6-5 Project Cost

The Project cost to be borne by the Indonesian side is roughly estimated as follows:

Drainage relocation	1,740,000 Rp
Demolition	00 Rp
Grade preparation	7,260,000 Rp
Total	9,000,000 Rp

Time of estimate: December 1984

Increase rate of prices in Indonesia has recently been eleven percent per year on an average. Therefore, it is necessary to prepare the budget taking a price increase into consideration.

CHAPTER 7 OPERATION AND MAINTENANCE PLAN

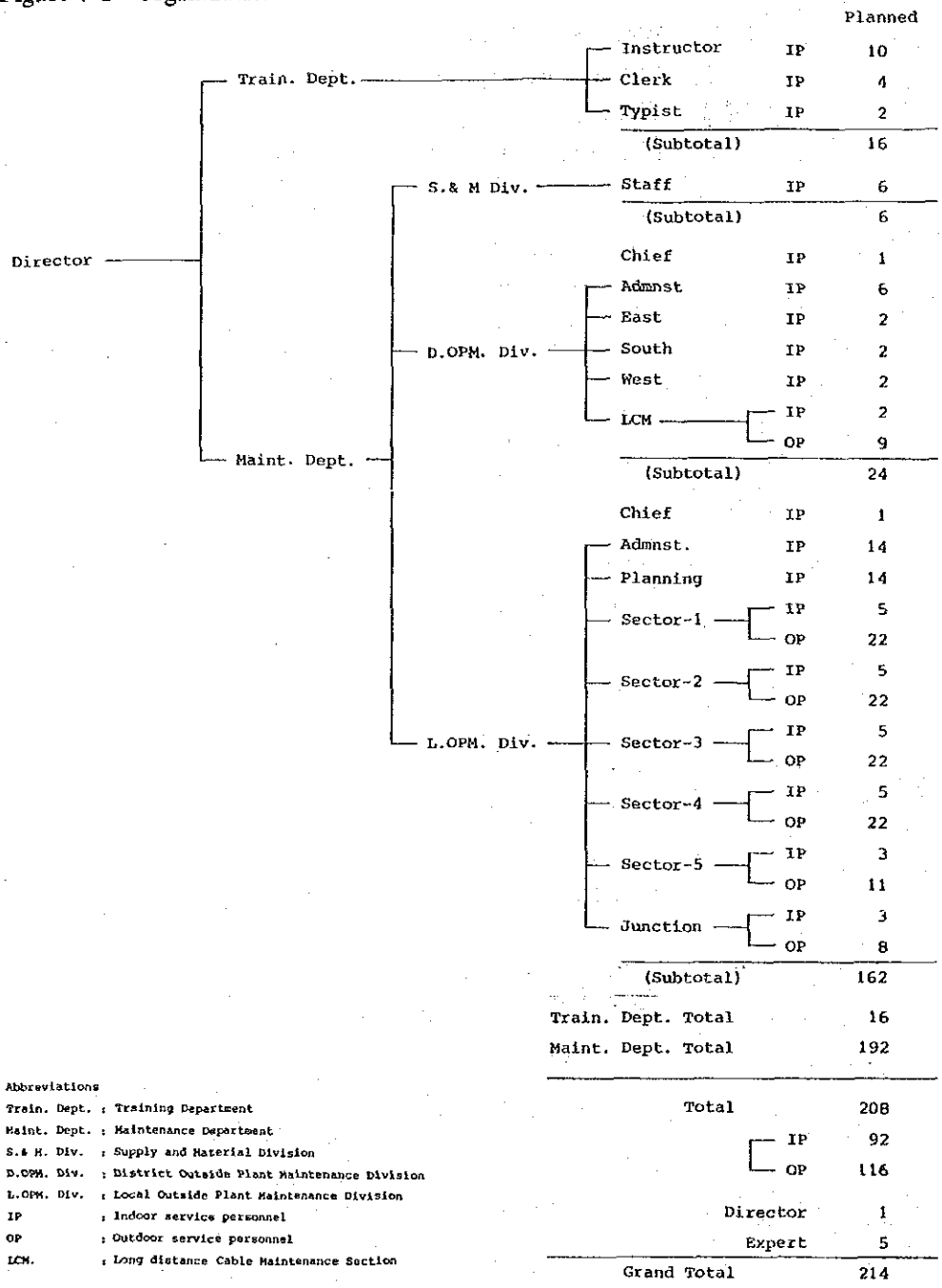
CHAPTER 7 OPERATION AND MAINTENANCE PLAN

7-1 Operation Plan

7-1-1 Operation Organization

The Model Center will be operated by the following personnel and organization shown in Figure 7-1.

Figure 7-1 Organization Chart of the Model Center



		Planned
Train. Dept. Total		16
Maint. Dept. Total		192
Total		208
	IP	92
	OP	116
	Director	1
	Expert	5
Grand Total		214

Abbreviations

Train. Dept.	: Training Department
Maint. Dept.	: Maintenance Department
S.& M. Div.	: Supply and Material Division
D.OPM. Div.	: District Outside Plant Maintenance Division
L.OPM. Div.	: Local Outside Plant Maintenance Division
IP	: Indoor service personnel
OP	: Outdoor service personnel
LCM.	: Long distance Cable Maintenance Section

7-1-2 Rough Estimate of Operation Cost

The monthly operation cost is roughly estimated as shown in Table 7-1.

Table 7-1 Operation Cost per Month

Item	Cost (Rp)
Personnel expenses	4,500,000 Rp
Office expenses	1,350,000 Rp
Running cost-Building	480,000 Rp
-Vehicles	2,200,000 Rp
Total	8,400,000 Rp

As previously mentioned, the Model Center will accomodate a part of the present organizations. The personnel expenses and related office expenses for this existing part are the same for the present and the future. Therefore, the personnel expenses and the related office expenses are estimated only for the additional 35 personnel.

(1) Personnel Expenses

The unit price of the personnel expenses of PERUMTEL is not given, so the necessary expenses are estimated on the following assumption by referring to those of other fields in Indonesia:

1) Instructor 200,000 Rp/month
2) Maintenance staff, etc. 100,000 Rp/month

Table 7-2 Additional Personnel Expenses per Month

Division	No.	Unit Price(RP)	Amount(Rp)
Local O.P.M. Div	4	100,000	400,000
District O.P.M. Div	9	100,000	900,000
Supply & Material Div	6	100,000	600,000
Instructor	10	200,000	2,000,000
Clerk & typist	6	100,000	600,000
Total	35		4,500,000

(2) Office Expenses

The office expenses includes stationery, expenses for communications etc. It is assumed to correspond to 30% of the personnel expenses.

4,500,000 Rp x 30% = 1,350,000 Rp/month.

(3) Running Cost of Building

It is listed in Table 7-3.

Table 7-3 Running Cost per Month

Utility	Quantity	Unit Rate	Rate
Elec. minimum Rate	35 kw	1,500 Rp	52,000 Rp
Elec. meter Rate	35 kw x 8 hours x 50% x 25 days	96 Rp	336,000 Rp
Water Rate	3 cu.m/hour x 8 hours x 25 days	150 Rp	90,000 Rp
Total			478,000 Rp

(4) Running Cost of Vehicles

1) Fuel cost

The fuel cost varies according to the types of fuel, consumption rate, frequency of use, etc. However, it is averaged and assumed as follows.

Daily kilometerage	60 km
Consumption rate	7 km/liter
Number of vehicles	20 vehicles
Price of gasoline	375 Rp/liter

20 x 60 x 25 ÷ 7 x 375 Rp = 1,600,000 Rp

2) Repair cost

Garage maintenance of vehicles will be held twice a year. Repairs include changing of necessary parts will be held once every two years.

20 x 2 x 40,000 Rp ÷ 12 months	= 135,000 Rp
20 x 1 x 200,000 Rp ÷ 24 months	= 167,000 Rp
Total	= 302,000 Rp
	= 300,000 Rp

3) Tax: Tax is estimated to be 180,000 Rp per year per vehicle.

20 x 180,000 Rp ÷ 12 = 300,000 Rp/month

4) Total running cost for the vehicles

(1) + (2) + (3) = 2,200,000 Rp/month

7-2 Maintenance Plan

7-2-1 Maintenance Organization

The building and equipment of the Model Center will be maintained by the following organizations of the Bandung Telephone office.

1) Building	Supply and Materials Division
2) Maintenance Equipment	
- Tools, measuring instruments	Local & District O.P.M. Divisions
- Vehicles	Supply and Materials Division
3) Training equipment and materials	Instructors
4) Outdoor training facilities	Instructors and Supply and Materials Division
5) Parking, stockyard	Daily Maintenance Dept. and Materials and Supply Division

7-2-2 Maintenance Procedure

(1) Building

The maintenance of the building includes daily cleaning and repairs of worn and deteriorated parts. The Model Center building will require facing and interior finish repairs and little structural repairs. It is important to use the building with care and with frequent cleaning. It is recommended to repair simple damages at the time of each occurence.

The Supply and Materials Division, which have been in charge of the building maintenance of the Bandung Telephone Office hires private

companies for maintenance other than simple repairs. The building of the Model Center will also be maintained in the same way. The following indicates the recommended frequency of the building maintenance activities:

1) General cleaning		1 per day
2) Window and floor washing		1 per week
3) General inspection		1 per month
4) Painting	Outside steel	1 per 2 years
	Wooden parts	1 per 3 years
	Interior walls	1 per 10 years
5) Outside facing replacement		1 per 15 years
6) Rooftop waterproofing		1 per 10 years

(2) Building Installations

Maintenance of building installations is very important because their durabilities are generally shorter than the building itself. The maintenance includes daily inspection cleaning and repairs. Recording the inspection results after every inspection is also important.

This has a close connection with the outside plant record management, the Supply and Materials Division. Bandung Telephone Office is in charge of this management. For reference, the expected durabilities of the main installations are shown below.

1) Distribution board	15 years
2) Flourescent lamp	5,000 - 10,000 hours
3) Incandescent lamp	1,000 - 2,000 hours
4) Intercom	15 years
5) Pump	15 years
6) Air conditioner	13 years
7) Water supply pipe	15 years
8) Drainage pipe	10 years

The frequency of the maintenance activities for building installations is as follows.

1) Change of fluorescent lamp	5 tubes/month
2) Septic tank maintenance	1/month

(3) Tools, measuring instruments, etc.

Daily examination and care are important to maintain equipment in good condition for use. For measuring instruments, they are not to be

repaired after they are damaged, but to examine them every time after use. It is also essential to keep equipment in order for easy confirmation of location, condition, number, etc. For this purpose, it is required to complete the equipment control especially on loan and return of tools and instruments. It is also recommended to establish a responsible organization and a recording system for equipment.

7-2-3 Rough Estimate of Maintenance Cost

Some of the maintenance affairs require to be implemented daily, monthly, or yearly, while others every decade or more. The maintenance cost of the Model Center is estimated on the annual expenses which could be covered by budget of each fiscal year. It does not conform to the budgetary system of PERUMTEL to reserve funds every year for the maintenance needed only once in a decade. For such maintenance, each budget should be individually prepared according to the necessity. The estimated maintenance cost per month is shown in Table 7-4.

Table 7-4 Monthly Maintenance Cost

Item	Cost
Cleaning	1,110,000 Rp
Painting	100,000 Rp
Septic tank maintenance	30,000 Rp
Equipment maintenance (except vehicles)	620,000 Rp
Fluorescent lamps	110,000 Rp
Total	1,970,000 Rp

(1) General cleaning

1) Five people will be enough for daily cleaning. The estimate includes personnel expenses and miscellaneous expenses which correspond to 100% of the personnel expenses.

5 x 25 day x 2,000 Rp x 2.0 = 500,000 Rp.

2) Twenty people will be necessary for weekly window cleaning

20 x (365 ÷ 7) week/year ÷ 12 month
x 2,000 Rp x 2.0 = 350,000 Rp.

3) Fifteen people will be necessary for weekly floor cleaning.

15 x (365 ÷ 7) week/year ÷ 12 month
x 2,000 rp x 2.0 = 160,000 Rp.

Total 1) + 2) + 3) = 1,110,000 Rp.

(2) General inspection

For monthly inspection of the building, two people are enough to complete it in half a day. Therefore, it can be as included a part of the routine work of the Supply and Maintenance Division.

(3) Painting

Painting cost is calculated based on the present construction cost. Although outside and inside parts require to be repainted at different frequency, frequency is assumed every two and a half years on an average. At present, the painting work costs about 3,000,000 Rp.

3,000,000 Rp ÷ 2.5 year ÷ 12 month = 100,000 Rp.

(4) Septic tank maintenance

The septic tank requires monthly inspection, oiling, addition of cleaning chemicals, sludge disposal, etc. The monthly maintenance cost is roughly estimated in the lump sum.

Lump sum 30,000 Rp.

(5) Equipment maintenance

Although the maintenance cost of equipment differs according to the frequencies of use, it is forecast as two percent of the total price of the equipment.

(6) Fluorescent lamps

The average durability is assumed to be 7,500 hours; daily use is four hours; the total number of fluorescent lamps is about 330 with a unit price of 20,000 Rp. Therefore, monthly number of change is

330 ÷ (7,500 hours ÷ 4 hours/day = 30 days) = 5

The monthly cost is 5 x 20,000 Rp = 100,000 Rp.

CHAPTER 8 PROJECT ASSESSMENT

CHAPTER 8 PROJECT ASSESSMENT

This is a project which aims to improve the maintenance technique of telecommunications outside plants. It is possible to indicate a part of the benefit to be brought by the proposed facilities in figures comparing the total costs required for the maintenance activities at present and in the future.

The qualitative improvement of telecommunication services by the technical improvement of the outside plant maintenance will also bring indirect benefit to the development of the Indonesian society and economy. This indirect benefit will be much bigger than the benefit in figures. However, as it is difficult to calculate this benefit accurately in figures, it is not adequate to evaluate the effect of the Project by an economic analysis method. Thus, the effect to be brought by the Project shall first be clarified qualitatively from the viewpoint of the necessity and urgency of the Project. Then, the Project will be assessed on the appropriateness by comparing this clarified effect with the details of the planning and the burden to be shared by the Indonesian side for the Project.

The telecommunication services in Indonesia has not satisfied the demand both in quality and quantity. The problem in quantity is the shortage of the capacities of both exchanges and cables. The qualitative problems are low quality of cables and incomplete maintenance system and technique. The Government of Indonesia has made efforts to improve the telecommunication services to solve these problems through three stages of the National Development Plans. However, the quantitative extension has been emphasized, while qualitative improvement has been secondary behind the quantitative extension. The significance of maintenance to secure performance quality of equipment has not been duly recognized. Therefore, maintenance has been backward in progress.

As a result, faults in telephones occur frequently and necessary fault repairs have often been delayed or some are obliged to be left without repairs. Moreover the fact that ninety percent of faults occur in outside plants indicates the backwardness of the outside plant maintenance compared with other maintenance. Therefore, improvement of the outside plant is the most urgent and important subject of the qualitative improvement of telecommunication services in Indonesia.

Under these circumstances, PERUMTEL has planned to establish telephone outside plant maintenance centers in the major cities of the country to meet the subject. These centers aim to implement outside plant maintenance more efficiently through concentrated maintenance administration and personnel training. For this propose, it is required to construct centralized facilities which will function as a base for daily maintenance activities and personnel training.

This is an effective way to improve knowledge and skill of the maintenance staff and to implement the maintenance activities more efficiently. However, as no systematized facilities for outside plant maintenance have been established in Indonesia so far, PERUMTEL possesses less experience and knowledge concerning the planning and operation of the above mentioned center. Thus, it is necessary to construct a model center to implement daily maintenance and staff training first, then to evaluate the knowledge and experiences obtained through the construction and operation of the Model Center, in order to establish an optimum standard for the other maintenance centers.

The Model Center will improve the present condition of maintenance through constructing a building and furnishing with necessary equipment and vehicles. The Model Center will accomodate all of the personnel concerned of the outside plant maintenance in the Bandung Telephone Office. After preparing instruction manuals and curriculum, the personnel will be trained intensively in the Model Center and on the job. Moreover, to spread knowledge and technique of maintenance, the Model Center will train instructors for the other centers and responsible personnel in charge of outside plant maintenance at the telephone offices in the jurisdiction of WITEL-V. Through the above activities, the Model Center will provide the following effects:

1) PERUMTEL acquires the knowledge and experience on the procedure of planning and operation of outside plant maintenance center.
2) PERUMTEL acquires the knowledge and experience in staff training in outside plant maintenance centers.

By these effects, the other maintenance centers will be ready to be constructed. Furthermore, knowledge and skill of the maintenance personnel of the Model Center will increase as a direct effect brought

by the Project. This will effect reduction of fault rate and increase the efficiency of maintenance in Bandung.

The facilities of the Model Center are designed considering the natural conditions and the construction circumstances of Indonesia as well as the specified conditions of the proposed site in Bandung. Therefore, the Model Center ensures the nature as a model for the other maintenance centers. Although the size of the facilities is minimum, the function fully satisfies the purposes of the maintenance center. The building is designed so as to ensure daylight and natural ventilation inside the building as much as possible. As much domestic materials as possible and construction methods which are in general use in Indonesia are applied. These considerations effect the more economical maintenance cost of the facilities. The construction cost of the works for the site clearance undertaken by the Indonesian side is reasonable.

The organization of the Model Center consists mainly of a part of the present personnel of the Bandung Telephone Office and a small number of newly recruited staff members. Therefore, the additional expenses to the present condition required for operation and maintenance of the Model Center are not so many. They are only new personnel and related administration, operation and maintenance expenses.

Therefore, the burden of the Indonesian side necessary for the implementation of the Project would be small compared with the Project effect.

Concluding the above, it is obvious that the model Center is urgently required in Indonesia. The benefits brought forth by the proposed facilities are highly anticipated. The facilities are minimum in size but the function can fully satisfy the purposes of the Model Center. Moreover, the burden of the Indonesian side for construction, operation and maintenance is reasonable. Therefore, it is duly recognized that the Project is appropriate to be implemented through Japan's Grant Aid.

CHAPTER 9 CONCLUSION AND RECOMMENDATIONS

CHAPTER 9 CONCLUSION AND RECOMMENDATIONS

Conclusion

The survey team confirmed the request of the Government of Indonesia and investigated the proposed site, background of the Project and other related matters to be clarified. After analyzing the collected data and information, the team prepared a plan for the Project to solve the existing problems in the telephone outside plant maintenance in Indonesia.

The proposed facilities are indispensable to improve the quality of telecommunication services in Indonesia. The effects to be brought by implementation of the Project are considerably large. However, the responsible organization of the Indonesian side for the Project implementation has not completely been established. This means that timely implementation is apprehended. Consequently, if the Government of Indonesia proceeds with the Project and operates the Model Center based on the following recommendations, the Project has sufficient appropriateness as a Japan's Grant Aid project. Both the Governments are, therefore, expected to take necessary measures urgently for the implementation of the Project.

Recommendations

The following items should also be carried out to implement the Project more smoothly and to achieve the expected purposes. The survey team recommends both the Governments of Indonesia and Japan to take necessary measures accurately with the schedule.

(1) The Government of Indonesia establishes a responsible organization necessary for the project implementation and determined an official authorized of signing necessary documents and a responsible official for the project implementation.

(2) The Government of Indonesia begins to prepare for the necessary procedures for custom clearances of the materials and equipment to be imported for the Project.

(3) The Government of Indonesia provides with possible convenience to the consultant and/or the contractor for all legal formalities required for the building permit, detailed design, construction and the equipment procurement.

(4) The Government of Indonesia is responsible to implement the following constructions at its own expenses. It is also required for smooth promotion of the Project to refer to this Basic Design Study Report and consult with the Japanese consultant about the execution advance.

1) Relocation of the existing facilities for water supply and drain for the Bandung Telephone Office.
2) Amendment of a part of the plan for the existing power supply increase and its implementation.
3) Demolition and removal of the existing buildings inside the site and grade preparation.
4) Intake of water supply pipe from the city main.
5) Other necessary works.

(5) The Government of Indonesia actively examines the purchase of the adjacent land, No. 18 Tera Street to use it for an additional approach and parking space and takes necessary measures for this purpose.

(6) The Government of Indonesia takes necessary measures to secure personnel and budget required for operation of the Model Center.

(7) The Japanese technical cooperation is essential for the effective operation of the Model Center. Both Governments take necessary measures for the purpose in accordance with the project progress.

Appendix-I **Activity Records of Surveys**

APPENDIX-I Activity Records of Surveys

I-1 Basic Design Study Field Survey

(1) Team Members

1) Team Leader	Mr. Toshizo KOIZUMI International Cooperation Division, Ministry of Posts and Telecommunications
2) Project Coordinator	Mr. Katsuji ONODA Basic Design Survey Division, Grant Aid Department, JICA
3) Architectural Planner	Mr. Toyoo KAWAMURA K.Ito Architects & Engineers
4) Architectural Designer	Mr. Masao OKUI K.Ito Architects & Engineers
5) Bldg. Installations Engineer	Mr. Hideo MATSUDA K.Ito Architects & Engineers
6) Equip. Planning Engineer	Mr. Shoji OHSHIMA K.Ito Architects & Engineers

(2) Diary

Date	Description
Dec. 3 Mon.	Arrival at Jakarta (Mr. Koizumi, Mr. Onoda, Mr. Kawamura, Mr. Okui), JL-721
4 Tue.	Courtesy call to the Ministry of Tourism, Posts and Telecommunications; Minister, Secretary General, Director for Planning Courtesy call to the Embassy of Japan (EOJ) Courtesy call to JICA Office Meeting on survey schedule at POSTEL Courtesy call to Jakarta Office of Nippon Telegraph & Telephone Public Corporation
5 Wed.	National Holiday Visit a similar facility (National Quality Control Laboratory)

Date	Description
Dec. 6 Thu.	Arrival at Bandung Discussion on survey schedule at PERUMTEL Site inspection, Innerteam meeting
7 Fri.	Visit to Bandung Telephone Office and meeting with Director, Site inspection Explanation on survey purpose at PERUMTEL Meeting on soil investigation Arrival at Jakarta (Mr. Matsuda, Mr. Ohshima), JL-721
8 Sat.	Discussion with PERUMTEL staff (Mr. Koizumi, Mr. Onoda Mr. Kawamura, Mr. Okui) Courtesy call to JICA, Visit NQCL, Arrival at Bandung (Mr. Matsuda, Mr. Ohshima)
9 Sun.	Site inspection (Mr. Okui, Mr. Matsuda, Mr. Ohshima) Inspection of telephone and construction conditions in and around the city (All members)
10 Mon.	Discussion with PERUMTEL staff
11 Tue.	Meeting on Minutes of Discussions at PERUMTEL (Mr. Koizumi, Mr. Onoda, Mr. Kawamura) Investigation of infrastructure, Meeting with PERUMTEL architectural staff (Mr. Okui, Mr. Matsuda, Mr. Ohshima) Arrival at Jakarta (Mr. Koizumi, Mr. Onoda, Mr. Kawamura)
12 Wed.	Discussion on Minutes of Discussion at POSTEL accompanied by Mr. Yoshida, Second Secretary, EOJ (Mr. Koizumi, Mr. Onoda, Mr. Kawamura) Investigation of underground utilities and objects (Mr. Okui, Mr. Matsuda, Mr. Ohshima) at the site
13 Thu.	Signing the Minutes of Discussions (Mr. Koizumi, Mr. Onoda, Mr. Kawamura) withnessed by Mr. Yoshida, Mr. Nishio from JICA Hearing at Bandung Telephone Office (Mr. Okui) Visit similar facilities (Mr. Matsuda, Mr. Ohshima)

Date	Description
Dec. 14 Fri.	Progress reporting and meeting at JICA (Mr. Koizumi, Mr. Onoda) Meeting at Bandung Regional Development Planning Board (BAPPEDA), Arrival at Jakarta (Mr. Okui, Mr. Matsuda, Mr. Ohshima) Return to Tokyo (Mr. Koizumi, Mr. Onoda) JL-722
15 Sat.	Data collection
16 Sun.	Return to Tokyo (Mr. Matsuda, Mr. Ohshima), CX-710, CX-500 Arrival at Bandung (Mr. Kawamura, Mr. Okui)
17 Mon.	Discussion with PERUMTEL staff
18 Tue.	Discussion with PERUMTEL staff
19 Wed.	Data collection Visit construction site of Tegallega Exchange Visit Dayeuh Kolot, former proposed site Discussion with PERUMTEL staff
20 Thu.	Courtesy call to Bandung Telephone Office Courtesy call to BAPPEDA Exchange of memorandum at PERUMTEL Arrival at Jakarta
21 Fri.	Data collection
22 Sat.	Progress reporting to JICA Return to Tokyo (Mr. Kawamura, Mr. Okui), JL-722

I-2 Draft Final Report Confirmation Survey

(1) Team Members

1) Team Leader	Mr. Toshizo KOIZUMI International Cooperation Division Ministry of Posts and Telecommunications
2) Project Coordinator	Miss Yumi ONODERA Public Relations Division, General Affairs Department, JICA
3) Architectural Planner	Mr. Toyoo KAWAMURA K.Ito Architects & Engineers
4) Architectural Designer	Mr. Masao OKUI K.Ito Architects & Engineers

(2) Diary

Date	Description
Feb. 20 Wed.	Arrival at Jakarta, JL-721
21 Thu.	Courtesy call to POSTEL, Submission of the Draft Final Report Courtesy call to Minister Nakamura, Embassy of Japan
22 Fri.	Arrival at Bandung, Reconfirmation of the site
23 Sat.	Explanation of the Draft Final Report at PERUMTEL
24 Sun.	Supplemental Data collection
25 Mon.	Discussion at PERUMTEL Arrival at Jakarta from Bandung
26 Tue.	Discussion and signing the Minutes of Discussion at POSTEL Dinner with officials concerned of POSTEL and PERUMTEL
27 Wed.	Progress reporting to JICA, Supplemental data collection Return to Tokyo, JL-722

I-3 List of the Officials Concerned

(1) Indonesian Officials

1) Ministry of Tourism, Posts and Telecommunications

Mr. AMHAD TAHIR	H.E. Minister
Mr. BAMBANG SUMARSONO Drs.	Secretary General
Mr. SOEHANA Ir.	Ministerial Aide
Mr. D. SINULINGGA Ir.	Director of Planning Bureau, Secretariat General
Mr. ROLLIN Ir.	Deputy Director General of Administrations, Directorate General of Posts & Telecommunications (POSTEL)
Mr. R.I. SOEMARDI	Director of Planning Dept., POSTEL
Mr. KOESMARIHATI SUGONDO Ir.	Chief of Program & Planning Div., Planning Dept., POSTEL
Mr. SUTARTO	Program & Planning Div., POSTEL
Mr. SUKARSO	Telecommunication Div., POSTEL
Mr. RAI SARESAUM	POSTEL
Mr. KIKIN SODIKIN	POSTEL

2) Ministry of Foreign Affairs

Mr. SOEKRO BERWODIPOERO	Economic Cooperation Div.

3) Telecommunication Public Cooporation (PERUMTEL)

Mr. PARTONO Ir.	Director of Operations and Technique Directorate
Mr. SOEDARMADI Ir.	Director of Sub Directorate of Maintenance, Directorate of Operations and Technique
Mr. BOEDIONO	Chief of Cable Network Div., Sub directorate of Maintenance
Mr. IMAM SUYOTO	Cable Network Technique Div., Sub directorate of Maintenance
Mr. SANI	Secretary Div., Sub directorate of Trade, Directorate of Operation and Technique

Mr. PANUT H	Secretary Div., Sub directorate of Trade, Directorate of Operation and Technique
Mr. AHADIJAT	Chief of General Facilities Div., Sub directorate of Supply Administration, Directorate of Supply
Mr. SADIKIN	General Facilities Div.
Mr. BOERHANOEDDIN	- ditto -
Mr. HADIAN	- ditto -
Mr. DASMAN RUSLI	Network Div., Sub directorate of Development Program, Directorate of Development
Mr. TARJONO	- ditto -
Mr. H.P. PANJAHITAN	Chief of Building and Supporting Facilities Planning Div., Sub directorate of Development Program, Directorate of Development
Mr. THOMAS WIDJANARTO	Building and Supporting Facilities Planning Div., Sub directorate of Development Program Directorate of Development
Mr. KETUT RENES	- ditto -
Mr. A. MUHAIMIN Ir.	Head of WITEL V
Mr. PRAMOEDJO	Chief of Telephone Technique Div., WITEL V
Mr. AHMAR GUNADI	Telephone Technique Div., WITEL V
Mr. SARIDJAN	Material Supply Div., WITEL V
Mr. YUSAK SLAMET	Chief of Bandung Telephone Office
Mr. GUTOMO GANDJAR	Chief of Inside Plant Div., Bandung Telephone Office (BTO)
Mr. SUHARTO	Inside Palnt Div., BTO
Mr. WAHIDIN	Chief of Supply and Material Div., BTO
Mr. SUHARDIJONO	Planning section Outside Plant Div., BTO

4) Bandung Regional Development Planning Board (BAPPEDA) and others

Mr. ENAN ROMDANI S. Ir.	Chief of BAPPEDA
Mr. SOERIDEHAN SH.	Chief of Div. III (Social and Culture) of BAPPEDA
Mr. ADANG SUHARA Ir.	Chief of Planning and Engineering Div. of BAPPEDA
Mr. RAIP ABUDULRAHMAN SH.	Secretary of BAPPEDA
Mr. HADI SAPARI	System Town Division (DTK), Bandung Municipality
Mr. TETENG MULYANA	Building Supervisory Div. (DPB), Bandung Municipality
Mr. MEMED MARTA	Public Work Div. (APU/PRT), Bandung Municipality
Mr. SOLEH TAMGIZ	- ditto -
Mr. E. GARMADI	Water Public Corporation (PAM)
Mr. BUOYANTO	Electric Public Corporation (PLN)

(2) Japanese Officials

Mr. Junichi MAKAMURA	Minister, Embassy of Japan
Mr. Noboru YOSHIDA	Second Secretary, Embassy of Japan
Mr. Yutaka YAMAMURA	Representative, JICA Jakarta Office
Mr. Hisamitsu NISHIO	JICA Jakarta Office
Mr. Tatsuichi HIDAKA	Nippon Telegraph & Telephone Public Corporation, Jakarta Office
Mr. Takao IWASHIMIZU	Expert of Columbo Plan, JICA

Appendix-II **Copies of Minutes of Discussions**

APPENDIX-II Copies of Minutes of Discussions

II-1 M/D of Basic Design Study Field Survey

MINUTES OF DISCUSSIONS
ON
THE CONSTRUCTION PROJECT
OF
THE OUTSIDE PLANT MAINTENANCE MODEL CENTER
IN
THE REPUBLIC OF INDONESIA

In response to the request made by the Government of the Republic of Indonesia for the construction project of the Outside Plant Maintenance Model Center, located in Bandung, Indonesia (hereinafter referred to as "the Project"), the Government of Japan, through Japan International Corporation Agency (JICA), has dispatched a Basic Design Study Team headed by Mr. Toshizo Koizumi (hereinafter referred to as "the Team") to conduct the Basic Design Study on the Project from 3rd to 22nd December, 1984.

The Team has carried out a field survey, had series of discussions and exchanged views with the Indonesian officials concerned with the Project.

As a result of the study and discussions, both parties have agreed to recommend to their respective Governments to examine the result of study attached herewith towards the realization of the Project.

Jakarta, December 13th, 1984

小泉敏三

Mr. Toshizo Koizumi
Leader
Japanese Study Team
Japan International
Cooperation Agency

Ir. Rollin
Deputy Director General of
Posts and Telecommunications
of the Republic of Indonesia

ATTACHMENTS

1. The objective of the Project is to provide necessary building, facilities and equipment for the construction project of the Outside Plant Maintenance Model Center in Bandung, Indonesia.

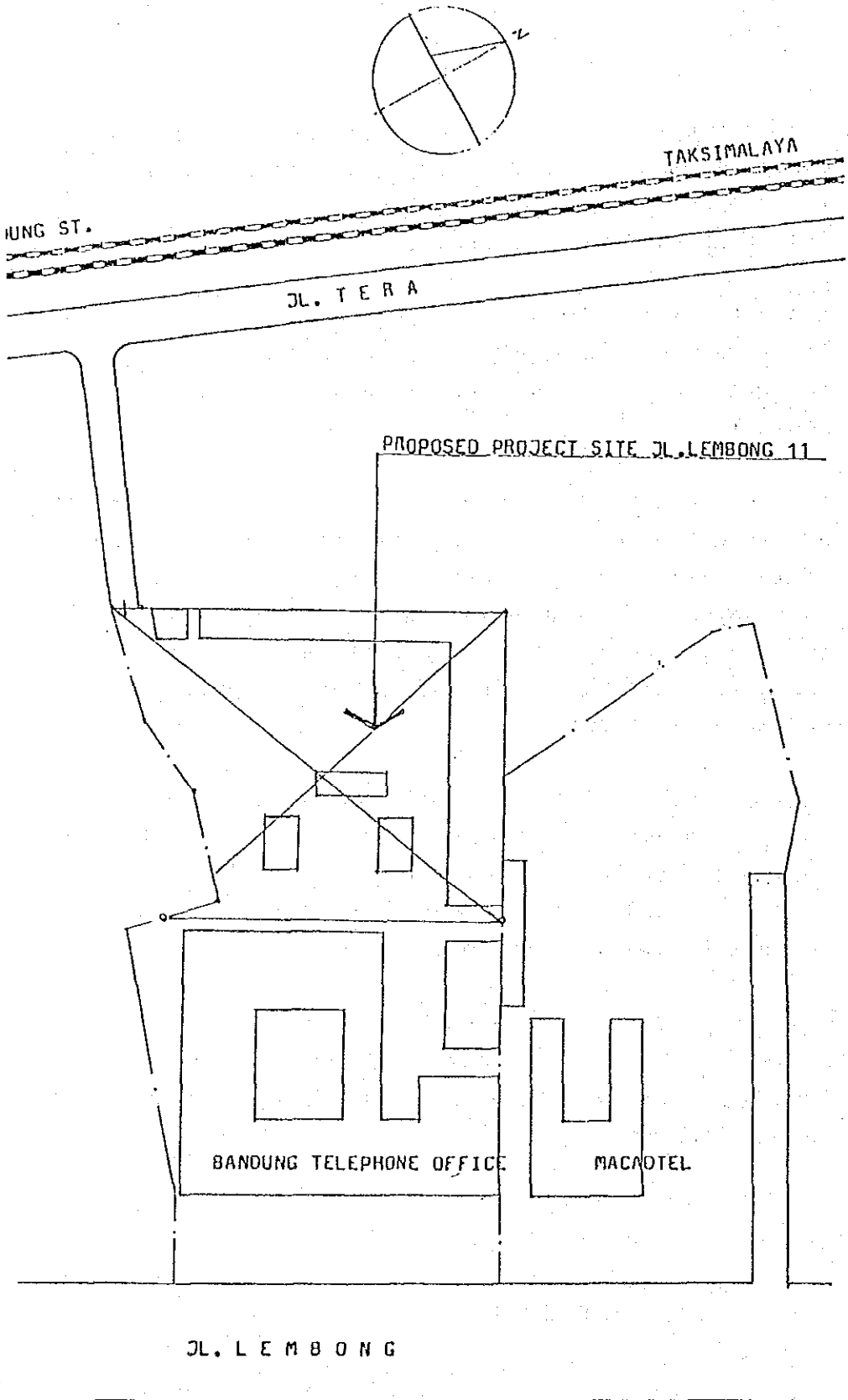
2. The site of the Project has been acquired by the Government of the Republic of Indonesia (hereinafter referred to as "the Project Site") as attached in Annex I.

3. The Japanese Study Team will convey to the Government of Japan the desire of the Government of the Republic of Indonesia that the former takes necessary measures to co-operate in implementing the Project and provides necessary facilities and other items as listed in Annex II within the scope of Japanese economic co-operation in Grant form.

4. The Government of the Republic of Indonesia has understood Japan's Grant Aid system explained by the Team which includes a principle of use of a Japanese consultant and Japanese general contractor for implementation of the Project.

5. The Government of the Republic of Indonesia will take necessary measures as listed in Annex III on condition that Grant Aid by the Government of Japan is extended to the Project.

Annex I


TAKSIMALAYA
JUNG ST.
JL. T E R A
PROPOSED PROJECT SITE JL.LEMBONG 11
BANDUNG TELEPHONE OFFICE
MACROTEL
JL. L E M B O N G

Annex II

The items of building facilities and related equipment required by the Government of the Republic of Indonesia are as follows:

1. Building for

    1) Administration
    2) Training
    3) Meeting
    4) Work shop
    5) Store
    6) Others

2. Facilities for

    1) Outside plant training
    2) Others

3. Equipment for

    1) Training
    2) Outside plant maintenance

Annex III

Following arrangements will be required to be taken by the Government of Indonesia.

1. To provide necessary data for basic design such as land survey and condition of sub-oil.

2. To carry out site preparation such as clearing, filling, levelling and access road before commencement of construction works.

3. To provide facilities for distribution of electricity, water supply, drainage, telephone lines and other incidental facilities to the Project Site.

4. To ensure prompt unloading, tax exemption, customs clearance at ports of disembarkation in Indonesia of the products purchased under the grant.

5. To exempt Japanese nationals from custom duties, internal taxes and other fiscal levies which may be imposed in Indonesia with respect to the supply of the products and services under the verified contracts.

6. To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contract, with such facilities which may be necessary for their entry into Indonesia and stay therein for the performance of their work.

7. To maintain and use properly and effectively the facilities constructed and equipment purchased under the grant.

8. To undertake incidental civil works such as gardening, fencing gates, guard house and exterior lighting.

9. To furnish general furniture such as carpets, curtain and others.

II-2 M/D of Draft Final Report Confirmation Survey

MINUTES OF DISCUSSIONS ON
THE DRAFT FINAL REPORT OF BASIC DESIGN STUDY ON
THE CONSTRUCTION PROJECT OF THE OUTSIDE PLANT MAINTENANCE MODEL CENTER
IN THE REPUBLIC OF INDONESIA

In response to the request by the Government of the Republic of Indonesia, the Government of Japan dispatched a team to carry out the basic design study on the Construction Project of the Outside Plant Maintenance Model Center (hereinafter referred to as "the Project") through Japan International Cooperation Agency (JICA) in December, 1984.

The study team carried out a field survey, had a series of discussions and exchanged views with the Indonesian officials concerned.

As a result of the basic design study, JICA prepared a draft final report of the Project (hereinafter referred to as "the Report") and dispatched a team headed by Mr. Toshizo Koizumi to submit the Report from 20th to 28th February, 1985.

The Team has explained the Report to the Indonesian officials concerned and held discussions.

Both parties have confirmed the result of the discussions attached herewith.

February 26, 1985
Jakarta, Indonesia

小泉敏三		
Mr. Toshio Koizumi	Ir. R. Partono	Ir. Rollin
Team Leader, Japan International Cooperation Agency	Director of Operations and Technique, Telecommunication Public Corporation, The Republic of Indonesia	Deputy Director General of Posts and Telecommunications, The Republic of Indonesia

ATTACHMENT

Major points of understandings are as follows :

1. The Indonesian side has principally agreed to the basic design proposed in the Report.

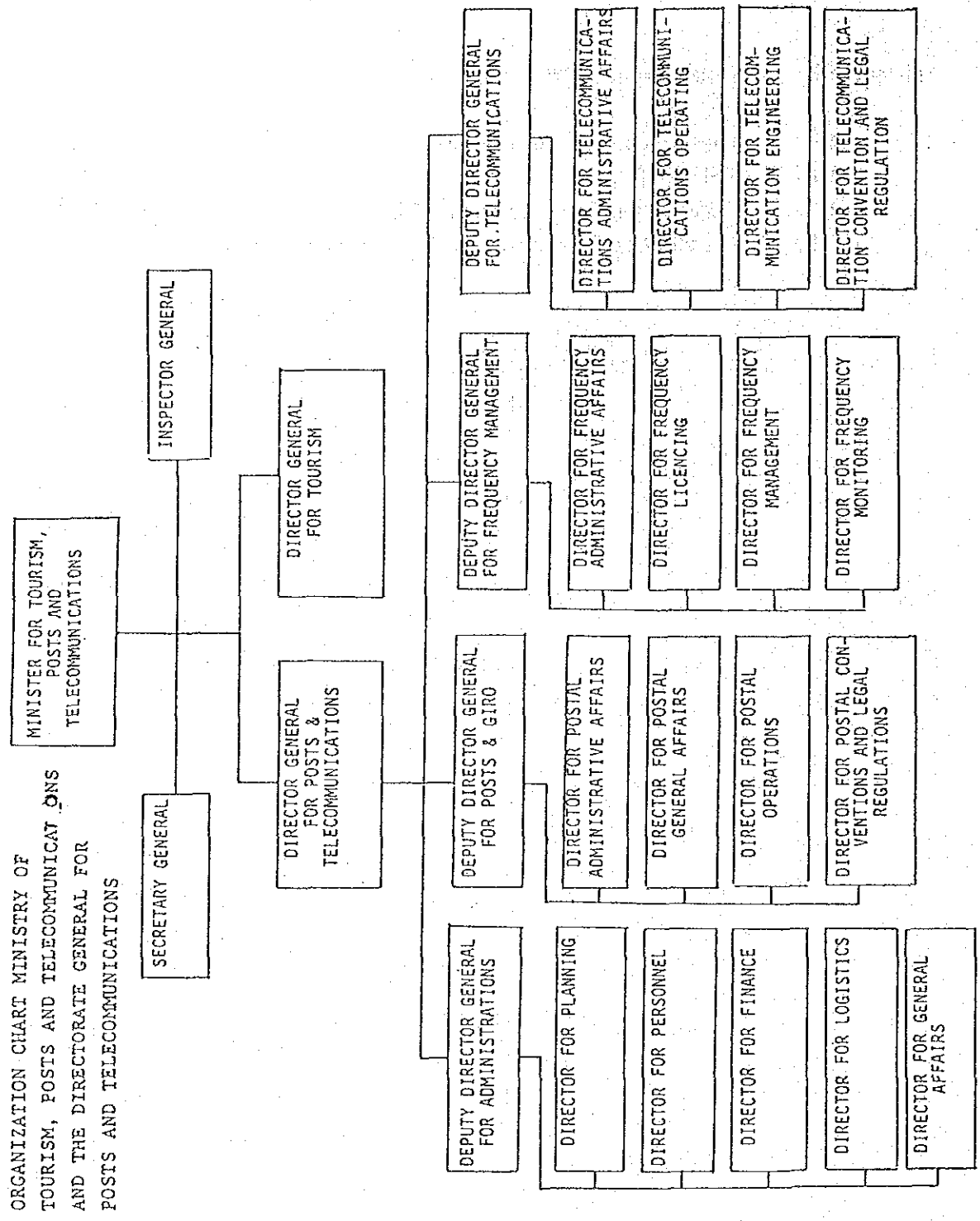
2. The final Report (10 copies in English) on the Project will be submitted the Indonesian side by the middle of May, 1985.

3. The Indonesian side understood the system of Japan's Grant Aid Programme and the arrangement to be taken by the Indonesian side for realization of the Project.

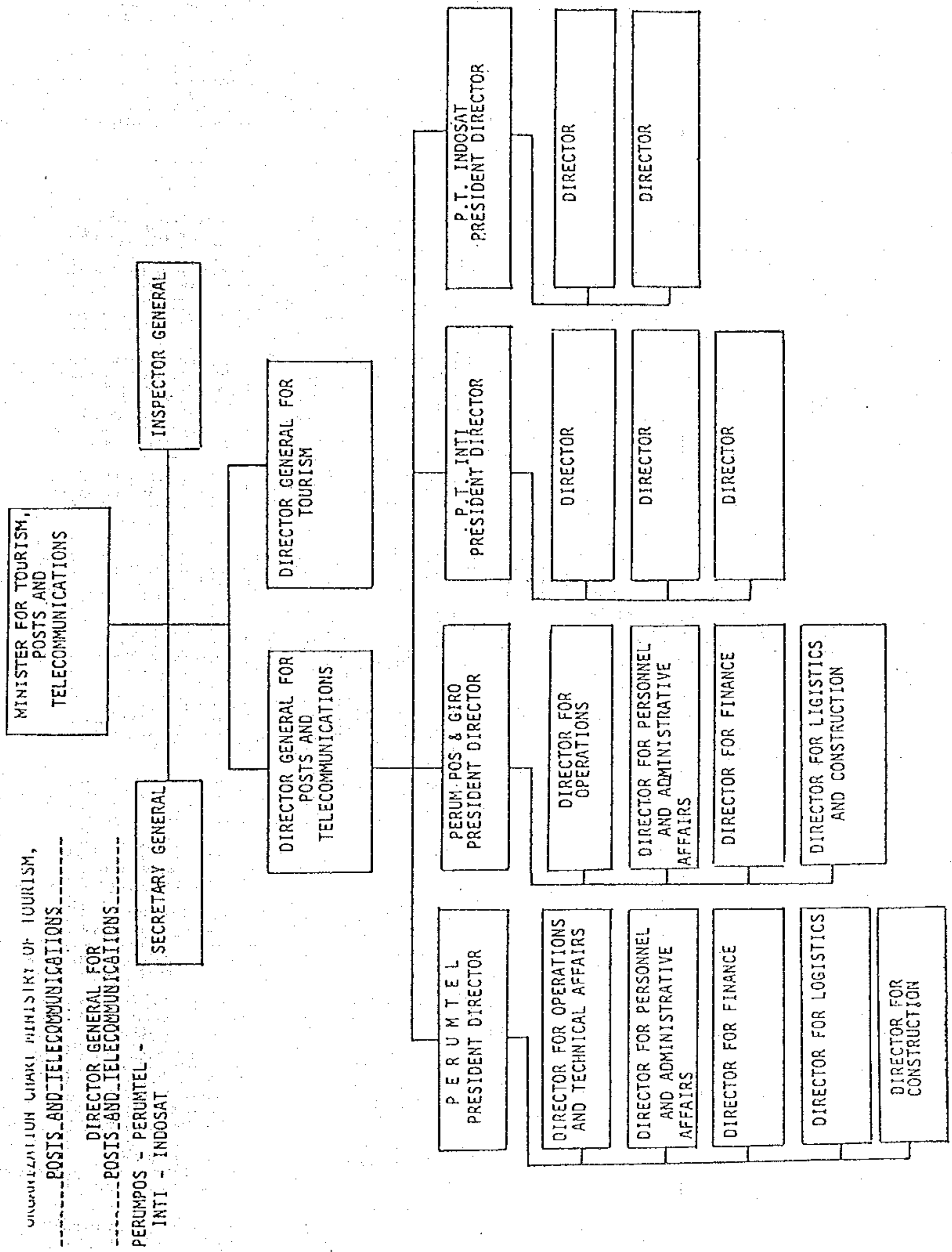
Appendix-III Organization Charts

APPENDIX-III Organization Charts

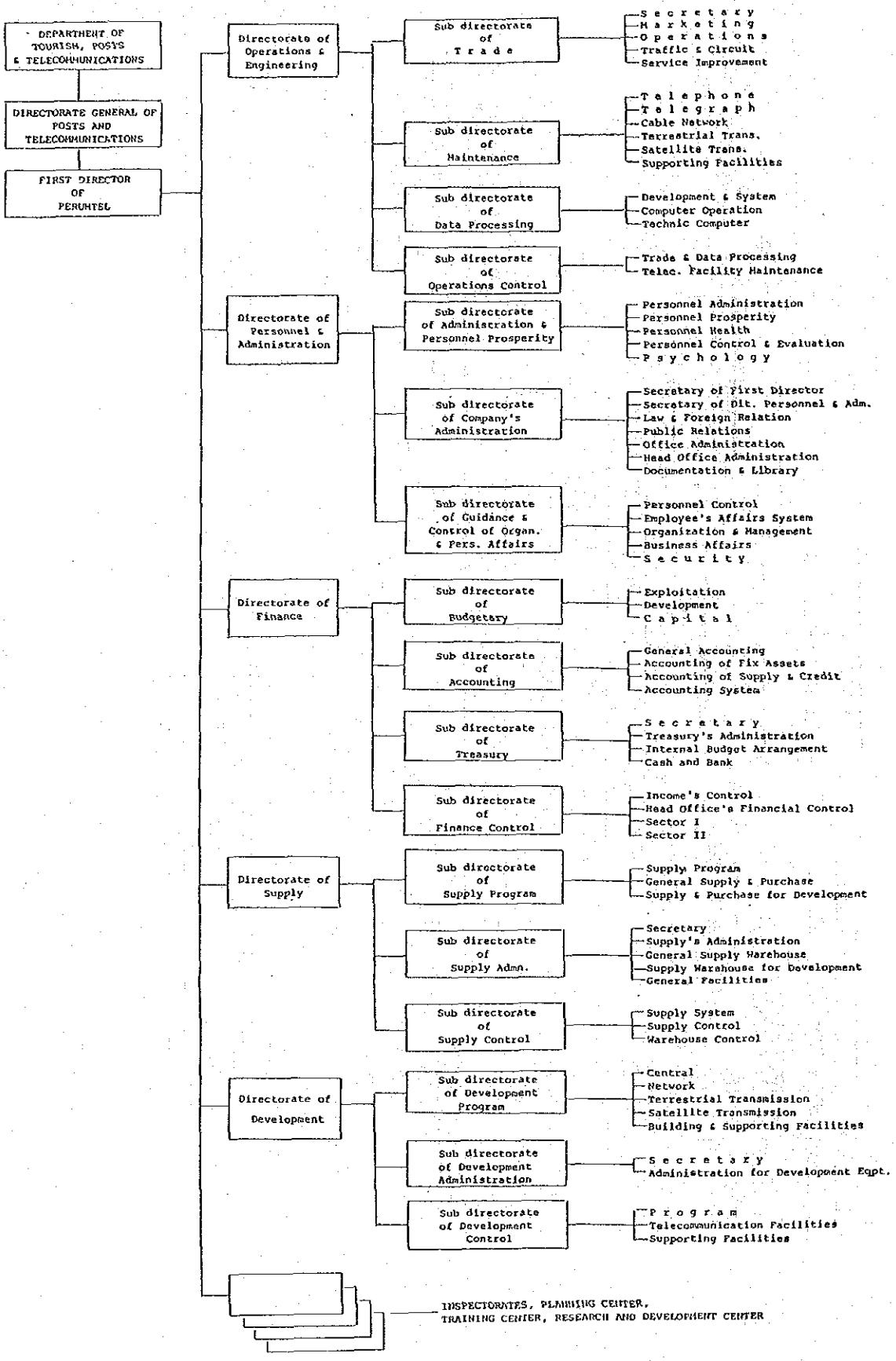
III-1 Organization chart of POSTEL



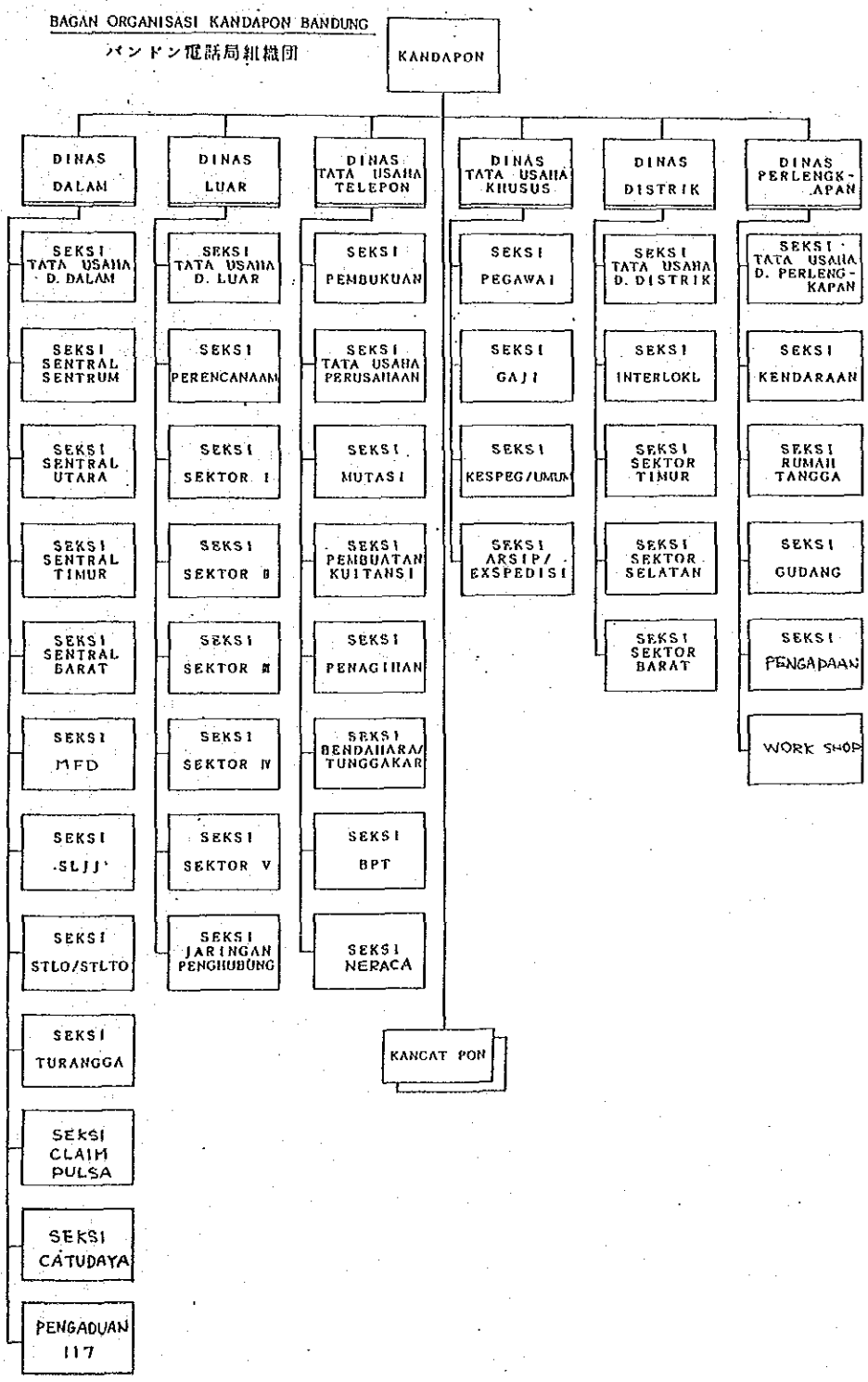
III-2 Relation Chat



III-3 Organization Chart of PERUMTEL



III-4 Organization Chart of the Bandung Telephone Office



Appendix-IV Soil Investigation Data

p.t. S O I L E N S

SOIL INVESTIGATION FOR THE PROPOSED 4 FLOORS BUILDING AT JALAN LEMBONG 11 BANDUNG, INDONESIA

I. INTRODUCTION

This report presents data developed from soil investigation for The Proposed 4 Floors Building at Jalan Lembong 11, Bandung, Indonesia.
The location of the project site is shown on plate 2 enclosed in this report.
This report presents as follows :

a. Data from the results of drillings, cone penetration tests and laboratory tests.

b. Recommendation of foundation of the proposed building based on the subsurface condition encountered.

II. SCOPE AND PURPOSE

The purpose of this soil investigation was to explore the subsurface conditions of the site, to evaluate the strength of the layers encountered and develop recommendation of foundation of the proposed building.
The scope of the investigation included :

a. Field exploration program to evaluate the subsurface conditions of the site and to obtain samples for logging and laboratory testing.

b. Laboratory testing on undisturbed samples taken from the boring holes.

c. Recommendation of foundation for the proposed 4 floors building.

The field exploration was performed during the period of December 11 to December 18, 1984.

Details of the field explorations and laboratory testing are presented in the Appendices I and II in this report.

III. SUBSURFACE CONDITIONS

The subsurface conditions of the site were investigated by performing 3 points cone penetration tests and 3 points drilling. Drillings were performed to 15 m depth each from the existing ground surface, except at point B3 to 20 m depth.

A brief summary of subsurface conditions are as follows :

Point No.	Range of depth in meters	Stratum Description
B1	0.00 - 0.05	asphalt concrete pavement
	0.05 - 1.00	silty sand, gravel and boulder, loose.
	1.00 - 7.00	silty clay and tuffaceous silt, soft to stiff.
	7.00 - 9.45	silty sand stone, soft rock
	9.45 - 11.00	silty sand, very dense
	11.00 - 15.40	gravelly sand, very dense.

Point No.	Range of depth in meters	Stratum description
B2	0.00 - 0.08	asphalt concrete pavement
	0.08 - 1.70	sandy, silty clay, soft
	1.70 - 2.90	silty clay, medium stiff
	2.90 - 4.50	tuffaceous silt, stiff
	4.50 - 5.20	silty gravelly sand, dense
	5.20 - 7.00	silty sand stone, soft rock
	7.00 - 7.45	sand, very dense
	7.45 - 11.00	gravelly silty sand, dense
	11.00 - 15.45	gravelly sand, very dense
B3	0.00 - 2.15	silty clay, medium stiff
	2.15 - 5.75	tuffaceous silt, very stiff
	5.75 - 10.00	sandy silty gravel, very dense
	10.00 - 20.14	silty gravelly sand, very dense

The highest ground water level (GWL) measured in the boring holes during drilling performance are as follows :

Point No.	GWL in meter from the existing ground surface
1	- 2.20
2	- 2.20
3	- 3.60

The locations of boring holes and cone penetration tests could be seen in the map plate 2 and the results are presented as bor logs plates A.2.1. to A.2.3 and graphs plates A.1.1 to A.1.3 enclosed in this report.

IV. FOUNDATION RECOMMENDATIONS

Based on the results of drillings, cone penetration tests and laboratory tests, we recommend as the following :
For column load of the proposed 4 floors building can be used pier foundation or drilled caisson with diameter and allowable axial compressive load of one pier foundation are as follows :

Caisson diameter in m	allowable axial compressive load in ton
0.80	90
1.00	150
1.20	200

The caissons shall have enough steel reinforcement and concrete quality at least K-125 or minimum compressive strength of 125 kg/cm^2.
Approximate depth of the caisson are :

Point No.	Approximate depth of the caisson from the existing ground surface in meter	Approximate elevation of the bottom of the caisson in meter
B1	- 7.00	+ 712.80
B2	- 6.00	+ 712.50
B3	-10.00	+ 710.60

The bottom of the caissons should be on the cemented sand stone or very dense gravelly sand/sandy gravels layers. The bottom of excavation should be clean from dirt caused by disturbances during excavation. It is necessary to avoid immediate settlement.

During caisson excavation by using machine drilling and during concreting we recommend to use full casing to prevent soil wall caisson failure.
Casing can be pulled out step by step after the surface of the concrete reach elevation higher than the end of the casing.

p.t. S O I L E N S

Rismantojo, civil engineer
Sawarso Wignjosajono, civil engineer
Hadi Hoesni Mantjanegara, civil engineer

APPENDIX I
FIELD EXPLORATIONS

The subsurface conditions at the proposed site were explored by drilling 3 points and performing 3 points cone penetration tests.

Drilling were performed to 15 m depth each, except at point B3 to 20 m depth by using machine drill rig Long Year 24 standard drill complete with its accessories and Long Year 535 RQ pumping unit. Our Engineer maintained a continuous logging of the soils encountered. Detailed lithologic soil description were presented in the boring logs shown on the plates A.2.1 to A.2.3 attached in this report.

Undisturbed soil samples were obtained at the certain depth in the boring holes, utilizing thin walled (Shelby) tube of 70 millimeter inner diameter, continuous disturbed soil samples for lithologic soil descriptions were also obtained utilizing single core barrel of 89 or 73 millimeters outer diameter.
Standard penetration tests were performed every 2 m interval, used as a substitute data.
Pocket penetrometer tests and the location of samples taken are presented in the boring logs enclosed in this report.

Cone penetration tests were performed utilizing 2 ton capacity Dutch cone apparatus, equipped with friction jacket placed above the cone allowing to measure both cone and friction resistances. The results of cone penetration tests are presented in graphs show cone penetration resistance in kg/cm^2, total friction resistance in kg/cm' perimeter and ratio between cone penetration and local friction resistances.
The results of cone penetration tests could be seen in the graphs plates A.1.1 to A.1.3 enclosed.

APPENDIX II
LABORATORY TESTING

Undisturbed soil samples were tested in the laboratory as the following :

- Bulk wet and dry density
- Water content
- Specific gravity
- Atterberg limits
- Sieve and hydrometer analysis
- UU Triaxial
- Consolidation
- Lithologic soil description.

Results of the whole laboratory tests are presented in tables, graphs and Mohr circles enclosed in this report. Terms, symbols, equipment utilized and procedures followed to perform the laboratory tests are listed in the appendices enclosed.

p.t. SOIL ENS

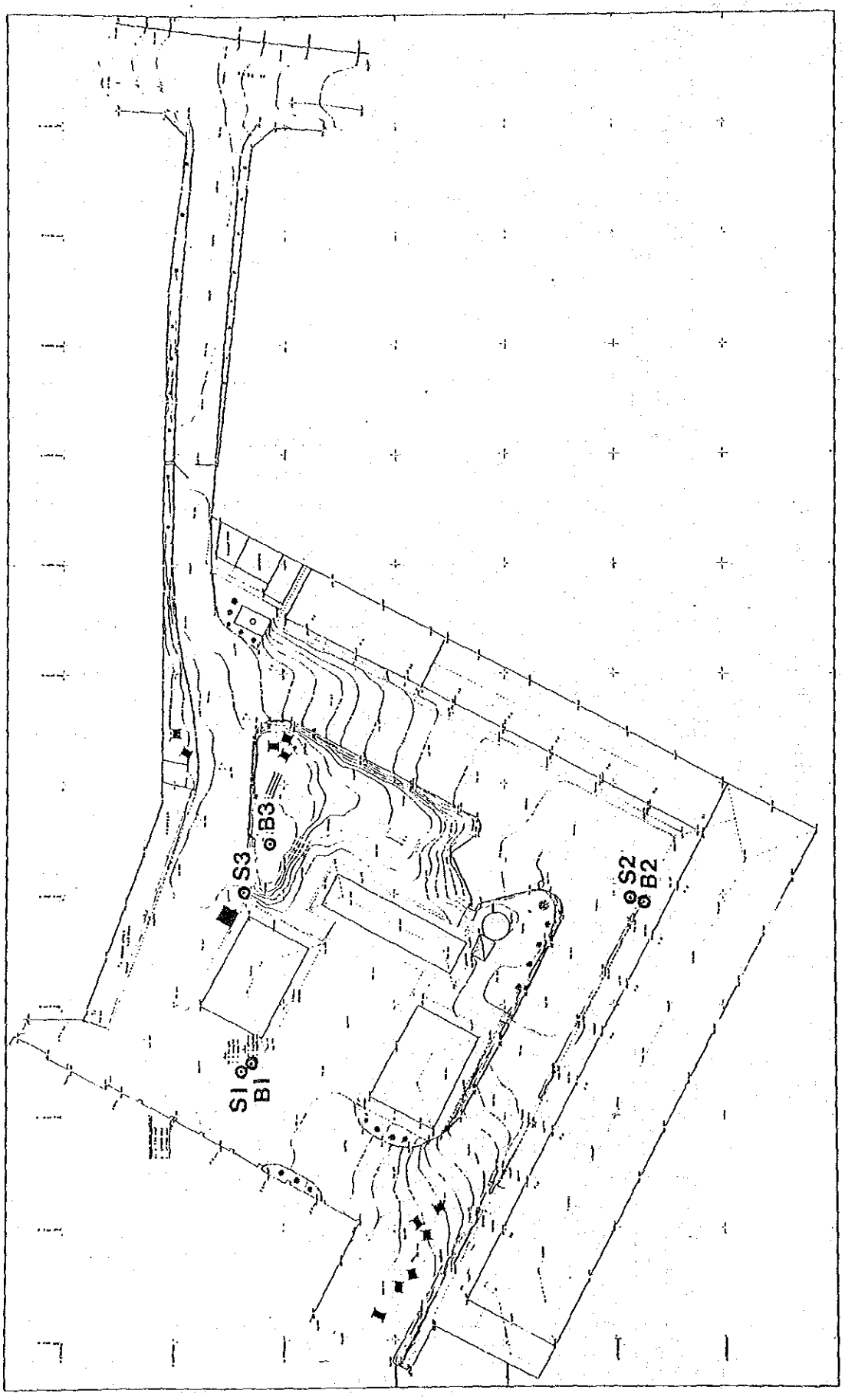
LABORATORY TEST DATA

PROJECT : 4 FLOORS BUILDING
LOCATION : Jl. Lembong 11, Bandung

Bor/ POINT No.	Depth m	γ_s t/m³	γ_m t/m³	γ_d t/m³	w %	w_L %	w_P %	I_P %	I_L	w_S %	e	n %	Sr %	% finer by weight passing sieve No 200	qu kg/cm²		UU, ~~CU, CD~~ Triaxial C kg/cm²	UU, ~~CU, CD~~ Triaxial ϕ °	Consolidation. C_c	Consolidation. P_c kg/cm²
B.1	2.25 – 2.90	2.59	1.57	0.89	75.6	85.8	50.0	35.8	+0.72	–	1.90	65	100	88	–	–	0.14	27	0.65	
	5.00 – 5.20	2.63	1.62	1.02	58.6	81.0	45.3	35.7	+0.37	–	1.57	61	98	89	–	–	0.10	32	0.38	
B.2	1.00 – 1.70	2.56	1.76	1.32	33.6	35.7	23.2	12.5	+0.83	–	0.94	49	91	94	–	–	*	*	0.22	
	1.70 – 2.40	2.62	1.55	0.89	74.4	102.3	47.8	54.5	+0.49	–	1.95	66	100	94	–	–	0.08	5	0.51	
B.3	1.00 – 1.70	2.62	1.68	1.14	47.4	91.6	42.2	49.4	+0.11	–	1.30	56	96	74	–	–	0.4	5	0.31	
	3.00 – 3.50	2.62	1.69	1.06	58.9	113	50.9	62.1	+0.13	–	1.46	59	100	91	–	–	0.3	23	0.45	

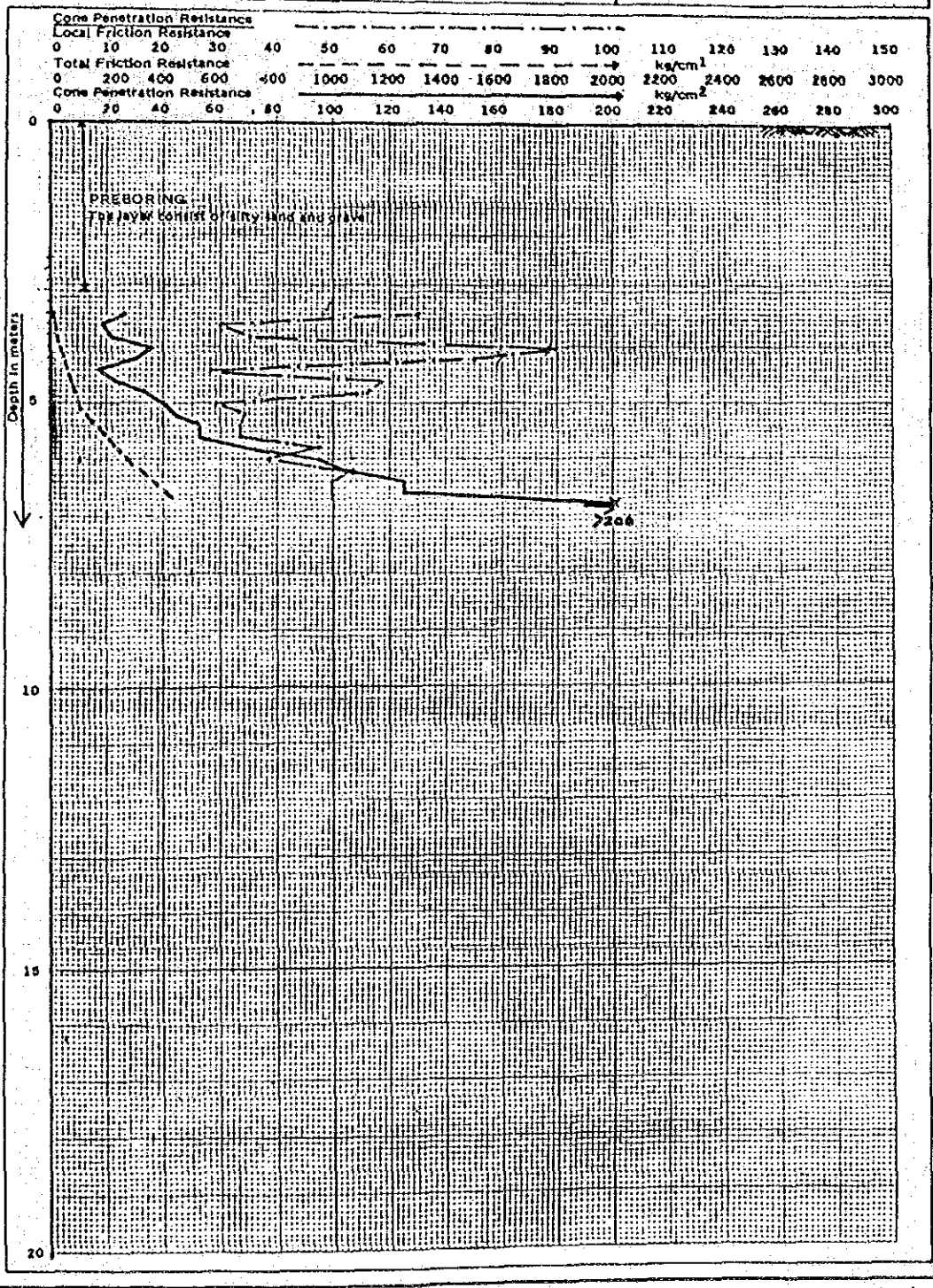
Note : * samples can not be trimmed in good condition.

Plate. 1


S3
B3
S2
B2
S1
B1

PROJECT	: 4 Floors Building	DUTCH CONE GRAPH	p.t. SOILENB
JOB NO.	: 1165	DUTCH CONE CAPACITY	: 2 Ton
CLIENT	: K. Ito Architects & Engineers	TYPE OF S-CONE	: Friction Jacket Area 100 cm^2
LOCATION	: Jalan Lembong No.11 BANDUNG	NOTE	: Cone Penetration Resistance > 200 kg/cm^2 at −6.80 meters depth.
DUTCH CONE NO.	: S.1		
DEPTH IN M.	: 6.80 m.		
ELEVATION	: +719.826		
COORDINATE	: X:1006.103; Y:1003.939		
DATE OF TEST	: December 12, 1984		

Foreman	: Furqon N.A.	Calculated by	Deddy S.	Checked by	Virastusrini
Dutch Cone Master	: Furqon N.A.	Drawn by	Deddy S.	Approved by	Rismantojo

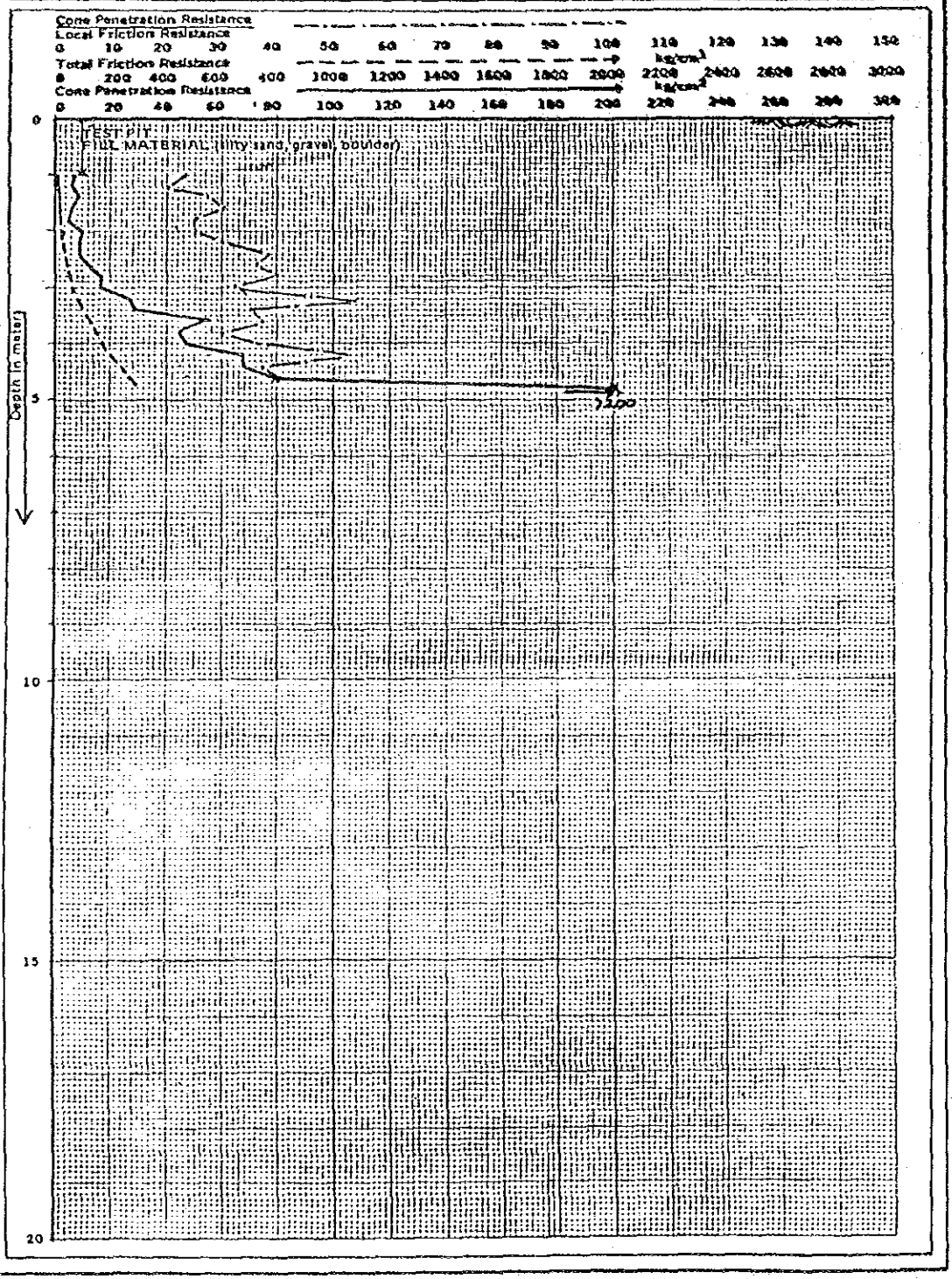


FORM SF.02

PLATE A.1.1

PROJECT	: 4 Floors Building	DUTCH CONE GRAPH	P.T. SOILENS
JOB NO.	: 1165	DUTCH CONE CAPACITY	: 2 Ton
CLIENT	: K. Ito Architects & Engineers	TYPE OF B—CONE	: Friction Jacket Area 100 cm^2
LOCATION	: Jalan Lembong No.11 BANDUNG	NOTE	: Cone Penetration Resistance >200 kg/cm^2 at —4.80 meters depth.
DUTCH CONE NO.	: S.2		
DEPTH IN M.	: 4.80 m.		
ELEVATION	: +718.490 m.		
COORDINATE	: X:1042.600 ; Y:1027.587		
DATE OF TEST	: December 14, 1984		

Foreman	: Furqon N.A.	Calculated by	: Daddy S.	Checked by	: Wirastusrini
Dutch Cone Master	: Furqon N.A.	Drawn by	: Daddy S.	Approved by	: Rismantojo

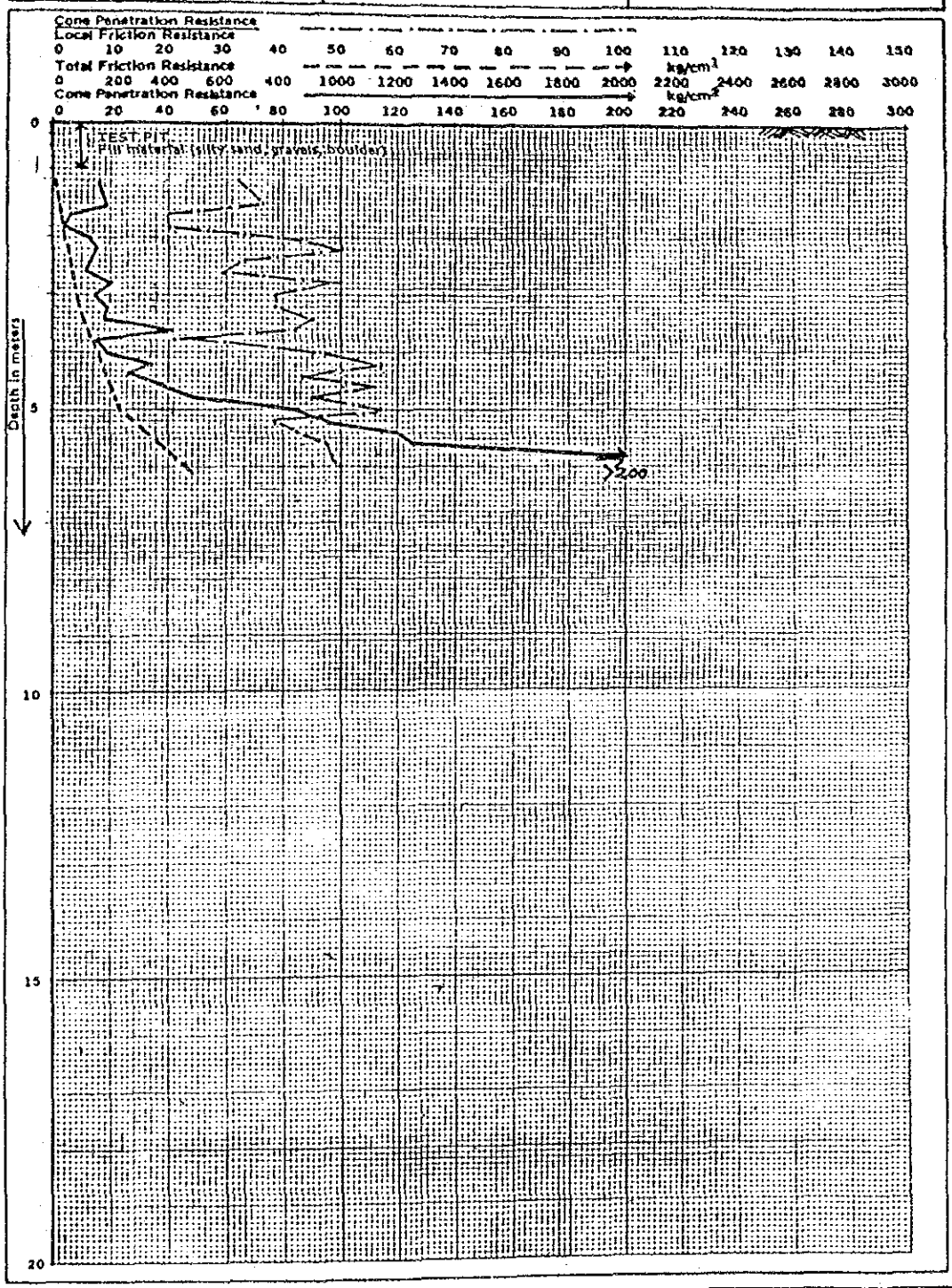


FORM SF.02

PLATE A.1,2

PROJECT	: 4 Floors Building	DUTCH CONE GRAPH	p.t. SOILENS
JOB NO.	: 1165	DUTCH CONE CAPACITY	: 2 Ton
CLIENT	: K.Ito Architects & Engineers	TYPE OF B-CONE	: Friction Jacket Area 100 cm^2
LOCATION	: Jalan Lembong No.11 BANDUNG	NOTE	: Cone Penetration Resistance >200 kg/cm^2 at -6.20 meters depth.
DUTCH CONE NO.	: S.3		
DEPTH IN M.	: 6.20 m.		
ELEVATION	: +719.990 m.		
COORDINATE	: X:1006.288 ; Y:1020.208		
DATE OF TEST	: December 13, 1984		

Foreman	: Furqon N.A.	Calculated by	: Deddy S.
Dutch Cone Master	: Furqon N.A.	Drawn by	: Deddy S.
Checked by	: Wirastusrini		
Approved by	: Rismantojo		



FORM SF.02

PLATE A.1.3

BORING LOG

P.T. SOILENS

PROJECT	: 4 FLOORS BUILDING	DATE STARTED	: December 12, 1984
JOB NO.	: 1165	DATE COMPLETED	: December 13, 1984
CLIENT	: K. ITO ARCHITECTS & ENGINEERS	BORING METHOD	: Coring, Sampling
LOCATION	: Jalan Lembong No.11 Bandung	SAMPLING METHOD	: Thin Walled (Shelby) Tube
BORE HOLE NO.	: (-)	STANDARD PENETRATION TEST TYPE	: Cable Hoisted Hammer (C.H.H.)
ELEVATION	: +719.831 m.		
COORDINATES	: X=1006.838 Y = 1004.673		
DEPTH	: 15.40 m.		
GROUND WATER LEVEL	: —2.20 m. IN DEPTH.		

FOREMAN : Furqon N.A.
DRILL MASTER : A. Unang Makbul
LOGGED BY : Furqon N.A.
REVIEWED BY : A. Soedarso
DRAWN BY : Deddy S.
CHECKED BY : Wirastuarini
APPROVED BY : Rhimantojo

SCALE	SAMPLE	ELEVATION in meter	DEPTH in meter	USCS. SYMBOL	GRAPHIC SYMBOL	ROCK / SOIL DESCRIPTION	DEPTH in meter	POCKET PENETRATION TEST q_u, kg/cm²	STANDARD PENETRATION TEST: DEPTH in meter	NUMBER OF BLOWS (Blows/cm)	GRAPH OF N / FOOT (20 40 60 80 100)	RECOVERY % / R.Q.D. % (20 40 60 80 100)
1			0.05	OM		asphalt concrete						
			0.60			SILTY, SANDY GRAVELS, brown coloured, coarse grained sand, poorly graded, Ø 0.50—3.00 cm, subangular gravels, loose. (fill material)						
			1.00	CH		BOULDER Ø 10 — 15 cm. (fill material)	1.30	0.25	1.50	1		
2	2.25						1.80	0.25		30		
			2.25	MH		SILTY CLAY, dark brown coloured, slightly organic matter, trace fine gravels, plastic, very soft, moist.	2.25	0.15				
3	2.90		2.90	CH		TUFFACEOUS SILT, brown coloured, gray mottled, slightly clayey, plastic, very stiff, moist.	2.90	3.25	3.05	9		
			3.35				3.35	3.75		30		
4				ML		SILTY CLAY, brown coloured, slightly carbonized matter, plastic, stiff, moist.						
			4.30	CH		TUFFACEOUS SILT, light gray coloured, yellow mottled, slightly clayey, low plastic, soft to medium stiff, moist to wet.	4.50	1.75				
5	5.00		5.00				5.00	1.50		32		
	5.20			CH			5.20	>4.5	5.35	30		
6			5.50	ML		SILTY CLAY, light brown coloured, gray mottled, plastic, stiff, moist.	5.65	>4.5				
							6.50	>4.5				
7			6.80			TUFFACEOUS SILT, light brown coloured, gray mottled, low plastic, very stiff to hard, moist.	7.00	>4.5		50		
			7.00				7.12	>4.5	7.00	12	100	
8						TUFFACEOUS SILT, light grayish yellow coloured, slightly very fine grained sand, becoming grayish brown coloured below 6.20 meters depth, very stiff to hard, moist.	8.00	>4.5				
9			9.00			CEMENTED TUFF, greenish gray coloured, weakly cemented, hard.	9.00	>4.5		36		
			9.45	ML			9.45	>4.5	9.15	30		
10				SM		SILTY SANDSTONE, brown coloured, medium to coarse grained, weakly to moderately cemented, soft rock.						
11			11.00			TUFFACEOUS SILT, light brown coloured, trace fine to medium grained sand, hard soil, (completely weathered siltstone)			11.15	65		
										30		
12						SILTY SAND, brown coloured, coarse grained sand, poorly graded, uncemented, very dense.						
13				SP		GRAVELLY SAND, brownish gray coloured, slightly silty, coarse grained sand, poorly graded, Ø 0.50—2.00 cm, angular to subangular gravels, uncemented, very dense.			13.15	45		
										30		
14												
15									15.15	88		
			15.40							25	100	
16						END OF THIS BORING. CASING DOWN TO —6.50 METERS DEPTH.						
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

WEATHERING

F	- rock fresh, crystals bright, few joints may show slight staining.
VSw	- rock generally fresh, joint stained, some joints may show clay if open.
Sw	- rock generally fresh, joint stained and discoloration extends into rock up to 1 in. Open joints contain clay.
Mw	- significant portions of rock show discoloration and weathering effects, except quartz.
W	- all rock except quartz discolored or stained some fragments of strong rock usually left.
HW	- mass effectively reduced to "Soil" with only fragments of strong rock remaining.
CW	- rock reduced to "Soil".

HARDNESS OF ROCK

very soft	- can be scratched easily with finger nail.
soft	- can be scratched with finger nail.
moderately hard	- can be scratched easily with knife, can't be scratched with finger nail.
hard	- difficult to scratched with knife.
very hard	- can't be scratched with knife.

HARDNESS OF SOIL

140 lb. Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density				Cohesive Consistency			
0 to 10		loose		0 to 4		soft	
10 to 30		medium dense		4 to 8		medium stiff	
30 to 50		dense		8 to 15		stiff	
50+		very dense		30+		hard	

Proportions Used

trace,	0	to	10%
few	10	to	20%
some	20	to	35%
and	35	to	50%

FORM SF 01 F

PLATE A 2.1

BORING LOG

P.t. SOILENS

PROJECT	: 4 FLOORS BUILDING	DATE STARTED	: December 14, 1984
JOB NO.	: 1165	DATE COMPLETED	: December 15, 1984
CLIENT	: K. ITO ARCHITECTS & ENGINEERS	BORING METHOD	: Coring, Sampling
LOCATION	: JL. LEMBONG NO.11, BANDUNG	SAMPLING METHOD	: Thin Walled (Shelby) Tube
BORE HOLE NO.	: B.2	STANDARD PENETRATION TEST TYPE	: Cable Hoisted Hammer (C.H.H.)
ELEVATION	: +718.536 M.		
COORDINATES	: X=1041.495, Y= 1019.781		
DEPTH	: 15.40 M.		
GROUND WATER LEVEL	: —5.70 M. IN DEPTH.		

FOREMAN : Furqon N.A. | LOGGED BY : Furqon N.A. | DRAWN BY : Daddy S. | APPROVED BY : Rismantojo
DRILL MASTER : A. Unang Makbul | REVIEWED BY : A. Soedarto | CHECKED BY : Wiraatmadja

SCALE	SAMPLE	ELEVATION in meter	DEPTH in meter	USCS. SYMBOL	GRAPHIC SYMBOL	ROCK / SOIL DESCRIPTION	DEPTH in meter	POCKET PENETRATION TEST q_u, Kg/cm²	STANDARD PENETRATION TEST: DEPTH in meter	NUMBER OF BLOWS (Blows/cm)	GRAPH OF N N / FOOT	RECOVERY %	R.Q.D. %
1	1.00		0.05	—		Asphalt & pavement concrete plate.							
				CL		SANDY, SILTY CLAY, dark brown coloured, trace gravels, with boulder Ø10 — 15 cm from 0.05 — 0.30 meters depth, plastic, soft to medium stiff, moist.	1.00	1.75					
2		1.70	1.70	CH		SILTY CLAY, greenish gray coloured, slightly fine gravels, plastic, medium stiff to stiff, moist.	1.70	1.75					
	2.40						2.50	1.50	2.55	6			
3			2.90				2.90	1.75		30			
				MH		TUFFACEOUS SILT, greenish gray coloured, trace medium to coarse grained sand, becoming brown coloured below 3.70 meters depth, stiff to very stiff, moist.	3.50	2.00	3.65	22			
4							3.90	>4.5		30			
			4.50	SP			4.50	>4.5					
5							5.00	>4.5					
			5.20	—		SILTY, GRAVELLY SAND, brown coloured, coarse grained sand, poorly graded, size Ø0.50—3.00 cm angular gravels, uncemented, very dense.	5.20	>4.5	5.15	50			
6							6.00	>4.5		5	N >100		
						SILTY SANDSTONE, brown coloured, fine to coarse grained sand, weakly cemented, soft rock.							
7			7.00	SP			7.00	>4.5					
			7.45			SAND, brown coloured, slightly silty, coarse grained, poorly graded, uncemented, very dense.	7.45	>4.5	7.15	78			
8							8.00	>4.5		30			
				SM		GRAVELLY, SILTY SAND, dark gray coloured, medium to coarse grained sand, very dense (completely weathered of silty sandstone).							
9							9.00	>4.5	9.00	50			
							9.11	>4.5		11	N >100		
10							10.00	>4.5					
			11.00				11.00	>4.5	11.15	65			
11							11.45	>4.5		30			
				SP		GRAVELLY SAND, dark gray coloured, trace silty, coarse grained sand, poorly graded, angular to subangular gravels, Ø0.50—2.00 cm, uncemented, very dense.	12.00	>4.5					
12													
							13.00	>4.5	13.15	61			
13							13.45	>4.5		30			
							14.00	>4.5					
14													
							15.00	>4.5	15.15	60			
15							15.45	>4.5		30			
			15.45										
16						END OF THIS BORING. CASING DOWN TO —4.50 METERS DEPTH.							
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													

WEATHERING

F	- rock fresh, crystals bright, few joints may show slight stainings.
VSw	- rock generally fresh, joint stained, some joints may show clay if open.
Sw	- rock generally fresh, joint stained and discolo-ration extends into rock up to 1 in. Open joints contain clay.
Mw	- significant portions of rock show discoloration and weathering effects, except quartz.
W	- all rock except quartz discolored or stained some fragments of strong rock usually left.
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moderately hard	- can be scratched easily with knife, can't be scratched with finger nail.
hard	- difficult to scratched with knife.
very hard	- can't be scratched with knife.

HARDNESS OF SOIL

140 lb. Wt x 30" fall on 2" O.D. Sampler

Cohesionless Density			Cohesive Consistency		
0 to 10	loose		0 to 4	soft	
10 to 30	medium dense		4 to 8	medium stiff	
30 to 50	dense		8 to 15	stiff	
50+	very dense		30+	hard	

Proportions Used

trace	0	to	10%
few	10	to	20%
some	20	to	35%
and	30	to	50%

PLATE A.2.2

FORM SF. 01 E

BORING LOG

P.t. SOILENS

PROJECT	: 4 FLOORS BUILDING	DATE STARTED	: December 16, 1984
JOB NO.	: 1165	DATE COMPLETED	: December 17, 1984
CLIENT	: K.ITO ARCHITECTS & ENGINEERS	BORING METHOD	: Coring, Sampling
LOCATION	: JL. LEMBONG NO.11 BANDUNG	SAMPLING METHOD	: Thin Walled (Shelby) Tube
BORE HOLE NO.	: B.3	STANDARD PENETRATION TEST TYPE	: Cable Hoisted Hammer (C.H.H.)
ELEVATION	: +720.618 m.		
COORDINATES	: X=1008.761 ; Y=+1024.668		
DEPTH	: 20.14 M.		
GROUND WATER LEVEL	: —3.60 M. IN DEPTH.		

FOREMAN : Furqon N.A.
DRILL MASTER : A. Unang Makbul
LOGGED BY : Furqon N.A.
REVIEWED BY : A. Soedarto
DRAWN BY : Daddy S.
CHECKED BY : Wirastuwini
APPROVED BY : Rismantojo

SCALE	SAMPLE	ELEVATION in meter	DEPTH in meter	USCS. SYMBOL	GRAPHIC SYMBOL	ROCK / SOIL DESCRIPTION	DEPTH in meter	POCKET PENETRATION TEST q_u, Kg/cm²	STANDARD PENETRATION TEST: DEPTH in meter	STANDARD PENETRATION TEST: NUMBER OF BLOWS (blow/cm)	STANDARD PENETRATION TEST: GRAPH OF N / FOOT (20 40 60 80 100)	RECOVERY % (20 40 60 80 100)	R.Q.D. % (20 40 60 80 100)
1	1.00		1.00	CH		SILTY CLAY, dark brown coloured, trace medium to coarse grained sand, slightly gravels, high plastic, stiff, moist.	1.00	1.75					
				CH		SILTY CLAY, grayish brown coloured, slightly fine gravels, high plastic, medium stiff to stiff, moist.	1.70	1.75	1.85	5			
2	1.70		2.15				2.15	2.00		30			
3	3.00			CH		TUFFACEOUS SILT, yellow, gray and brown coloured, slightly clay,high plastic, stiff to very stiff, moist.	3.00	2.50					
4	3.60						3.60	3.25	3.75	15			
							4.05	2.50		30			
5			5.00				5.00	3.25	5.15	22			
				ML		TUFFACEOUS SILT, light brownish yellow coloured, low plastic, slightly fine grained sand, very stiff, moist to wet.	5.45	3.75		30			
6			5.75				5.75	>4.5					
							6.00	>4.5					
7				GM		SANDY, SILTY GRAVELS, grayish brown coloured, rounded to subrounded gravels, Ø 0.50—4.00 cm, with boulders Ø 8.00 cm at 9.85 — 9.93 meters depth, uncemented, very dense.	7.00	>4.5	7.15	52			
							7.45	>4.5		30			
8							8.00	>4.5					
9							9.00	>4.5	9.00	50			
							9.12	>4.5		12	N>10		
10			10.00				9.85	>4.5					
							9.93	>4.5					
				SP		SILTY SANDY GRAVELS, brownish gray coloured, coarse grained sand, rounded to subrounded gravels, Ø 0.50—5.00 cm, uncemented, very dense.	10.00	>4.5					
11							11.00	>4.5	11.15	88			
							11.41	>4.5		26	N>10		
12							12.00	>4.5					
13							13.00	>4.5	13.15	69			
							13.40	>4.5		25	N>10		
14			14.00	SP		SILTY GRAVELLY SAND, brownish gray coloured, coarse grained sand, poorly graded, angular to subangular gravels, Ø 0.50—3.00 cm, uncemented, very dense.	14.00	> 4.5					
15							15.00	>4.5	15.15	50			
							15.24	>4.5		9	N>10		
16							16.00	>4.5					
17			17.00				17.00	> 4.5	17.15	50			
				SP		GRAVELLY SAND, brownish gray coloured, trace silty, medium to coarse grained sand, poorly graded, subangular gravels Ø 0.50—3.00 cm, becoming dark gray coloured below 19.00 meters depth, uncemented, very dense.	17.22	>4.5		7	N>10		
18							18.00	> 4.5					
19									19.15	50			
										10	N>10		
20			20.14						20.15	50			
						END OF THIS BORING. CASING DOWN TO —13.00 METERS DEPTH.				14	N>10		
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													

WEATHERING

F	- rock fresh, crystals bright, few joints may show slight staining.
VSw	- rock generally fresh, joint stained, some joints may show clay if open.
Sw	- rock generally fresh, joint stained and discoloration extends into rock up to 1 in. Open joints contain clay.
Mw	- significant portions of rock show discoloration and weathering effects, except quartz.
W	- all rock except quartz discolored or stained. some fragments of strong rock usually left.
Mw	- mass effectively reduced to "Soil" with only fragments of strong rock remaining.
Cw	- rock reduced to "Soil".

HARDNESS OF ROCK

very soft	- can be scratched easily with finger nail.
soft	- can be scratched with finger nail.
moderately hard	- can be scratched easily with knife, can't be scratched with finger nail.
hard	- difficult to scratched with knife.
very hard	- can't be scratched with knife.

HARDNESS OF SOIL

140 lb. Wt x 30" fall on 2" O.D. Sampler

Cohesionless Density				Cohesive Consistency			
0	to 10	loose		0	to 4	soft	
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30	to 50	dense		8	to 15	stiff	
50+		very dense		30+		hard	

Proportions Used

trace	0	to	10%
few	10	to	20%
some	20	to	35%
and	35	to	50%

FORM SF. 01 e

PLATE A2.3.