4-4 Construction Plan

4-4-1 Construction Circumstances and Construction Policy

For the construction of this school in Maldives where all construction materials must be imported, primary consideration must be given to the simplification of materials and their uniformity. Also, they must be strongly built, must not be easy to break, and must be easily repairable when damaged or found to be out of order.

As a result of the rush of building construction in Maldives in recent years, the technical levels of Maldivian engineers are higher than before. Since, however, priority must be placed on reliability and quality and a short term of construction work, the principal parts of the work such as the foundation, concrete placing, and sash installation, cannot but depend on skilled workers from third countries (e.g., Philippines and/or Sri Lanka). For interior work, as many Maldivian engineers and workers as possible will be invited to serve under the directions of the managers. One important aspect of this grant aid from Japan is that, through the construction of the primary school under the Project, as much practical knowledge of architecture as possible should be transferred to Maldivian engineers.

A lodge or lodges for engineers to stay in while in Male must be temporarily constructed by the general construction contractor in a place near the school site. An informal consent for the procurement of the place is given by the Ministry of Education of Maldives.

The detailed construction work schedule, processes and other particulars, the schedule of materials procurement and delivery to the site, and the schedule of work to be commenced on both the Maldivian and Japanese sides, must be established between the staffs in charge from the two countries. Careful studies should be made in determining the periods of delivery of supplies from Japan and third countries, and working processes should be set up to preclude the possibility of periods of inactivity or retroactions, in order to ensure completion of the work within the specified term.

4-4-2 Division of Works

Undertakings by the Japanese Government

1) Construction

a.	Classrooms	28 rooms
b.	Library	1 room
c.	Music Room	1
d.	Schience Room	1
e.	Practical Arts Room	1
f.	Prayer Room (Play Room)	1
g.	School Hall	500 seats (movable)
h.	Toilets	
i.	Principal's Office	1
j.	Assisant Principal's Office	2
k.	Teachers' Room	1
l.	General Office	1
m.	Medical Treatment, First-Aid Room	1
n.	Small Kitchen	1
o.	Purchase Dept.	1
p.	Janitors' Room	1
q.	Storerooms, Corridors, etc.	

2) Educational Equipment

a. Desks for pupils
b. Chairs for pupils
c. Desks for special classrooms
d. Chairs for special classrooms
e. Chairs for school hall
f. Desks for teachers
g. Chairs for teachers

3) Physical education equipment

4) General eduction equipment

5) Music education equipment

6) First-aid and medical treatment equipment

7) Medicines

Undertakings by the Maldivian Government

1) Construction-Related Work

a. Land leveling and clearing
b. Installation of power service line
c. Installation of telephone service line
d. Connection to the drain
e. Banking, landscape gardening, planting

2) Necessary Procedural Transactions

a. Procedures for exemption of taxes and charges
b. Procedures for permission of immigration, dwelling, etc.
c. Organization of Project implementation agencies
d. Appropriate and effective maintenance and management of constructed facilities and supplied equipment

4-4-3 Construction Work Supervision Plan

Based on the set policies for grant aid from the Japanese Government, Japanese consultants will supervise the construction work in accordance with the engineering and supervision agreement entered into with the Maldivian side. The purpose of the supervision of the construction work is to direct the construction contractor and to fairly supervise their work in order to ensure completion of the construction while realizing the intent of the design and satisfying the requirements of the construction contract.

Along with the progress of the construction work spot supervision will be made at such times and dates as previously agreed with the Government of Maldives. The main supervision services are as follows.

a) Examination and Approval of Working Drawings

Examination of working drawings, building materials, samples, equipment components, etc. submitted from the construction contractor.

b) Directions for Work

Examination of working schedules and processes, directions to the contractor, and reports to the proprietor on the progress of the construction work.

c) Assistance in Application for Payment Approval

Check of invoices for construction work expenses for which payments will be made during and after completion of the work, and assistance in payment procedures.

d) Witnessing of Inspection

The consultant will inspect each lot of work done during the term of work and give pertinent directions where necessary. On completion of the work, and upon confirming that all items under the contract have been fulfilled, the consultant will witness the delivery of the completed work and acceptance of it by the proprietor. Throughout the entire process from commencement till the completion and delivery of the work, the consultant will keep the Japanese government representatives informed of the particulars of the work including the procgress of the work, payment transactions, and delivery of the completed work.

4-5 Construction Schedule

The construction work on this primary school will start with the design operations following the execution of the official documents for exchange between the governments of Japan and Maldives, pursuant to the procedures of grant aid cooperation of the Japanese Government.

The design operations will take about 2.5 months. Following the completion of the design operations, at least 1.5 months will be needed to decide on a construction contractor. Assuming that the construction work will take 12 months thereafter, a total period of about 16 months will be needed from the execution of official documents for exchange till the completion of the work.

Shown in the following page is the schedule after the execution of official documents for exchange. It must be taken into account that the school year in Maldives begins in February and that the Maldivian Ministry of Education strongly desires to see the inauguration of this primary school in February 1989.

The execution of the contract between a Japanese construction contract and the Government of Maldives, and approval by the Japanese Government, as well as the execution of the contract between a Japanese consultant and the Government of Maldives, must all be smoothly performed to the effect that the time when the permit for the construction is issued by the Maldivian Government and the time when the contract is executed between the Japanese construction contractor and the Maldivian Government are the time for the commencement of the construction work.

TENTATIVE CONSTRUCTION SCHEDULE

DESCRIPTION \ MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
GOVERNMENT OF JAPAN	E/N				APPROVAL												
GOVERNMENT OF MALDIVES	CONSULTANT CONTRACT		APPROVAL		CONSTRUCTION CONTRACT											COMPLETION ATTENDANCE	
CONSULTANT	DETAIL DESIGN		TENDER		CONSTRUCTION SURVEILANCE											COMPLETION INSPECTION	
MALDIVE SIDE WORK	SITE CLEARANCE																
	INFRASTHUCTURES																
SHIPMENT SCHEDULE																	
JAPAN					JAPAN												JAPAN
SINGAPORE					SINGAPORE	MALE										SINGAPORE	
SRILANKA					COLOMBO	MALE										MALE	
Construction: TERM OF WORKS																	
TEMPORARY WORK														REMOVING OF SCAFFOLDING			
EARTH WORK																	
CONCRETE WORK							FOUNDATION	1F	2F	3F	RF						
MASONRY																	
WATER PROOFING																	
ROOFING WORK																	
TILE WORK																	
CARPENTRY																	
METAL WORK																	
PLASTER WORK																	
GLAZING PLASTIC WORK																	
PAINTING																	
INTERIOR FINISH WORK																	
OTHER WORKS																	
EXTERIOR FINISH WORK																	
ELECTRICAL INSTALLATIONS																	
PLUMBING INSTALLATIONS																	
EDUCATIONAL EQUIPMENT																	

4-6 Maintenance and Operation Costs

Full responsibility for the operation and maintenance of the school after its completion lies with the Ministry of Education.

The budget approved for the year 1987 for Jamaludden School, whose scale is similar to that of the school under this project, is as follows.

			Approx.
a)	Maintenance and operation costs	173,000 Rufiyaa	2,548,000 Yen
b)	Procurement	189,000	2,784,000
c)	Communications and services	63,300	932,000
d)	Travel (mainly for expatriates)	61,000	899,000
e)	Salaries and allowances	1,528,824	22,520,000
f)	Miscellaneous	10,000	147,000
	Total	2,025,124 Rufiyaa	29,830,000 yen
			(1 Rufiyaa = 14.73 yen)

The teaching staff at Jamaludden School for 1987 comprises 8 senior staff members and 101 teachers.

The comparatively large number of teachers is due to the fact that the figure includes teachers for native language (Dhivehi) education and religions education (Islam) which cannot be carried out by Sri Lankan teachers. After establishment of a regular two-shift system, all teachers except for the principal will be full-service teachers.

For the school under this project to be opened in 1989, the teaching personnel will consist of 8 senior staff memebers and 80 teachers based on the example of Jamaludden School.

The estimated budget for the school, assuming an annual increase for salaries and others of 7%, is:

Salaries	Approx. 1,500,000 Rufiyaa	
Maintenance & operation, and others	570,000	
Total	2,070,000 Rufiyaa	= ¥30,500,000
	(1 Rufiyaa = ¥14.73)	

4-7 The Cost Estimation Conditions

a) Time of estimation : July 1987

b) Applied exchange rates : US$1 = ¥148.81
1 Rufiyaa = 14.73 yen

c) Term of work : 12 months

d) Construction contractor: A Japanese construction contractor

e) Tax exemption : Exemption from duties on imported building materials and equipment, and exemption from enterprise tax and other taxes on the Japanese construction contractor

4-8 Undertakings of the Government of Maldives

In the estimation of the project-related costs for the account of the Government of Maldives, it is understood that the cost of the infrastructure construction of the site is involved in, as a part of, the Male development project which is being carried out irrespective of this project.

1) Expenses for connection to main pipelines (Power service live shall be provided by grant aid costs to be covered by the Maldives side: Rf 119.535)

2) Leveling and earth-filling work for playground site

3) Landscape gardening and planting

4) Expense for purchasing stationery and furnishings

5) Charge for customs clearances of imports

CHAPTER 5 EVALUATION OF THE PROJECT

CHAPTER 5 EVALUATION OF THE PROJECT

Construction of primary schools has been the earnest desire of the Government of Maldives for many years. From the viewpoint of the long-term educational administrative policy, the Government has attached importance to the construction of local primary schools since 1974, but now it is no exaggeration to say that the shortage of educational facilities in Male due to the increase in the number of primary school children has never been more serious than it is today.

Male is divided into four municipal districts and the Government is now planning to establish one primary school in each district. In the first and second districts, primary schools have already been constructed, and the third one is expected to be completed in time for the new school term in February 1989. This project is to construct the fourth primary school in the fourth district, and is regarded as essential from the viewpoint of the distribution of residential areas.

When these four schools begin to operate normally and all the school activities are conducted in the double-shift system, primary-school education in Male, which is the cornerstone of the country's educational administration, will take a remarkable step forward.

This project does not merely deal with the foundation of the fourth primary school; it will not only complete the fundamental setup of the primary educational administration in Maldives, but also become a driving force toward future development.

The social functions of primary schools in Maldives are diverse; the fact that they serve as public halls and cultural centers accounts for their immeasurable contribution toward the society. In view of the large number of school-age children with relatively low ratio of enrolment as well as the fact that 74% of the national educational budget must be appropriated for the wages of foreign teachers, it is quite appropriate and significant for the Japanese Government to provide grant aid for this project.

The foundation of primary education will be firmly established through this project in the Republic of Maldives, and after all the necessary facilities are completely provided for all the children to receive primary education, the scope of activity and future possibilities of the Ministry of Education will expand rapidly, so that it is expected that the content of education in this country will be enriched and improved a great deal.

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

As described in previous chapters, the project has been evaluated in terms of its significance, viability and effectiveness. As a result of the evaluation it is concluded that the project should be implemented with grant aid of the Japanese Government.

Through provision of necessary facilities and equipment, it is expected that this project will produce enormous benefits and will greatly contribute to the development of primary education in the Republic of Maldives along with the previous aid in the foundation of 15 rural primary schools (from 1979 to 1985).

In order to activate the primary education in the Republic of Maldives further, assistance which will promote the exchange of human resources is desirable as well as the supply of equipment and facilities. The dispatch of teachers of music, physical education, arts, chemistry, etc. and active participation in education by the members of JOCV (Japan Overseas Cooperation Volunteers) are highly recommended.

The auditorium included in this project will serve as the well-equipped assembly hall in Maldives, where concerts or theatrical performances can be held.

The problem which will face the Government of Maldives after the completion of the four primary schools in Male is obviously the shortage of secondary schools. Even at present, entrance to secondary school from primary school has to be limited to 30% of the students by severe entrance examinations owing to the shortage of educational facilities. If the condition of middle schools is left behind the great improvement in primary education, the competition for entering middle schools will become much severer in a few years from now.

To ensure continuous development of education in Maldives, it is necessary to increase secondary shools both in Male and other regions so that the present rate of enrolment (30%) can be maintained. If appropriate measures are taken in this context, the significance of the present project will be greatly enhanced.

APPENDICES

Appendix 1. Member List of the Basic Design Study Team

1. March 19 to April 3, 1987

Junzo SAGO	Leader	Assistant Director, Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Takenobu MOHRI	Architectural Plaanning	Mohri Architect & Associates, Inc.
Tatsuru OGAWA	Structural Planning	Mohri Architect & Associates, Inc.
Nobuhiro MOHRI	Architectural Planning	Mohri Architect & Associates, Inc.

2. July 14 to July 25, 1987 (Field survey phase II)

Tatsuru OGAWA	Structural Planning	Mohri Architect & Associates, Inc.
Nobuhiro MOHRI	Architecturl Planning	Mohri Architect & Associates, Inc.

Appendix 2 List of Persons Interviewed

(Concerned personnel of the Republic of Maldives)

Mr. Mohamed Shareef	-- Director of External Resources Ministry of Foreign Affairs
Mr. Mohamed Zahir Hussain	-- Minister of Education
Mr. Abudullah Rasheed	-- Director of Education Planning
Mr. Asima Shakoor	-- Under Secretary Ministry of Education
Mr. Asleema Rasheed	-- Secretary Ministry of Education
Mr. Mohamed Latheef	-- Ministry of Education
Mr. Mohamed Shihab	-- Sr. Undersecretary Ministry of Planning & Development
Mr. Hamdun A. Hameea	-- Project Analyst Ministry of Planning & Development
Mr. Mohamed Naseer	-- Secretary Ministry of Foreign Affairs
Mr. Mohamed Shafeegu	-- Asst. Director Office for Physical Planning and Design (OPPD)
Mr. Ibrahim Rafeeg	-- Structural Engineer OPPD
Mr. Ian Banks	-- Architect OPPD
Mr. Ismail Shafeeu	-- Director of Ministry of Planning & Development
Mr. Mohamed Shihab	-- Sr. Undersecretary Ministry of Planning & Development
Mr. Abdul Afoor Mohamed	-- Asst. Undersecretary Ministry of Foreign Affairs
Mr. Hamdhoon Hameed	-- Ministry of Planning & Development
Mr. Abdul Ganee	-- Principal Vacational Trainig Centre
Mrs. W.A.D.N. Narangodr	-- Principal Aminiya School
Mrs. L.S.G. de Silvr	-- Principal Iskandhar School

Mrs. G.I.D.L. Gwaswighe	-- Principal Jamaludheen Primary School
Mr. Ahmed Ah. Maniku	-- I.T.E. (INSTITUTUE FOR TEACHER EDUCATION)
Mrs. Naseeme Mohamed	-- Director Ministry of Health Services
Mr. Hamid Abdulghafoor	-- P.E. Teacher

(Resident representatives of the Japense Government)

Japanese Embassy in Sri Lanka

Mr. Yasunari HAMAMOTO	-- Ambassador Extraordinary and Plenipotentiary
Mr. Masashi SAKURAHATA	-- Second Secretary
Mr. Atsushi MATSUMOTO	-- Third Secretary

JICA Sri Lanka Office

Mr. Jiro HASHIGUCHI	-- Resident Representative
Mr. Tetsuo AMAGAI	-- Staff member

Appendix 3 Itinerary of the Study Team

1. Basic Design Study Team (19 March to 3 April, 1987)

No.	Date	Itinerary	Contents of Survey
	1987		
1	19 March (Thu.)	13:00 Lv. Tokyo (JL-719)	
		19:15 Av. Singapore	
		22:00 Lv. Singapore (UL-303)	
		23:10 Av. Colombo	
2	20 March (Fri.)	10:00 JICA Office	Discussion of survey schedule and policy (Mr. Hashiguchi, Resident Representative of JICA Sri Lanka Office and Mr. Amagai, Staff member of JICA Office)
		11:00 Japanese Embassy	Courtesy call on Mr. Hamamoto, Ambassador, Mr. Sakuramata, Second Secretary and Mr. Matsumoto, Third Secretary (accompanied by Mr. Amagai)
		12:00 to 14:00 The city of Colombo	Discussion of survey schedule and policy (Mr. Amagai)
		16:00 to 17:00 JICA Office	Discussion with Mr. Adachi, JOCV Coordinator
		19:30 to 22:30 Ramada Hotel	Party invited by the Japanese Embassy
3	21 March (Sat.)	9:30 LV. Colombo (UL-101)	Accompanied by Mr. Sakuramata, Second Secretary
		10:20 Av. Male	
		13:00 to 18:00 Male	Round survey of the project site
4	22 March (Sun.)	9:00 to 10:00 Ministry of Foreign Affairs	Courtesy call at the Ministry of Foreign Affairs (explaining the Inception Report)
		10:15 to 11:45 Ministry of Education	Courtesy call at the Ministry of Education (discussion of requested contents)

No.	Date	Itinerary	Contents of Survey
4	22 March (Sun.) (Cont'd)	12:00 to 13:30 O.P.P.D.	Discussion at site of details of existing facilities
		14:00 to 18:00	Analyzing data at hotel
		20:00 to 23:30 Villingili Beach Resort	Party invited by the Ministry of Education
5	23 March (Mon.)	9:00 to 9:50 V.T.C.	Investigation visit at V.T.C.
		10:00 to 10:50 Ministry of Education	Courtesy call on Mr. Zahir, Minister of Education
		11:00 to 11:30 Iskandhar School	Investigation visit at Iskandhar School
		11:30 to 12:00 Ameeniya School	Investigation visit at Ameeniya School
		12:00 to 12:30 Jamaldheen Primary School	Investigation visit at Jamaldheen Primary School
		12:30 to 13:00 Maafannu	Site investigation at Phase III
		15:00 to 17:00 Nasandhura Palace Hotel	Discussion on details of existing primary schools in male with UNICEF Assistance Program Officer, Mr. Kukita
6	24 March (Tue.)	8:30 to 10:00 Henveiru	Investigation and simplified survey of construction site Mr. Sakuramata, Second secretary left to Colombo (by UL-102 leaving at 9:30)
		10:30 to 11:30 Ministry of Education	Analysis and discussion of details of request
		11:30 to 13:30 Male	Investigation visit at private schools
7	25 March (Wed.)	9:00 to 11:15 O.P.P.D.	Analysis and discussion of details of request
		11:30 to 12:15 Municipal office	Confirmation of administrative divisions and progress of sewerage construction work

No.	Date	Itinerary	Contents of Survey
7	25 March (Wed.) (Cont'd)	14:00 to 18:00 Feydhoo Finolhu	Visit at Students' Recreation Center
8	26 March (Thu.)	9:00 to 10:45 Ministry of Education	Discussion on Minutes
		11:00 to 12:00 JOCV	Visit at JOCV Office
		14:00 to 16:00 Thulusdhoo	Visit at Rural Vocational School
		16:30 to 17:30 Huraa	Visit at primary school under the assistance of UNICEF
		20:00 to 22:00 Villingili	Meeting of the team
9	27 March (Fri.)	10:00 to 13:00 Villingili	Meeting of the team
		19:00 to 22:00 Villingili Beach Resort	Talking with 16 JOCV's
10	28 March (Sat.)	9:30 to 10:00 Ministry of Education	Confirmation of contents of the minutes
		10:30 to 11:15 Ministry of Foreign Affairs	Signing the minutes (Mr. Shareef, Senior Secretary and Mr. Sago, Team Leader)
		19:00 to 22:00 Bandos Island Resort	Party invited by the survey team
11	29 March (Sun.)	10:00 to 13:00 Villingili	Arrangement and analysis of data
		14:30	Mr. Sago, Team leader left to Japan (by UL-102 leaving at 14:30)
		15:00 to 18:00	Arrangement and analysis of data
12	30 March (Mon.)	9:30 to 9:50 Ministry of Foreign Affairs	Courtesy call at Ministry of Foreign Affairs
		10:00 to 11:00 O.P.P.D.	Collection of data

No.	Date	Itinerary	Contents of Survey
12	30 March (Mon.) (Cont'd)	11:00 to 12:30 Male	Collection of data
		12:30 to 13:30 Ministry of Education	Collection of data
		14:00 to 19:00 Villingili	Analysis of data supplied by the Republic of Maldives
13	31 March (Tue.)	9:30 Lv. Male (UL-102)	
		11:20 Av. Colombo	
		16:00 to 16:20 Japanese Embassy	Reported survey results to Mr. Sakuramata, Second Secretary
		16:30 to 17:00 JICA	Reported survey results to Mr. Hashiguchi, Resident Representative of JICA Office
14	1 April (Wed.)	11:20 Lv. Colombo (SQ-023)	
		19:30 Av. Singapore	
15	2 April (Thu.)	9:00 to 12:00 Kings Hotel	Analysis of data supplied by the Republic of Maldives
		14:00 to 16:00 Kings Hotel	Discussion with Chin, Architect
		22:35 Lv. Singapore (JL-710)	
16	3 April (Fri.)	6:15 Av. Tokyo	Team members (Mr. Takenobu Mohri, Mr. Tatsuru Ogawa, and Mr. Nobuhiro Mohri) arrived at Japan.

2. Basic Design Study Team (Field survey Phase II) (14 to 25 July, 1987)

No.	Date	Itinerary	Contents of Survey
		Itinerary for geological survey	
1	14 July (Tue.)	13:00 Lv. Narita (JL-719)	
		18:45 Av. Singapore	
		22:20 Lv. Singapore	
		23:25 Av. Colombo	*Equipment for plate loading tests arrived at Male. (KISO-JIBAN CONSULTANTS CO., LTD.)
2	15 July (Wed.)	Colombo o Courtesy call at JICA Office	
		o Courtesy call at Japanese Embassy	
		. Customs clearance and preparation of plate bearing test	
3	16 July (Thu.)	17:10 Lv. Colombo (UL-101)	
		18:00 Av. Male o Courtesy call on Mr. Zahir, Minister of Education and Mr. Rasheed at International Airport of Male	
		. Discussion with KISO-JIBAN CONSULTANT CO., LTD. . First plate loading test conducted	
4	17 July (Fri.)	Male: In the morning o Survey of damage at and around the site	
		. Survey of damage at Iskandhar and Ameeniya Primary Schools and construction site of the Third Primary School	
		In the afternoon o Witness at plate loading test	
		o Second plate loading test conducted	
		* Boring equipment arrived at Male. Customs clearance and preparation	

No.	Date	Itinerary	Contents of Survey
5	18 July (Sat.)	Male:	In the morning Discussion at Ministry of Education (MOE) o Witness at boring test and plate loading test o Courtesy call at Ministry of Foreign Affairs In the afternoon: Discussion at Office for Physical Planning and Design (O.P.P.D.) o Survey of damage at and around the site . First boring test . Plate loading tests performed at two points (total four points completed)
6	19 July (Sun.)	Male:	In the morning Discussion at MOE o Witness at boring test In the afternoon Discussion with Mr. Adachi, JOCV o Discussion at I.T.E. (Institute for Teacher Education) for confirming educational facilities and instruments . Second boring test
7	20 July (Mon.)	Male:	In the morning Discussion at MOE In the afternoon o Site survey o Discussion about survey at Municipality . Third boring test
8	21 July (Tue.)	Male:	In the morning Reporting survey results to MOE In the afternoon Reporting survey results to Ministry of Foreign Affairs o Fourth boring test
9	22 July (Wed.)	11:05	Lv. Male (EK-803)
		12:55	Av. Colombo In the afternoon: o Reporting survey results to Japanese Embassy o Reporting survey results to JICA Office

No.	Date	Itinerary	Contents of Survey
10	23 July (Thu.)	9:30 Lv. Colombo (UL-302) 15:40 Av. Singapore	In the afternoon: o Discussion at KISO-JIBAN CONSULTANTS CO., LTD.
11	24 July (Fri.)	Singapore	In the morning: o Discussion at KISO-JIBAN CONSULTANTS CO., LTD.'s office and then at laboratory . Starting analysis at laboratory
12	25 July (Sat.)	Mr. Ogawa 9:00 Lv. Singapore (SQ-012) 17:30 Av. Tokyo Mr. Mohri 0:50 Lv. Singapore (SQ-006) 8:20 Av. Tokyo	

Appendix 4

MINUTES OF DISCUSSIONS
For
The Basic Design Study on the Project for Constructing the Primary School in Male'
in
The Republic of Maldives

In response to the request made by the Government of Maldives for the Project for Constructing the Primary School in Male' (hereinafter referred to as "the Project") the Government of Japan has sent through the Japan International Cooperation Agency (herinafter referred to as "JICA"), a team headed by Mr. Junzo SAGO, Grant Aid Div., Economic Cooperation Bureau, Ministry of Foreign Affairs to conduct a basic design study from March 21st to March 31st, 1987. The team has carried out a field survey, held a series of discussions and exchanged views with the authorities concern of the Project.

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

Male, March 28th, 1987

Mr. Junzo SAGO
Leader, Basic Design Study Team,
JICA

Mohamed Shareef
Director of External Resources
Ministry of Foreign Affairs

1. Objective of the Project

The objective of the Project is to construct necessary facilities and provide necessary equipments for the Primary School in Male'

2. Organization

Responsible and Executing Agency: Ministry of Foreign Affairs
Implementing Agency: Ministry of Education

3. Project site

The proposed site of the Project is located at Male' and is shown in ANNEX 1-a, ANNEX 1-b

4. The major requested items for the Project

The outline of the facilities and major equipments is shown in the attached ANNEX 2

5. Grant Aid Program

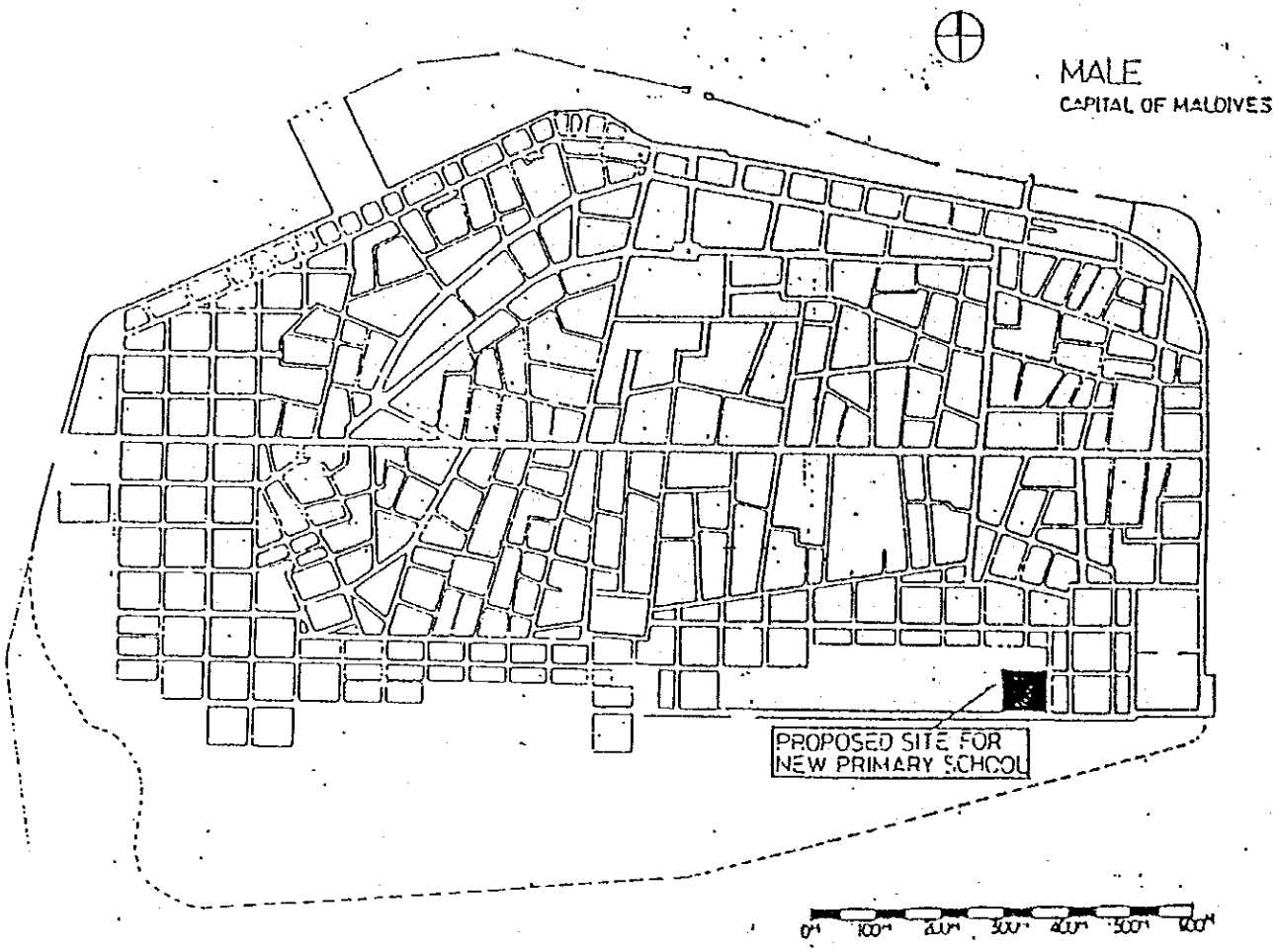
1) The Maldives side has understood the system of the Japanese Grant Aid and the necessity of consulting services of a Japanese consultant firm for the implementation of the Project.

2) The Maldives side will undertake to ensure the necessary budget and personnel for the proper and effective operation and maintenance of facilities and equipment provided under the Grant Aid

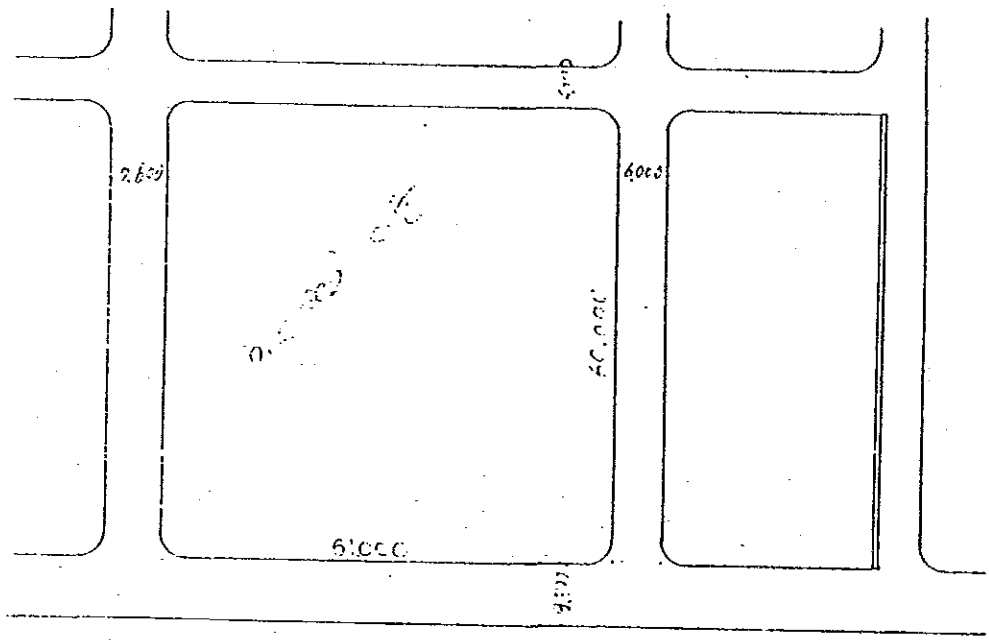
3) The team will convey to the Government of Japan the desire of the Government of Maldives that the former takes necessary measures to cooperate in implementing the Project and provide necessary facilities and equipment under the Japanese Grant Aid Programme.

4) The Maldives side understood that the necessary measures listed in ANNEX 3 will be taken by the Maldives side on condition that the Grant Aid by the Government of Japan would be extended to the Project.

ANNEX 1-a


MALE
CAPITAL OF MALDIVES
PROPOSED SITE FOR
NEW PRIMARY SCHOOL

ANNEX I-L



Water Front Park

ANNEX 2

Major items required for "the Project" by the Government of Maldives.

A. Building Facilities

a) Rooms for Education

- Classrooms
- Library
- Music Room
- Science Room
- Practical Arts Room
- School Hall

b) Rooms for Administration

- Office Rooms - Principal, Assistant Principals and other staffs
- Sick Room
- Storage
- School Keeper's Room

B. Equipment

- Related equipments of the Project.

ANNEX 3

Following arrangement are required to be taken by the Government of Maldives.

1. To secure a lot of land necessary for the construction of facilities and to clear, fill and level the site as needed before the start of the construction.

2. To provide necessary data and information for basic design.

3. To provide facilities for distribution of electricity, telephone and other incidental facilities to the proposed Project Site.

4. To ensure prompt unloading, tax exemption, customs clearance at ports of disembarkation in Maldives, and prompt internal transportation therein of the products purchased under the grant.

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

6. To undertake incidental civil works such as gardening, fencing gates and exterior lighting, if needed.

Appendix 5 Boring Test Data at the Project Site

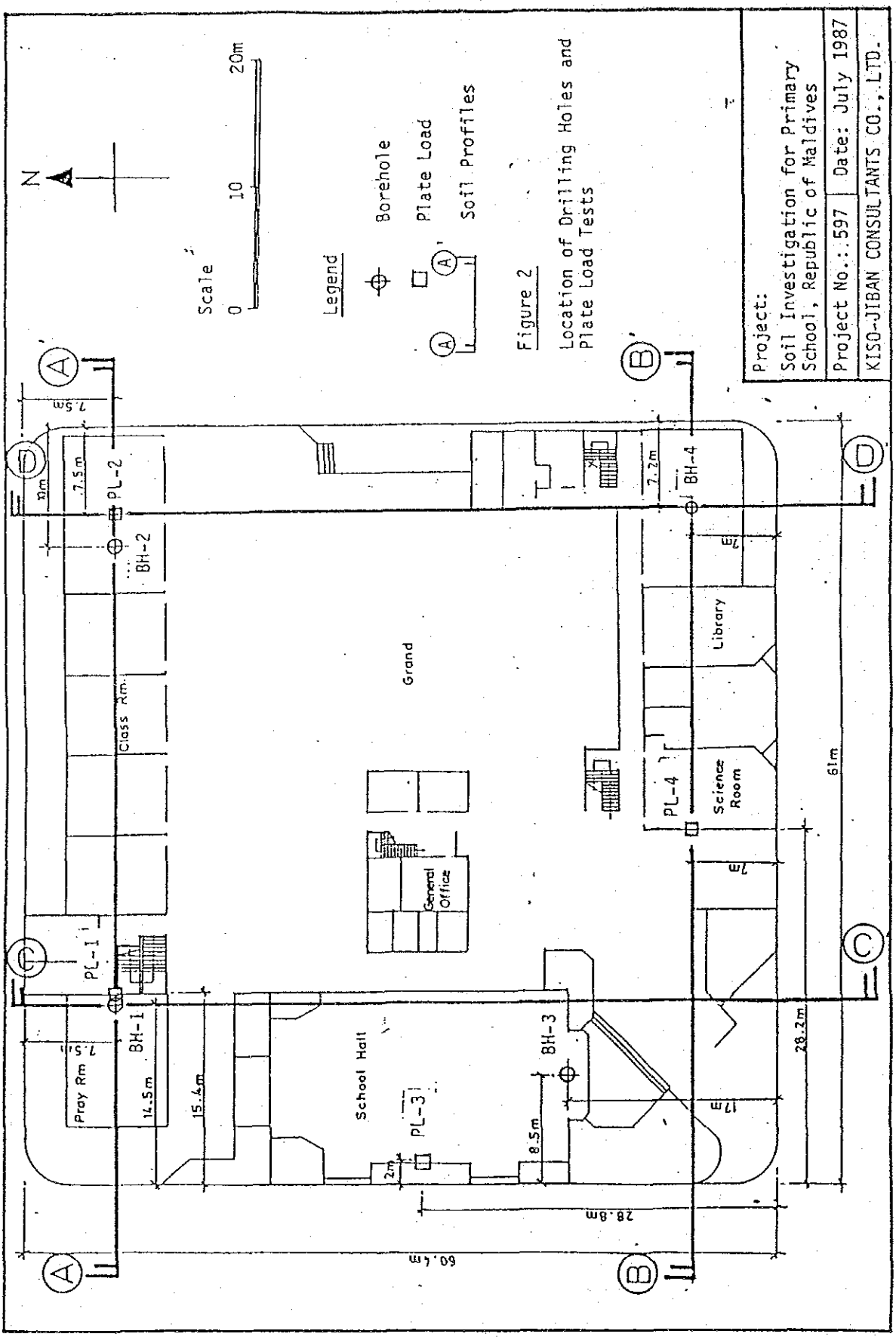


FIG. 6-1 DRILLING LOG

Remarks

Project No. 597 Project Soil Investigation for Primary School, Republic of Maldives Type of Drilling

Hole Number BH-1 Elevation TBM -1.092 m. Date 21.7.87

Water Table GL -0.3 (at 0800) m. Driller Wong (Chen)

Scale in m.	Elevation in m.	Depth in m.	Thickness in m.	Legend	Type of Soil	Colour	Relative Density or Consistency	General Remarks	Sampling: Depth in m.	Sampling: Sample No.	Standard Penetration Test or Core Recovery: Blows Per Each 10cm	N-Value
	-1.09	0.00										
1	-2.19	1.10	1.10		Gravelly Sand	Light brown	-	With gravels & boulders (Max. size 350mm)	1.15 1.45	P-1	6 3 2	1
2									2.15 2.45	P-2	27 10 11	6
3									3.15 3.45	P-3	19 7 6	6
4									4.15 4.45	P-4	13 4 4	5
5					Medium to coarse Sand with Gravel	Light brown	Medium dense	Sand is composed of coral and shell fragments. Gravel size is 3 to 40mm	5.15 5.45	P-5	12 5 4	3
6	-7.24	6.15	5.05						6.15 6.45	P-6	5 2 2	1
7								With coral gravel size 10mm	7.15 7.45	P-7	2 1 1	0
8							Very loose to loose	Loose and high water content. Less gravel	8.15 8.45	P-8	5 1 2	2
9	-10.24	9.15	3.00		Fine Sand	Milky white			9.15 9.45	P-9	8 5 3	3
10	-11.09	10.00			Sandy Gravel / Gravelly Sand	Light brown	Loose	Composed of coral	10.15 10.45	P-10	2 1 0	1
	-11.59	10.50	0.50						11.15 11.38	P-11	50/23	50 blows/23cm
11					Organic Silt	Dark brown to black	Soft	Sticky, with traces of very fine sand				
12	-13.09	12.00	1.50						12.00	C-1		
13					Coral Sandy Gravel	Light brown	Very dense	Coral is porous	13.50			
14										C-2		
15	-16.09	15.00	3.00		Coral Rock	Light brown	-	Core length is 50mm to 200mm. Friable by hammer	15.00			
16												
17						End of Drilling						
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												

Core Recovery: C-1 63%, C-2 38%; RQD: 100%, 100%

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FIG.6-2 DRILLING LOG

Remarks

Project No. 597 Project Soil Investigation for Primary School, Republic of Maldives Type of Drilling

Hole Number BH-2 Elevation TBM -1.016m m. Date 18.7.87

Water Table GL -0.3 (at 0900)m. Driller Wong (Chen)

Scale in m.	Elevation in m.	Depth in m.	Thickness in m.	Legend	Type of Soil	Colour	Relative Density or Consistency	General Remarks	Sampling: Depth in m.	Sampling: Sample No.	Standard Penetration Test or Core Recovery: Blows Per Each 10cm	N-Value
	-1.02	0.00										
1	-2.07	1.05	1.05		Gravelly Sand	Light brown	-	With boulders (Max. size 200mm)	1.15 1.45	P-1	4 1 1 2	2
2									2.15 2.15	P-2	12 4 4 4	8
3									3.15 3.45	P-3	15 6 5 4	11
4					Medium to coarse Sand with Gravel		Loose to medium dense	Sand is composed of shell fragments and coral. Gravel size is 3 to 50 mm	4.15 4.45	P-4	9 4 3 2	7
5						Light brown			5.15 6.45	P-5	17 6 5 6	11
6	-7.12	6.10	5.05						6.15 6.45	P-6	3 2 1 0	3
7					Very fine Sand			Sample cannot be obtained due to very loose and high water content	7.15 7.15	P-7	3 1 1 1	2
8	-9.52	8.50	2.40			Milky white	Very loose		8.15 8.45	P-8	3 2 1 0	3
9	-10.72	9.70	1.20		Gravelly Sand	Light brown	Medium dense	Composed of coral	9.15 9.45	P-9	10 3 3 4	6
10						Dark brown to black			10.15 10.45	P-10	8 2 3 3	5
11	-12.17	11.15	1.45		Organic Silt		Medium Stiff	Sticky, smelly with traces of fine sand	11.15 11.45	P-11	34 7 10 12	17
12									12.15 12.45	P-12	50 10 18 22	28
13						Dark brown			13.15 13.41	P-13	50/26 16 20 15/6	50 blows/26cm
14					Coral Sandy Gravel (Soft coral)		Dense to very dense	Max. size of gravel expected to be 100mm	14.15 14.40	P-14	50/25 13 19 18/5	50 blows/25cm
15	-16.40	15.38	4.23			Light brown			15.15 14.38	P-15	50/23 18 22 10/3	50 blows/23cm
16					End of Drilling							

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FIG. 6-3 DRILLING LOG

Remarks

Project No. 597 Project Soil Investigation for Primary School, Republic of Maldives Type of Drilling

Hole Number BH-3 Elevation TBM -0.946 m. Date 20.7.87

Water Table GL -0.55 (at 0930)m. Driller Wong (Chen)

Scale in m.	Elevation in m.	Depth in m.	Thickness in m.	Legend	Type of Soil	Colour	Relative Density or Consistency	General Remarks	Sampling: Depth in m.	Sampling: Sample No.	Standard Penetration Test or Core Recovery: N-Value	Blows Per Each 10cm	N-Value / Core Recovery / RQD
	-0.95	0.00											
1	-2.10	1.15	1.15		Gravelly Sand	Light brown	-	With gravels & boulders (Max. size 200mm)	1.15 / 1.45	P-1	4	1 1 2	
2									2.15 / 2.34	P-2	50/19	27 23/9	50 blows/19cm
3					Medium to coarse Sand with Gravel			Sand is composed of shell fragments and coral. Gravel size is 3 to 50mm	3.15 / 3.45	P-3	20	9 6 5	
4													
5	-6.10	5.15	4.00			Light brown	Loose		4.15 / 4.45	P-4	11	3 5 3	
									5.15 / 5.45	P-5	6	2 2 2	(No Sample)
6									6.15 / 6.45	P-6	7	2 3 2	
7								With coral. Gravel size 30mm Loose and high water content.	7.15 / 7.45	P-7	4	2 1 1	
8									8.15 / 8.45	P-8	6	2 2 2	
9	-9.95	9.00	3.85		Fine Sand	Milky White	Loose		9.15 / 9.45	P-9	6	2 3 2	
10	-11.45	10.50	1.50		Sandy Gravel / Gravelly Sand	Brown	Very dense	Composed of soft coral	10.15 / 10.35	P-10	50/19	31 19/4	50 blows/19cm
11									10.50	C-1			49% 100%
12									12.00				
13								Core length is 50 to 250mm. Friable by hammer		C-2			68% 100%
14						Light yellowish brown			13.50	C-3			67% 100%
15	-15.95	15.00	4.50		Coral Rock		-	Hard coral	15.00				
16						End of Drilling							
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

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FIG. 6-4 DRILLING LOG

Remarks

Project No. 597 | Project Soil Investigation for Primary School, Republic of Maldives | Type of Drilling

Hole Number BH-4 | Elevation TDM -0.933 m. | Date 19.7.87

Water Table GL -0.3 (at 0930) m. | Order Wong (Chen)

Scale in m.	Elevation in m.	Depth in m.	Thickness in m.	Legend	Type of Soil	Colour	Relative Density or Consistency	General Remarks	Sampling: Depth in m.	Sampling: Sample No.	Standard Penetration Test or Core Recovery: Blow N-Value	Blows Per Each 10cm: 10cm	10cm	10cm
	-0.93	0.00												
1	-2.08	1.15	1.15		Gravelly Sand	Light brown		Fine to medium grained & coral gravels	1.15 1.45	P-1	6	2	2	2
2									2.15					
3						Brownish grey		Sand is composed of shell fragment and coral	2.45	P-2	33	10	11	12
4									3.15 3.45	P-3	17	6	5	6
5									4.15 4.45	P-4	8	3	3	2
6									5.15 5.45	P-5	20	4	4	8
7									6.15 6.45	P-6	7	3	2	2
8									7.15 7.45	P-7	23	10	8	5
9					Medium to coarse Sand with gravel	Light brown	Loose to medium dense	Size of gravel becomes greater with depth. Maximum size 150mm	8.15 8.45	P-8	16	7	6	3
10	-10.98	10.05	8.90						9.15 9.45	P-9	11	5	3	3
11					Coral Sandy Gravel	Light brown	Very dense	Coral is soft and porous	10.15 10.26	P-10	50/11	50/11		
12	-12.93	12.00	1.95						11.15 11.28	P-11	50/13	39	11/3	
13									12.15 12.25	P-12	50/10	50		
14									13.00	C-1				
15	-15.93	15.00	3.00		Coral Rock	Light brown		Coral after 12.50m is hard	14.00	C-2				
16						End of Drilling			15.00					

N-Value: 10 20 30 40 50

20 40 60 80 100(%) Core Recovery

RQD

50 blows/11cm

50 blows/13cm

50 blows/10cm (No Sample)

130% 70% 36% 65%

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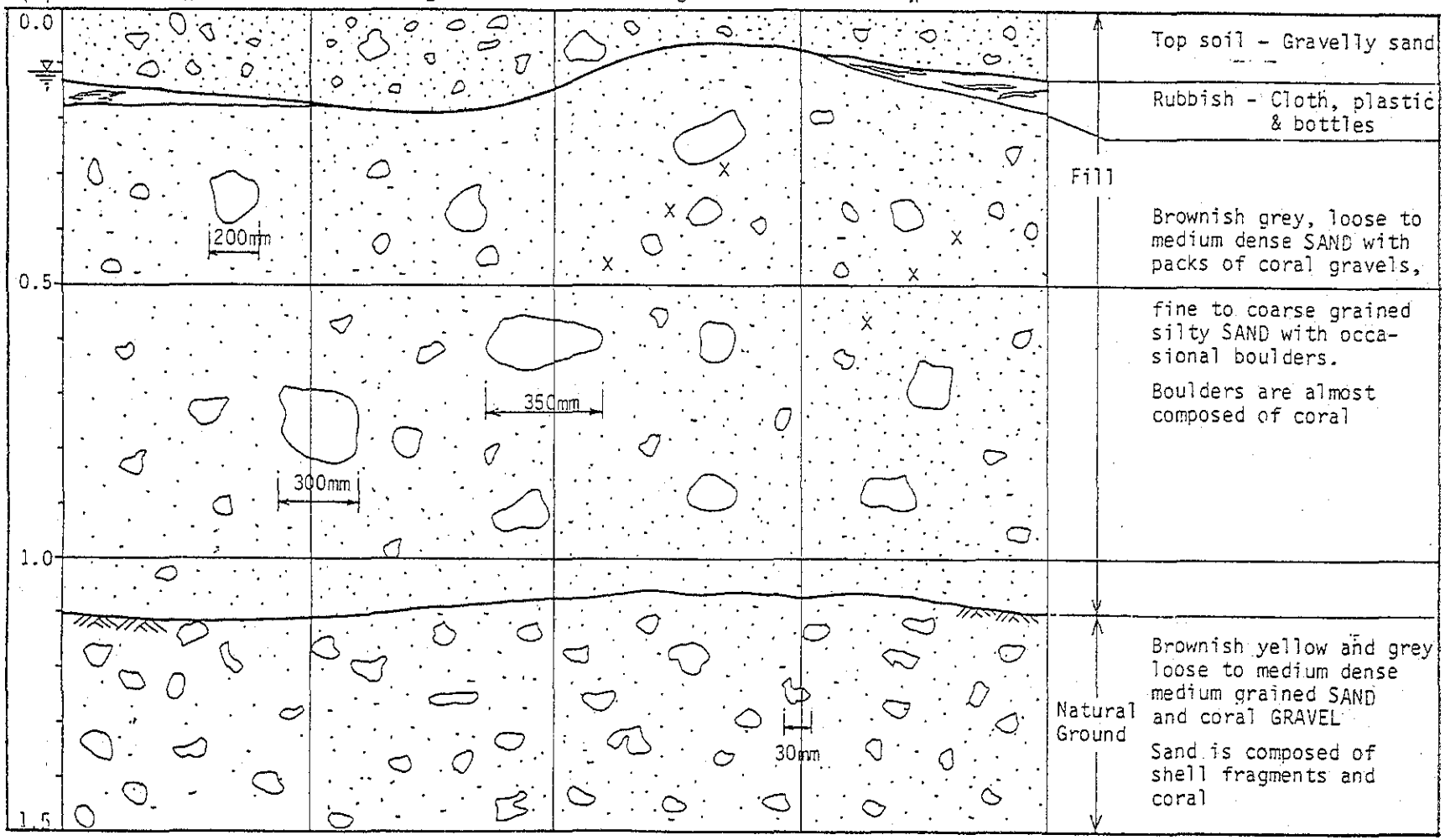
FIGURE 6-5 DESCRIPTION OF TEST PIT

Project No.: 597

Project: Soil Investigation for Primary School, Republic of Maldives Test Pit No.: PL-1

Ground Elevation: TBM -1.092m Test Elevation: TBM -2.29m Engineer: Chen Date: 16.7.87



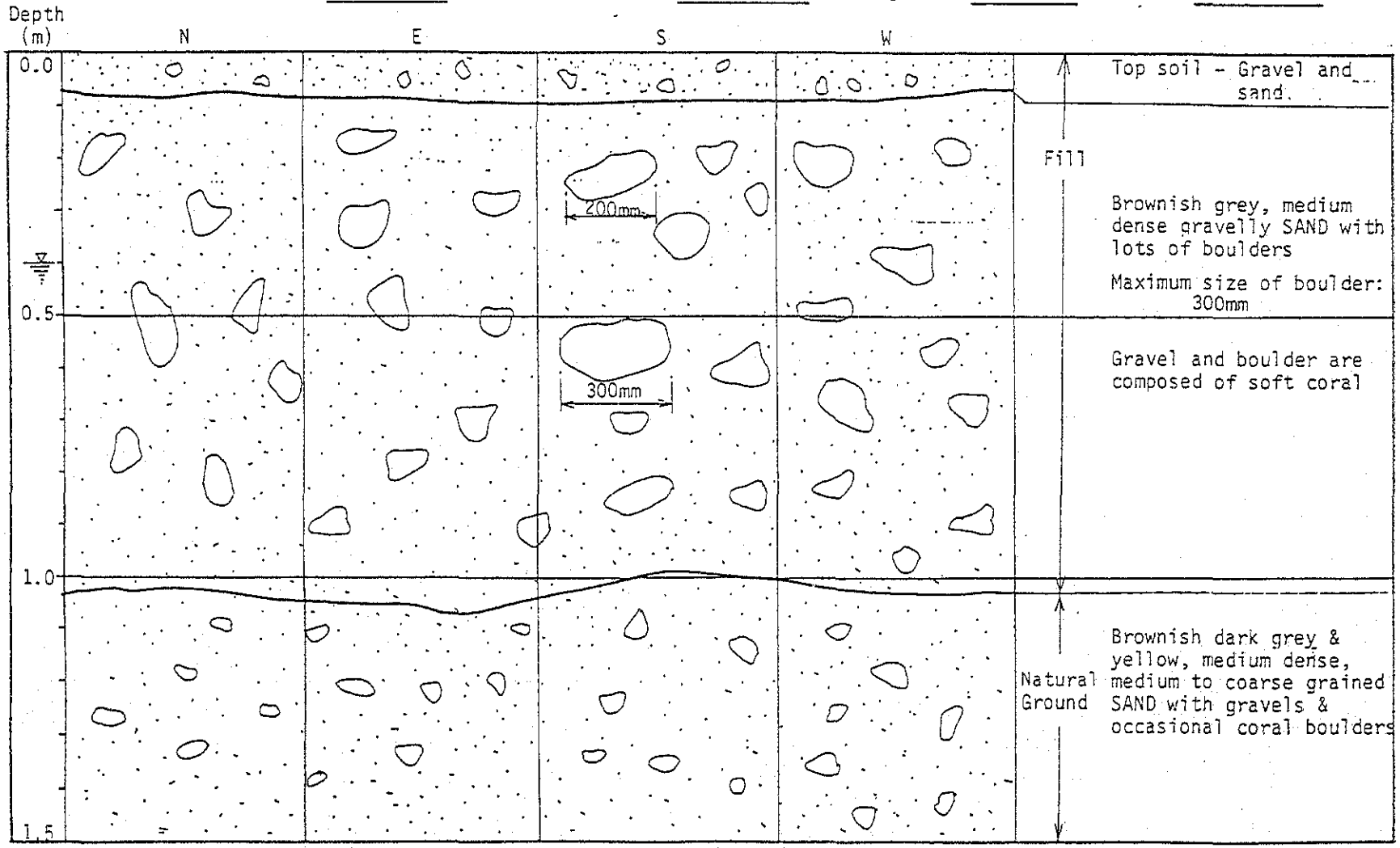
N, E, S, W Indicate 4 Phases of Pit

FIGURE 6-6 DESCRIPTION OF TEST PIT

Project No.: 597

Project: Soil Investigation for Primary School, Republic of Maldives Test Pit No.: PL-2

Ground Elevation: TBM -1.029m Test Elevation: TBM -2.23m Engineer: Chen Date: 18.7.87



N E S W Indicate 4 Phases of Pit

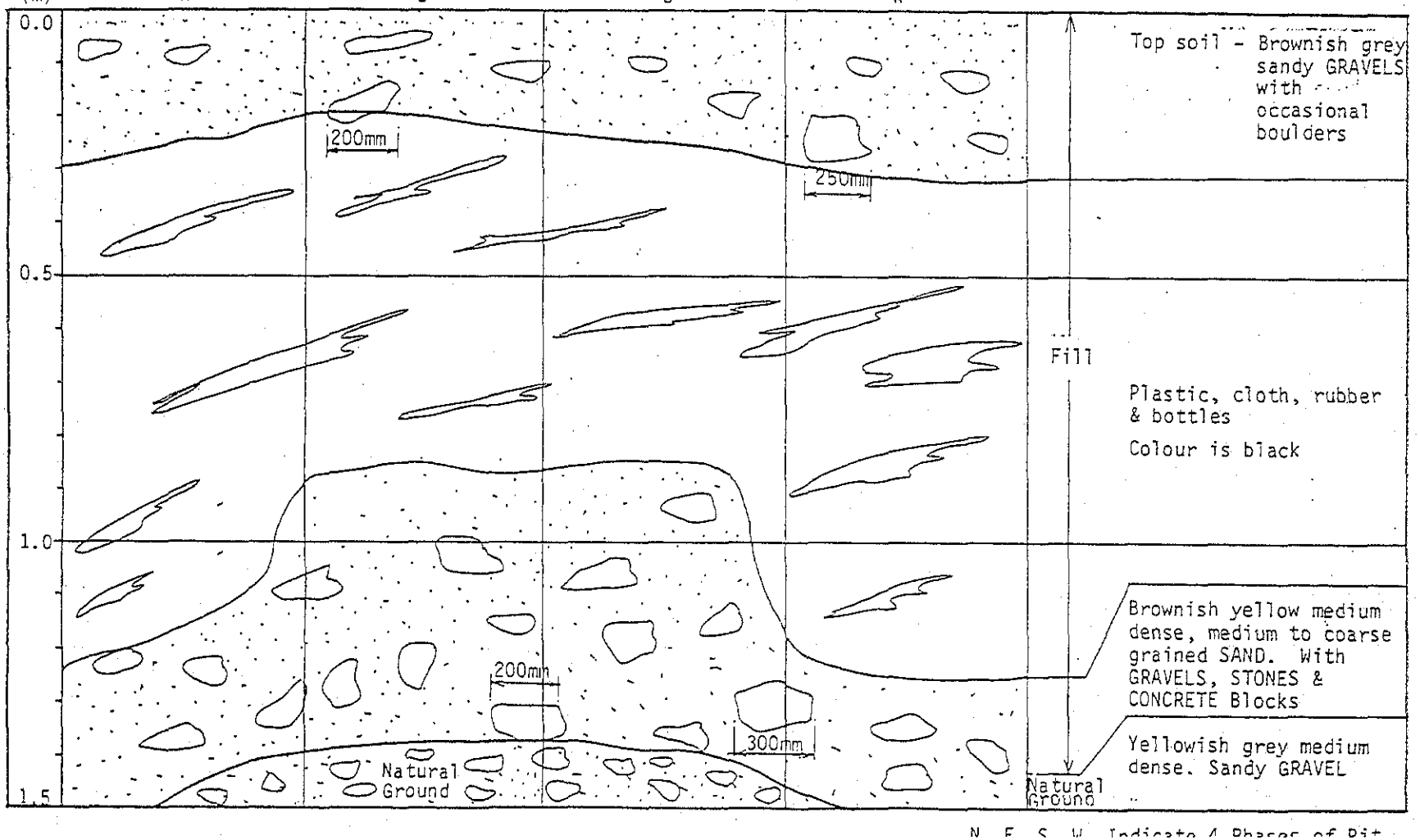
FIGURE 6-7 DESCRIPTION OF TEST PIT

Project No.: 597

Project: Soil Investigation for Primary School, Republic of Maldives

Test Pit No.: PL-3

Ground Elevation: TBM -0.965m Test Elevation: TBM -2.37m Engineer: Chen Date: 17.7.87



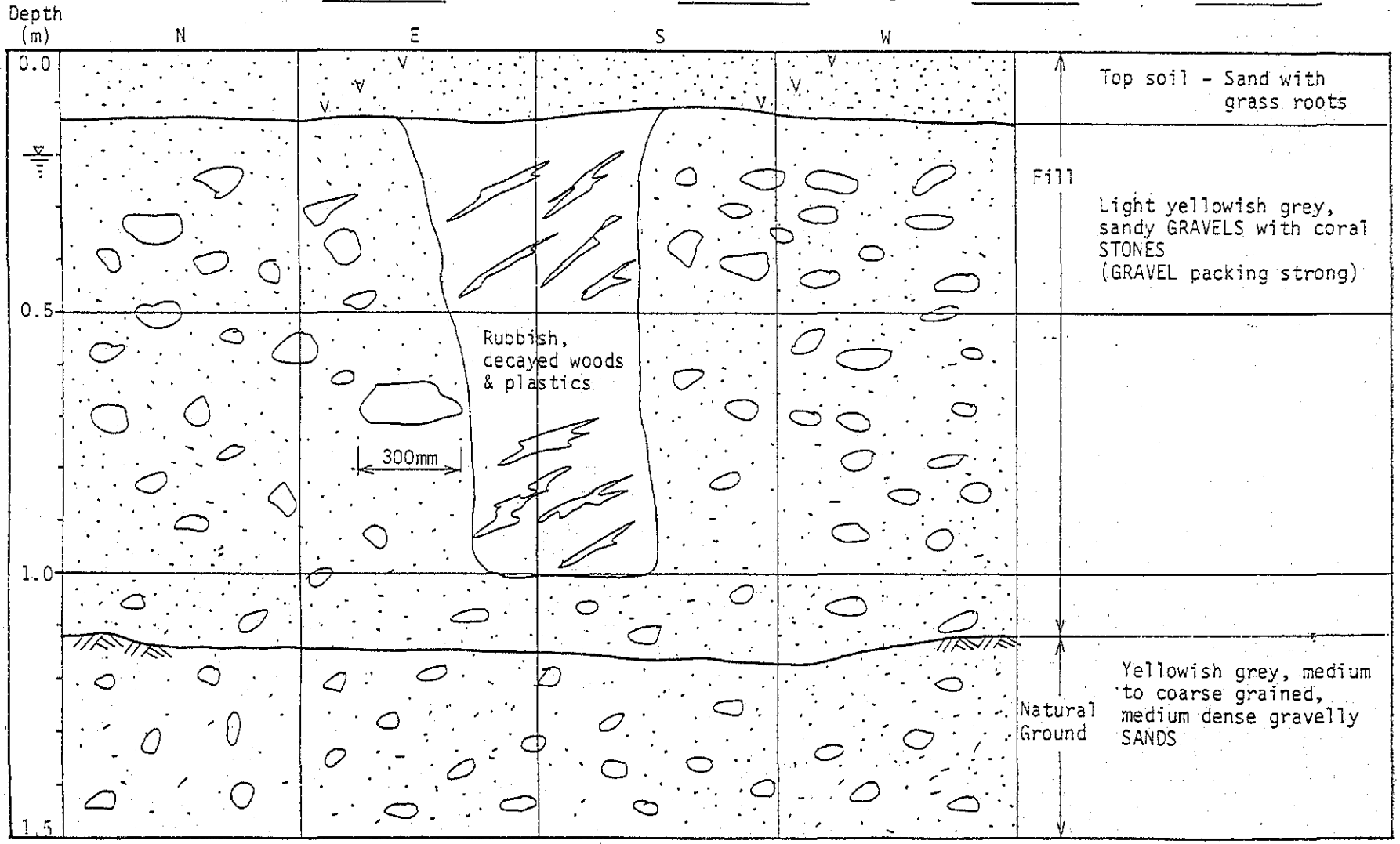
N E S W Indicate 4 Phases of Pit

FIGURE 6-8 DESCRIPTION OF TEST PIT

Project No.: 597

Project: Soil Investigation for Primary School, Republic of Maldives Test Pit No.: PL-4

Ground Elevation: TBM -0.895m Test Elevation: TBM -2.10m Engineer: Chen Date: 17.7.87



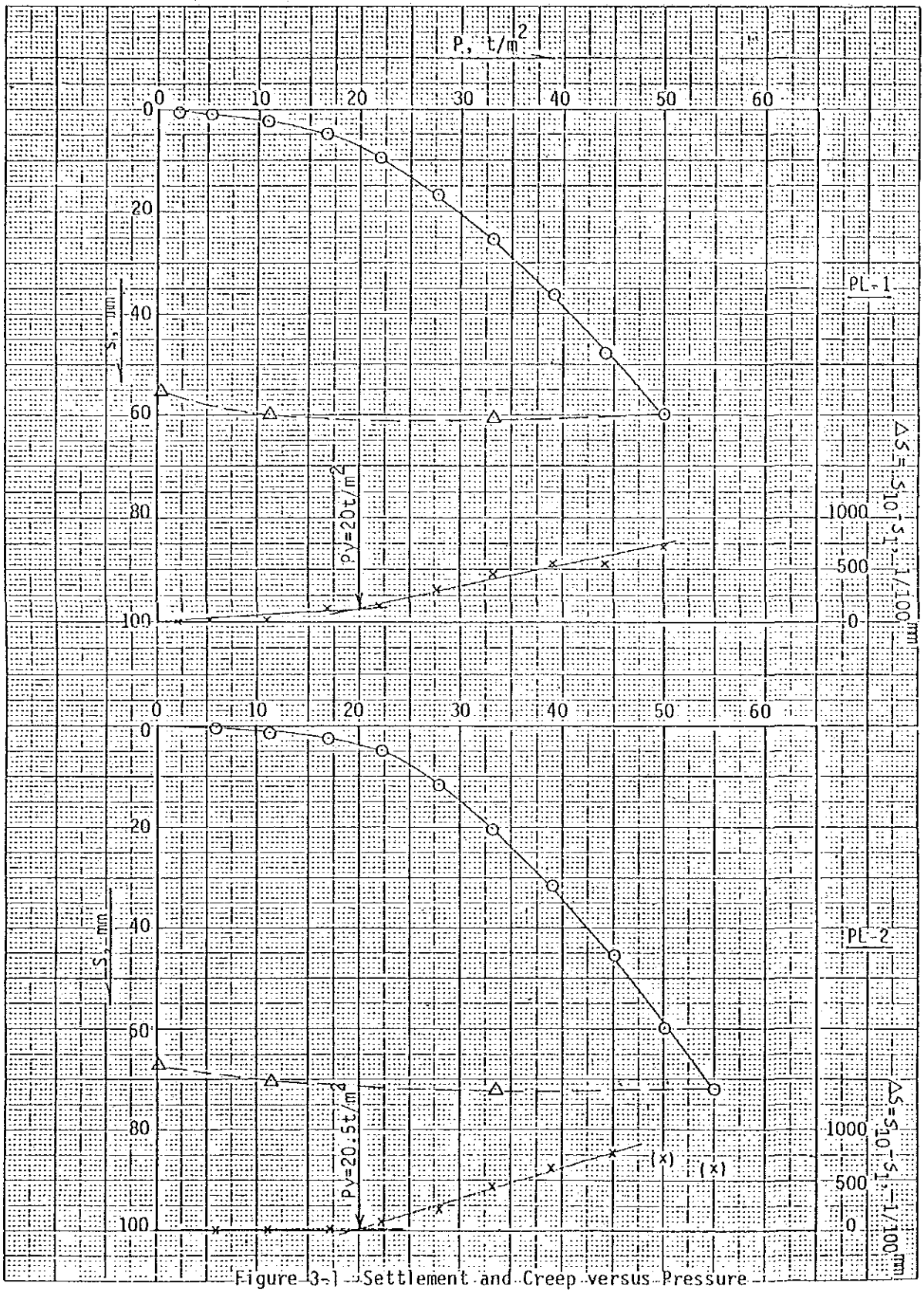


Figure 3-1 Settlement and Creep versus Pressure

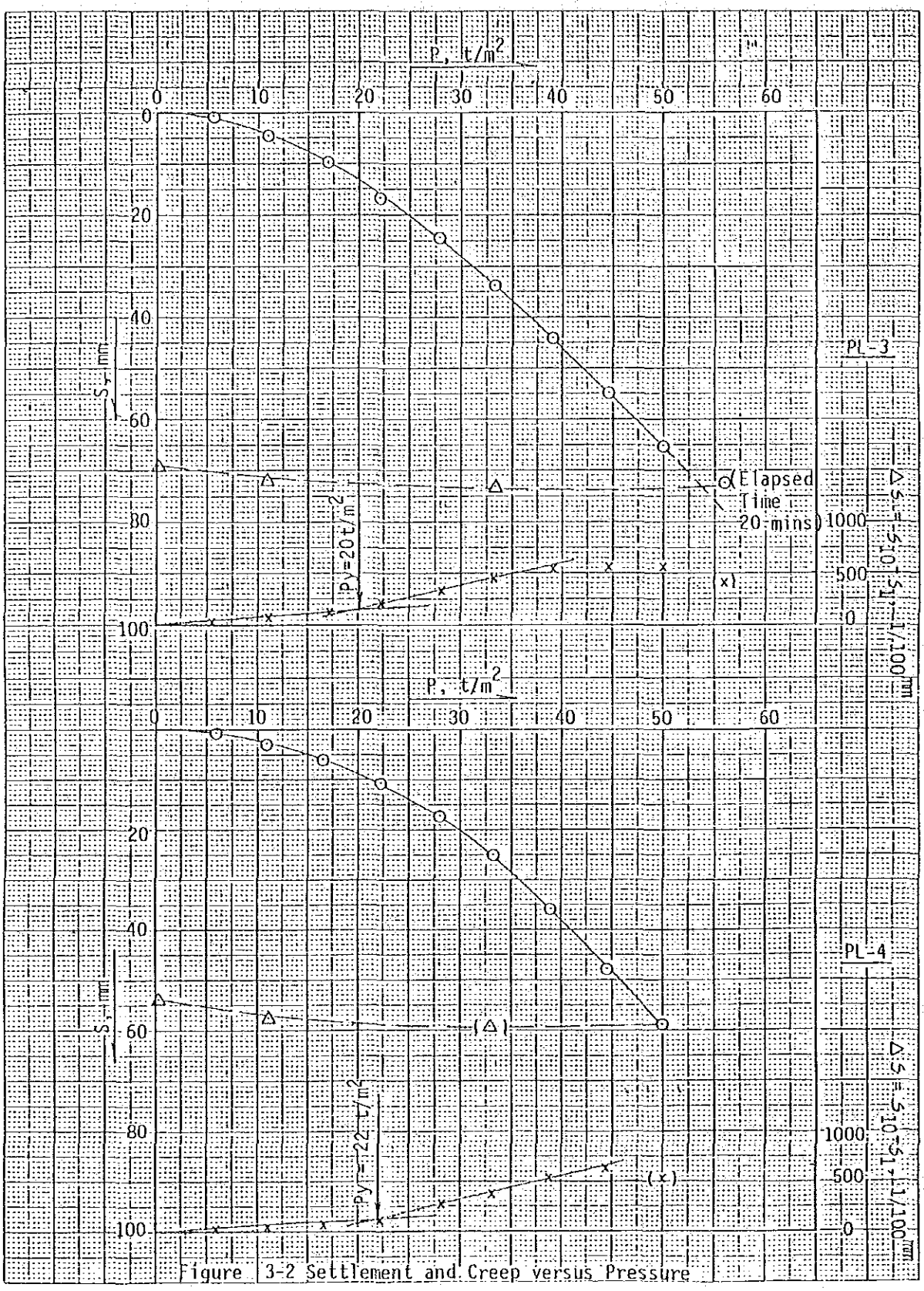


Figure 3-2 Settlement and Creep versus Pressure

Figure 3-3 Log P versus-Log S

Figure 3-4 Settlement versus Pressure & Time

Table 4 Results of Yield Pressure

Test No. & Depth	Py, Yield Pressure (t/m^2)		
	Creep Method	Log Curve	Semilog Curve
PL-1 (1.2m)	20.0	16.0	16.5 - 22.2
PL-2 (1.2m)	20.5	19.0	?
PL-3 (1.4m)	20.0	?	16.5 - 22.2
PL-4 (1.2m)	22.0	20.0	22.2 -(27.8)

Appendix 6 Meteorological Data

Table 1-1 Monthly average temperature in the Republic of Maldives

Month	1	2	3	4	5	6	7	8	9	10	11	12
Monthly average temperature	27.5	27.7	28.4	28.7	28.7	28.3	28.0	27.9	28.0	27.6	27.0	27.5
Monthly maximum temperature	29.7	30.1	30.9	31.4	40.9	30.5	30.1	30.1	30.1	30.0	29.9	29.7
Monthly minimum temperature	25.5	25.7	26.0	26.4	26.4	25.9	25.6	25.6	25.3	25.3	25.3	25.2

Source: Some Meteorological Data from 1967 to 1988

Table 1-2 Monthly average temperature in Capital Male

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temperature(°C)	29	30	31	31	31	31	30	30	29	30	30	30

Source: Handbook of Nations in the World (Asian version)

Table 1-3 Monthly relative humidity in the Republic of Maldives (1985)

Month	1	2	3	4	5	6	7	8	9	10	11	12
Humidity(%)	79	78	77	80	80	78	78	79	80	82	81	81

Source: Some Meteorological Data

Table 1-4 Monthly precipitation in the past five years (Unit: mm)

Year \ Month	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
1981	97.5	22.3	123.5	42.6	280.6	100.4	48.8	160.5	232.8	125.4	180.6	225.8	1,640.8
1982	30.8	TR	61.4	64.3	250.3	193.2	173.2	146.1	221.7	210.3	562.9	404.7	2,318.9
1983	33.1	2.8	129.3	22.3	328.5	213.0	123.5	263.5	160.2	64.3	115.6	211.5	1,640.6
1984	163.0	130.9	264.5	166.5	99.5	84.6	216.0	157.4	115.4	96.8	391.8	26.9	1,973.3
1985	220.6	177.5	131.0	206.4	112.3	180.8	55.1	119.6	132.0	218.7	174.7	174.1	1,902.8
Average	109.0	66.7	141.9	100.4	214.2	154.4	135.3	164.0	172.4	143.1	285.1	208.6	1,895.3

Source: Statistical Year Book of Maldives 1986

*TR: Signifies a trivial amount of precipitation.

Table 1-5 Monthly average precipitation in Capital Male

Month	1	2	3	4	5	6	7	8	9	10	11	12
Precipitation (in mm)	47	65	5	96	211	159	229	137	343	319	150	137

Source: Handbook of Nations in the World (Asian version)

Table 1-6 Monthly relative wind velocity (m/sec)
(Average of observed values from 1967 to 1983)

Month	1	2	3	4	5	6	7	8	9	10	11	12
m/sec	5.4	4.47	3.34	3.0	5.14	4.89	4.68	4.42	5.23	4.9	4.4	4.78

Table 1-7 Average days per wind directions in 1985 (%)

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		VRB
January	1	3	43	21	14	1	2	0	-	-	0	0	0	2	6	1	2	1
February	11	12	33	6	2	1	-	-	1	1	1	-	0	2	11	11	5	4
March	6	7	10	14	11	3	2	0	0	2	0	3	8	8	9	4	9	4
April	3	1	3	2	2		1		1	1	14	10	30	13	11	5	1	1
May	4								1	1	9	14	35	11	15	5	4	1
June									2	9	12	53	22	2	1	-	-	-
July	0									1	7	12	43	27	8	-	2	-
August								0	9	9	7	6	25	20	20	2	1	-
September			0		0					2	5	7	29	39	15	3	1	-
October	1	1	2		1	1				0	3	15	29	21	21	2	2	0
November	4	1	15	2	1	1				2	7	7	23	12	10	5	9	1
December	2	7	33	17	9	2	2	2	1		1	5	5	1	3	2	5	4

Table 1-8 Monthly sunshine hours(observation in 1984)

Month	1	2	3	4	5	6	7	8	9	10	11	12	Average
Hrs.	181.0	205.3	233.0	217.5	231.9	182.4	209.4	228.5	226.2	262.1	195.6	282.0	221.2