


BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR CONSTRUCTING
THE PRIMARY SCHOOL IN MALE
IN
THE REPUBLIC OF MALDIVES

SEPTEMBER 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

THE PRIMARY SCHOOL IN MALE IN THE REPUBLIC OF MALDIVES SEP 1987 JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

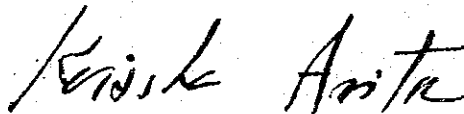
In response to the request of the Government of the Republic of Maldives, the Government of Japan has decided to conduct a basic design study on the Project for Constructing a Primary School in Male and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Maldives a study team headed by Mr. Junzo Sago, Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs from March 19 to April 3, 1987.

The team had discussions on the Project with the officials concerned of the Government of Maldives and conducted a field survey in the project area. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Maldives for their close cooperation extended to the team.

September, 1987.

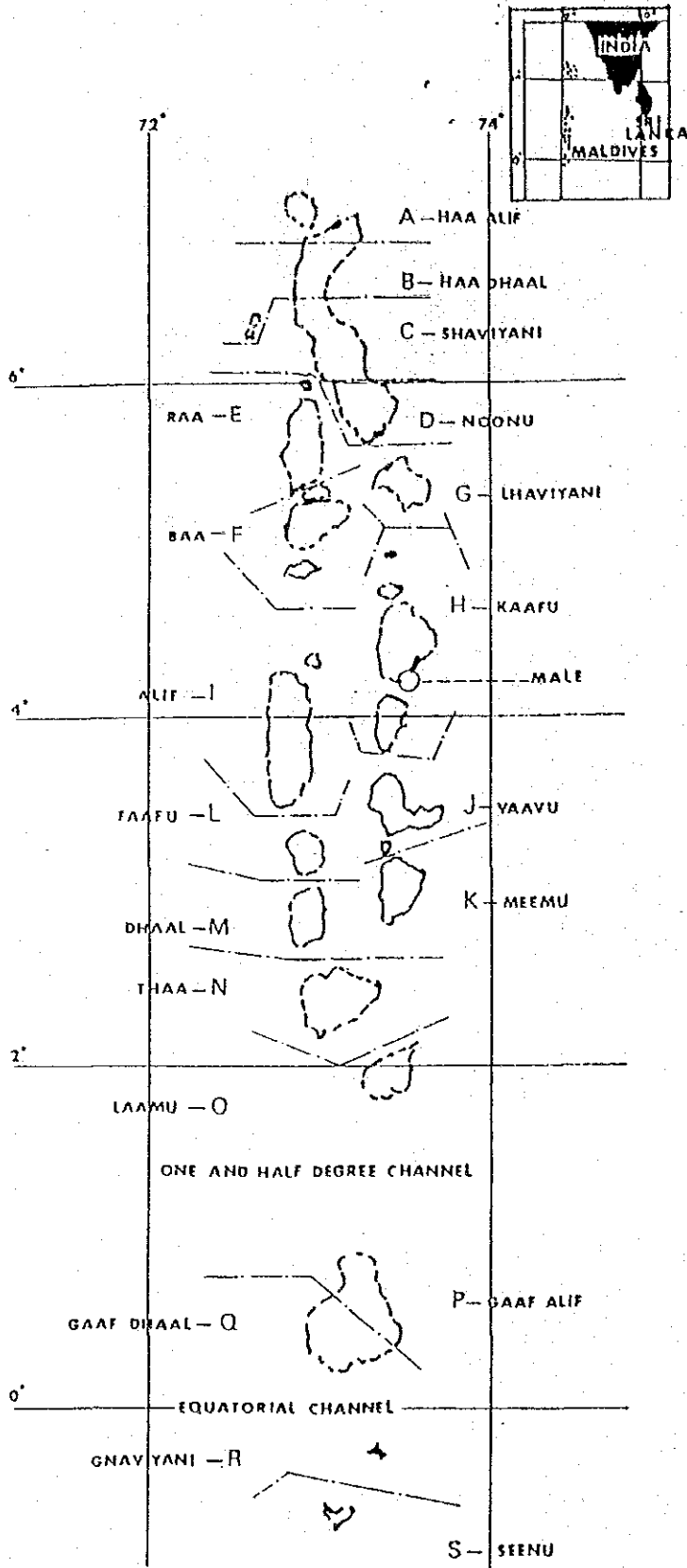


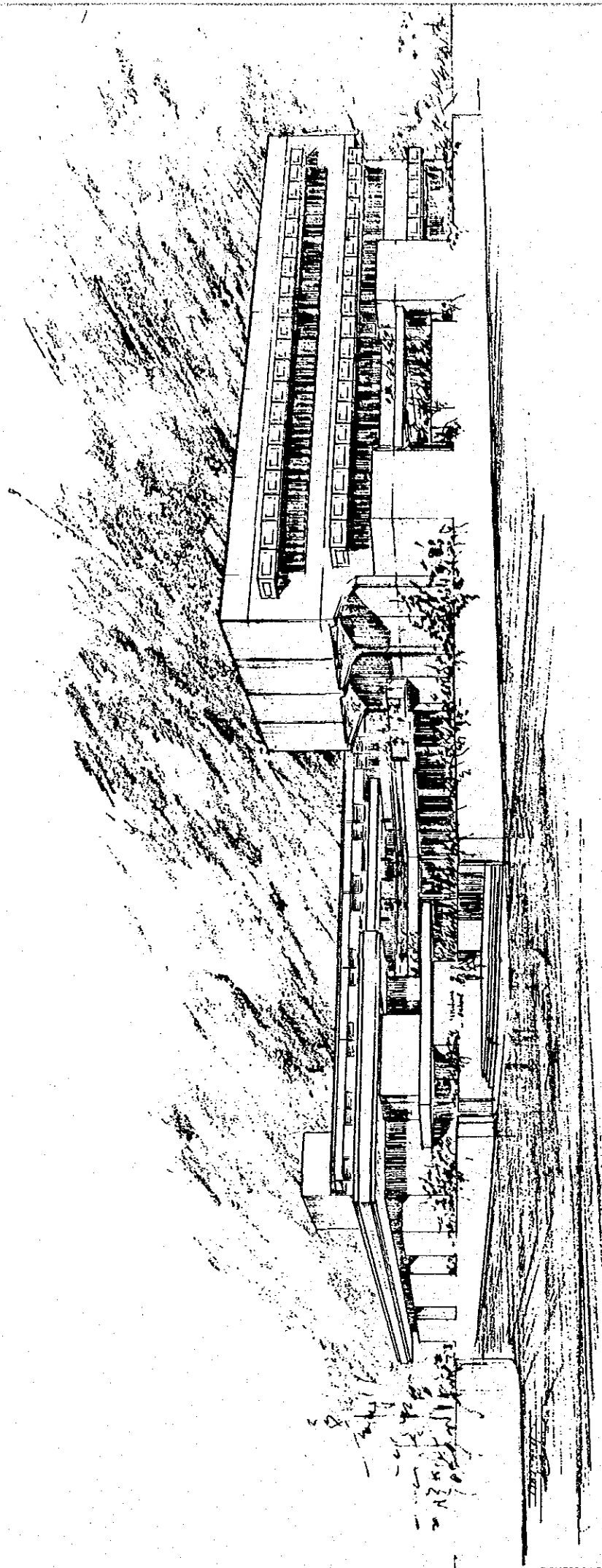
Keisuke ARITA

President

Japan International Cooperation Agency

REPUBLIC OF MALDIVES





The project for constructing
the primary school in Male

SUMMARY

SUMMARY

The Republic of Maldives consists of about 1,200 atolls, of which 202 are inhabited. The total population is 189,400 (according to 1981 national census) and its capital, Male, the most densely populated island in the Republic, has a population of 46,000 in an area of 1.77 sq.km.

With the aim of promoting primary education in the islands other than Male, the Government of Maldives has founded 15 primary schools under the grant aid of the Japanese Government, 19 with the assistance of UNICEF, and 20 at the expense of the present Government since 1974.

In Male, on the other hand, the shortage of educational facilities mainly caused by the rapid increase of the population, has hindered school-age children from receiving satisfactory primary education, which has become a serious social problem. At present, as an extreme measure, a triple shift of lessons on a day has been adopted to tide over the situation.

The number of primary-school-age children was 4,969 in 1985, and by 1990 it is expected to be 7,500. The Government of Maldives, while improving the facilities of the existing primary school, founded another four-storied primary school on a site of 4,000 square meters with the financial assistance of the Libyan Government in 1985, and started the construction of a third primary school of the same size through the assistance of the Republics of Korea and Pakistan at the beginning of 1987. Since Male is divided into four municipal districts based on its population distribution, it needs at least four well-furnished primary schools.

Under the above-mentioned circumstances, the Government of Maldives made an urgent plan of constructing a fourth primary school, and has requested the Japanese Government to extend grant aid for constructing the school building and providing various sorts of educational equipment so as to be able to start the new school system (double shift) from February, 1989. In response to the request, the Japanese Government has decided to conduct a basic design study on the project through the Japan International Cooperation Agency (JICA), and dispatched a Basic Design Study Team to Maldives for a period from March 19 to April 3, 1987.

Just a week after the study team returned to Japan in April, 1987, the islands of Maldives were hit by unusual, high tidal waves ever experienced in its history, and about one third of Male island was inundated with sea water to a depth of three feet including the Project construction site. After careful consideration, JICA decided to conduct a supplementary study between July 14 and July 25, 1987 to investigate the ground condition of the construction site. The team examined the influence of the sea water on the Project site, and confirmed that its affection was negligible and the site had enough intensity for the construction.

Throughout the study, the team confirmed appropriateness of the request as well as the educational system, the school district system and the scale of schools in the Republic of Maldives. As to the teaching staff, about 60 teachers are sent to Male from Sri Lanka every year under the cooperation scheme of the Sri Lankan Government. These Sri Lankan teachers, with some exceptions, work on the basis of a one year contract at first, and after confirmation of their adaptability in Maldives, the contract will be renewed for another two or three years. The teachers are well paid, and the rate of their pursuance is high.

After the completion of this project, the Ministry of Education will take the administrative responsibility, and the annual budget will be guaranteed by the Government. The primary schools in Male are to be managed on a double shift basis permanently, and all the teachers would be divided into two working groups under each principal.

Based on the result of careful study and analysis on the contents of the request, the planned primary school in Male shall have the following facilities and equipment.

Facilities

School facilities:			Administration facilities:		
Classroom	28	53 m ² (per class)	Principal's office	1	26.4 m ²
Library	1	82 m ²	Assistant Principal's office	2	13.2 m ²
Music room	1	70 m ²	Teachers' room	1	90.4 m ²
Science room	1	82 m ²	General office	1	24.2 m ²
Practical art room	1	70 m ²	Medical & first aid room	1	11.0 m ²
Prayer room (Playroom)	1	65 m ²	Janitors' room	1	15.75 m ²
School hall	1 (500 seats)	410 m ²	Toilet, storage (inc. stairs and hall)		65.45 m ²
Toilet		276.03 m ²			
Total floor area: 3,870.225 m ²					
Site area : 3,670.83 m ²					

Equipment and materials

Educational furnishings	:	Desks and chairs for pupils Desks and chairs for teachers School Hall chairs	
General educational equipment	:	Slide projectors, overhead projectors and others	88 items
Physical education equipment	:	basket ball equipment, volleyball equipment, bucks and others	31 items
Music education equipment	:	a piano, an organ, tambourines, drums, and others	23 items
First aid and medical equipment:	:	medicines, bed and others	48 items.

The construction period of the primary school is expected to be 12 months. After construction is completed, the annual maintenance and operation costs for this school which will be borne by the Republic of Maldives are estimated RF2.3 million including personnel expenses for education.

Primary schools in the Republic of Maldives have high social status and they are widely used for social functions as public halls or cultural centers. Considering the present situation that 74% of the Education Ministry's budget has to be allotted for foreign teachers' wages and the large number of school age children with rather low ratio of school attendance in Male, it is quite appropriate and significant for the Japanese Government to implement this project under its Grant Aid Program. Along with the 15 schools which were constructed between 1979 and 1985 through grant aid of the Japanese Government, this project will contribute greatly to the development of education in the Republic of Maldives and to the friendship between the two countries as well.

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MAP OF THE REPUBLIC OF MALDIVES

PERSPECTIVE

SUMMARY

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CHAPTER 1 INTRODUCTION

CHAPTER 1. INTRODUCTION

With the belief that the key to a successful nation building lies in the promotion of education, the Republic of Maldives has set up a plan to construct primary schools in the remotest corners of the country, and has been making every effort to achieve this goal with the assistance of Japan's grant aid , UNICEF funds as well as at its own expense since 1974.

In the meantime, due to the increase in the population in Male, the capital, the shortage of educational facilities has become such an acute problem that the Government of Maldives is now in need of a new primary school in Male. The Government drafted a 10-year plan for the promotion of education and the development of human resources, incorporated therein a plan for constructing a primary school in Male as the core of this scheme, and requested the Japanese Government for grant aid.

In response to the request, the Japanese Government decided to conduct a basic design study on this project and entrusted the study to the Japan International Corporation Agency (JICA). JICA dispatched to Maldives a basic design study team led by Mr. Junzo Sago, Assistant Director of the Grant Aid Division of the Ministry of Foreign Affairs, for a period from march 17 to April 3, 1987.

The study team held discussions with the officials concerned in the Government of Maldives, examined the appropriateness of the Project, and carried out various surveys necessary for drafting basic designs. Minutes of discussions were exchanged between the study team and the Government of Maldives on March 28. (Refer to the appendices 1-3 regarding the formation of the study team and its itinerary.)

After the Basic Design Study Team returned to Japan, Male suffered from the disastrous high tidal waves that it has ever experienced. The Japanese Government dispatched the engineers who had participated in the basic design study to survey the extent of the damage at and around the prospective project site, i.e., the ground condition of the site, and the damage that the existing schools and the third school now under construction had suffered, and confirmed the viability of construction on the site. The report was compiled on the basis of the results and analyses of the above mentioned surveys.

CHAPTER 2 BACKGROUND OF THE PROJECT

CHAPTER 2 BACKGROUND OF THE PROJECT

2-1 Outline of the Republic of Maldives

The Republic of Maldives is composed of atolls and islands scattered in the form of a double chain about 700 km southwest of Sri Lanka in the Indian Ocean. These atolls and islands extend over an area of about 110,066 sq.km, ranging about 824 km from north to south and about 130 km from east to west. Although no accurate surveys have been carried out, the total land area of Maldives is estimated to be about 298 sq.km. The area surrounded by coral reefs is approximately 3,300 sq.km.

The number of islands, cays, and atolls which compose the Maldives Archipelago is 1,111. The largest island is Gan Island, the southernmost one with a length of 7,240 m, while the capital Male is an island of 1,775 m in length by 1,130 m in width. The highest point of each island is very low, about 2 m on the average, and the highest point of the Republic is less than 5 m above sea level. The groundwater level is high on all the islands, about 1.0 m below the ground surface. Almost all the inhabited islands are provided with wells for their water supply. Since the water is saline, it is not good for drinking, however, and the supply of potable water is fully dependent upon rainwater.

The population of the Republic of Maldives is 189,400 as of 1986. They are distributed over the 202 inhabited islands out of the approximately 1,200 islands and atolls, the remaining being uninhabited. The island with the largest population is the capital Male, with about 46,000 living in an area of only one square mile (or about 1.77 sq.km.). The number of islands whose population exceeds 1,000 is no more than 33. The population living in urban districts occupies 25.53% while the remaining 74.47% live in rural districts. According to the national census in 1985, the total population is composed of 98,180 males and 91,220 females, and those of 17 years or younger account for 50% of the total population. The life expectancy at birth is about 52 years.

2-2 Outline of the Project

Since 1974, with a view to expanding primary-level education, the Republic of Maldives has constructed 15 primary schools under the grant aid cooperation of the Japanese Government and 19 under the assistance of UNICEF on the islands other than Male. An additional 20 small-scale schools have been improved by the present Government. However, many other islands have no public primary schools for offering children a basic primary education.

In addition to the natural increase in the population of Male, a great number of families live in rural islands have moved to Male, in spite of the Government's strict limitations of migration with the expectation of giving their children better educational opportunities. The shortage of education facilities on the island is a serious social problem, depriving many school-age children of receiving primary education. The emergency step of instituting a thruple-shift class system has been adopted to barely cope with the present situation. It is estimated that the number of school-age children in Male will increase to 6,870 in 1987 and 7,500 in 1990 from the 1985 figure of 4,969.

Under these circumstances, the Government of the Republic of Maldives recognized the necessity of constructing large-scale primary schools in the capital Male and consequently set up the "Educational and Human Resource Development Plans 1985 - 1995" which incorporates construction of four primary schools in Male.

2-3 Outlines of the Related Projects

In the Republic of Maldives, government schools play the main role in primary education, with private schools performing minor functions. Expansion and improvement of private schools are not expected at present. The Government of the Republic of Maldives, as the first undertaking of the aforementioned Plans, transformed an old preschool into a primary school named "Iskandhar school" by expanding and modifying the buildings. This school is composed of 20 classrooms, a library room, and others, and construction work is still under way while classes are already being given.

The second school is the "Jamaludden Primary School" (J.P.S.) which was completed with the aid of the Government of Libya in 1985. It is of a considerable scale with four-storied buildings containing 29 classrooms, a school hall, library, art room, and music room on a total area of 4,000 sq.m.

The third school is being constructed under the composite assistance of Korea and Pakistan. Although it was scheduled to open in 1987, construction was only started in March 1987. A building containing classrooms included in the first construction period will be completed by the end of 1987 and be in time for the new school term beginning in February 1988.

The fourth school is the one proposed in the present project and it is hoped that it will open for the new school term in February 1989.

The influence of the disastrous high tidal waves, which might have affected the implementation of the Project, was found negligible and the Ministry of Education repeatedly expressed its desire to have it constructed at the earliest time possible.

2-4 Background and Details of the Request

As described in the previous chapter, the Government of the Republic of Maldives established the "Educational and Human Resource Development Plans 1985 - 1995" and has been positively promoting improvement of the educational system in the Republic. The construction of the primary school under this project plays an important part in achieving that objective. This project aims at construction of a well-equipped primary school so as to meet the rising demand for quality primary education in Male as quickly as possible. The Government of the Republic of Maldives has requested grant aid of the Government of Japan because it highly evaluates the past performance of Japanese grant aid with which 15 primary schools were constructed in Maldives (from 1979 to 1985).

The Ministry of Education is responsible for administration of the proposed primary school. After completion, the facility will be controlled and maintained by the budget of the Ministry of Education and be operated over a long period according to its policy.

The details of the facilities and equipment requested by the Republic of Maldives are listed below:

1. Buildings

1) Educational facilities

a) Classrooms	28
b) Library	1
c) Music room	1
d) Science room	1
e) Practical arts room	1
f) Prayer room	1
g) School hall	1
h) Toilets	

2) Administrative building

a) Principal's office	1
b) Assistant Principal's office	2
c) Teachers' room	
d) General office	
e) First aid medical room	
f) Storage	
g) Janitors' room	

2. Instruments and materials

1) Children's desks and chairs and teachers' desks and chairs

2) Library books

Approximatey 170 to 200 books and magazines

- 3) Physical education equipment
24 items including softball equipment, basketball equipment,
volleyball equipment, bucks, and mats.
- 4) Teaching aids
100 items including slide projector, overhead projector, 26" color
TV
- 5) Musical instruments
26 items including piano, organ, tambourines, and drums
- 6) Emergency medical supplies
30 items including medicines, beds, etc.

CHAPTER 3 THE DETAILS OF THE PROJECT

CHAPTER 3 THE DETAILS OF THE PROJECT

3-1 Objective

The primary school which the Government of the Republic of Maldives has requested the Government of Japan to construct is the final one of the four primary schools to be constructed under the Educational and Human Resource Development Plans 1985-1995. The construction of this primary school will consolidate the foundation of the education plan which is of extreme importance to the welfare of the Maldives people and is a matter of great urgency when taking the increase in population into consideration. It is preferable that the project be implemented with grant aid of the Japanese Government at the earliest time possible so that the school may be completed in time for the new school term begins in February 1989.

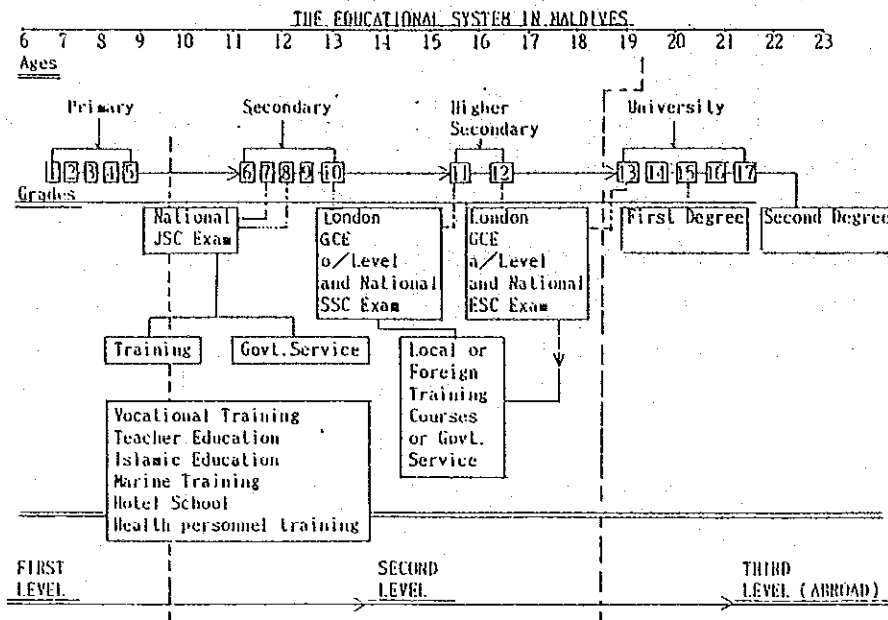
3-2 Review of the Contents of the Request

3-2-1 Educational system in Maldives

A) Primary school

The educational system in the Republic of Maldives is in a transition period, and the present system has been recently established and put in action. Levels from the first to the fifth grades were once termed primary school and from the sixth to the seventh grades, middle school. However, the cumulative stage from the first to the seventh grades is now considered to be that of primary education and is termed primary school. The three years from the eighth to the tenth grades are termed secondary school while the eleventh to the thirteenth grades are termed higher secondary school. University education depends upon study abroad. (See the chart of the education system in Maldives below.)

The educational system in Maldives



B) Government schools and private schools

In Male there are two types of schools, government schools and private schools. Private schools require higher educational fees but have teachers of lower quality than government schools. All the children who have reached school age (namely, who have reached the age of six on or before February 22) are allowed to enter a government school. Since the government school admits children for the first and eighth grades only, however, those children who have moved from other places or who could not enter school for some reason when they reached the age of admittance are compelled to enter a private school. Promotion to a higher grade is quite strict in the government schools and the period for a student to stay in the same grade is limited to two years at the longest. Therefore, some students are forced to move to private schools.

Unless students pass the examination for a Junior School Certificate (J.S.C.) when graduating from primary school, they are not permitted to enter a higher school. The examination may be taken in either English or Divehi and covers six subjects including the compulsory ones such as English, mathematics, Islamic studies, and Divehi. About 30% of the total graduates of the government and private schools pass the examination to enter a secondary school for the eighth grade.

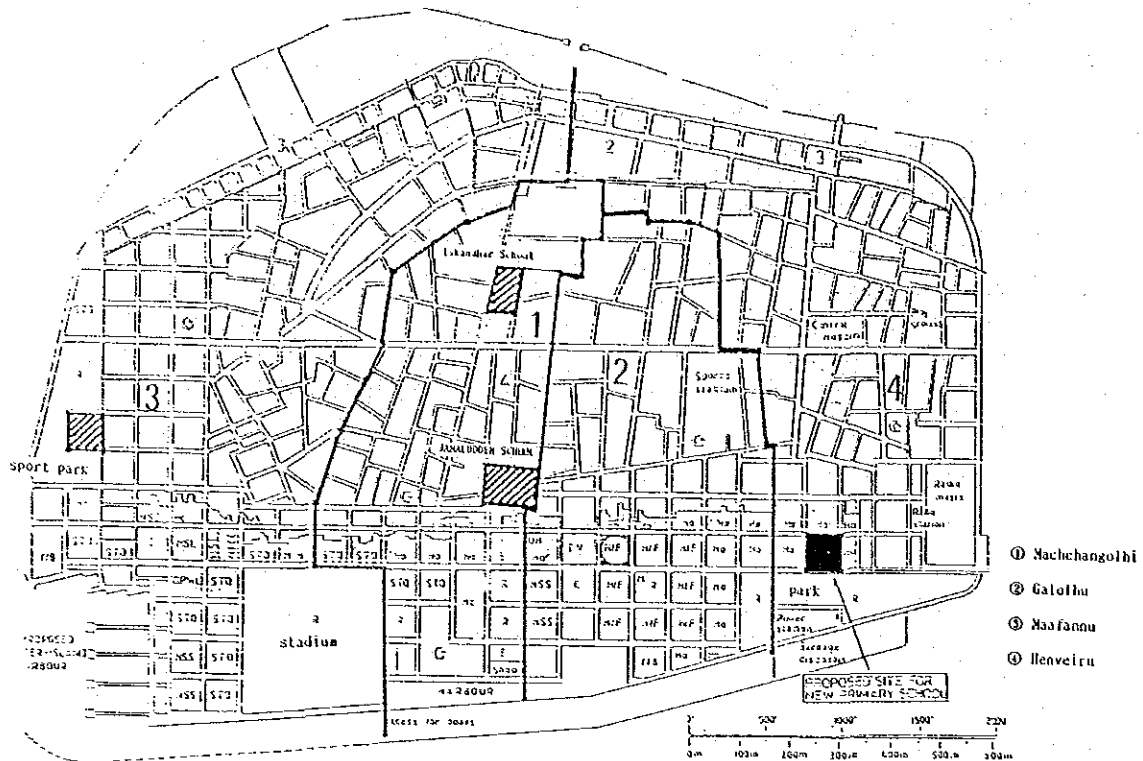
C) Triple-shift class system

A triple-shift class system has been adopted out of necessity as a result of the severe shortage in the number of classrooms. The system is composed of the three shifts from 7:00AM to 10:30AM, 11:00AM to 2:30AM, and 3:00PM to 6:30PM. This system is said to be a temporary one. The final target is to adopt a double-shift system throughout the country. The Government has no intention to adopt a single-shift system so far.

D) School district system

The City of Male is divided into four municipal districts (see following page). There have been no school districts in the City, and children are enrolled in a school irrespective of the municipal districts. However, a school district system will be adopted when construction of the primary school under this project is completed and the basis for primary education are arranged in good order. Then, an educational policy will be established to admit children living in Machchangolhi, Galolhu, Maafannu, and Henveiru districts respectively to Primary School No. 1, "Iskandhar Primary School", No. 2, "Jamaludden Primary School", No. 3 (presently under construction and to be opened in 1988), and No. 4 (primary school under this project to be opened in 1989). One primary school is allocated to each municipal district, and it is understood that all are appropriately located.

DEVELOPMENT PROPOSALS FOR MALE' RECLAMATION
 (Based on information provided by the President's office)



3-2-2 Present state of primary education in Male

A) No. of students

(Student Enrollment by Grades at Govt. Schools in Male)

STUDENT ENROLLMENT BY GRADES AT GOVT. SCHOOLS IN MALE' (SEP. 1986)

SCHOOL	Total	I	II	III	IIII	V	VI	VII	VIII	IX	X	XI	XII	SPC
Amalya School	1586				493	395	303	163	87	86	59			
Majeediyya School	1639				463	436	319	176	75	91	79			
Ma'hadul Diraasatul Islamiyya	197							90	64	25	18			
Vocational Training Centre	141								141					
Iskandhar School	1059	242	386	431										
Jamrudheem Primary School	1872	802	501	552										17
Science Education Centre	53												32	21
TOTAL	6547	1044	897	983	956	831	622	429	367	202	156	32	21	17

*TOTAL ENROLLMENT IN R.Y.V.T.C AND V.T.C. IS 209
 ** Class of Ma'hadul Diraasatul Islamiyya and V.T.C. are considered equivalent to that of Lower Secondary classes of formal Govt. schools
 SPC is the handicapped class.

(Student Enrollment by Grades at Pvt. Schools in Male)

STUDENT ENROLLMENT BY GRADES AT PVT. SCHOOLS IN MALE (SEP. 1986)

Private School	Total	I	II	III	IV	V	VI	VII	VIII	IX	X	Nursery	special	Pre-school	Com.	Total%	
Faizun Prop. School	1409				159	213	237	361	119	142	57				71	16.4%	
Mak'uliyah School	1583	84	184	196	214	268	270	192	24	49	25				34	12.8%	
Majeediyah Alaya	901	50	32	32	45	24	14	6				143	64	150		6.7%	
Mafayya School	900	22	20	15	17	14	20					30	31	91		3.5%	
Henveiru School	767												346	201	220		11.2%
Galolhu School	670	18	24	29	17								164	244			5.7%
Mafanau School	1144	43	22	46	45	55							407	24	612		15.6%
Majeediyah Alaya	1687	55	78	112	108	87	36	45					452	55	639		19.6%
Majeediyah Alaya	412	24	17	27									63	171			3.5%
																	0.0%
Total	8483	296	467	481	605	661	627	604	343	191	82	1605	415	2327	105		100.0%

Presently in Male there are 7 government schools and 9 private schools. The total number of students is 15,156, or 6,547 in the government schools and 8,609 in the private schools.

On the other hand, the total number of students in rural atolls is 31,652, indicating just how large the number of students in Male is. The difference in cultural level between Male and the rural atolls has tended to become wider in recent years. Although migration from rural districts into Male is strictly prohibited, many are moving into Male, depending upon their relatives. Especially, there has been a tendency for those parents who have children of school age to entrust them to relatives living in Male so that the children can get better education. The most substantial factor for the increase in the population of Male has been the migration of people from Gan Island in Addu Atoll, the southernmost in the Republic, where a rapid decline of the textile industry and an overflow of the unemployed occurred by the retreat of British capital from the industry.

B) Scales of schools

Aiming at realization of a universal education system, the Government of Maldives established a ten-year plan under the title of "Human Resource Development Plans 1985 - 1995". As the first step of the Plan, the Government set as the main goal, the completion of four primary schools by the end of 1988 under the facilities construction program so that all school-age children may receive primary education at government schools. The Government estimates the increase of school-age children to be about 7,500 in 1990 and about 8,670 in 1995 while the present number is about 6,870 as listed in the following table.

	School age Population
1983	4,276
1985	6,450
1986	(6,660)
1987	(6,870)
1990	(7,500)
1995	(8,670)

Notes:

Based on an estimated population increase ratio of 3.36% per annum. Parenthesized figures are estimated ones.

Supposing that all four government primary schools accept new first-grade students in 1990, the number of students accepted by each school will be 1,875 students (= 7,500 - 4). Dividing the 1,875 students into the double-shift system, each shift has to accept about 940 students. Since it is said that the upper limit of the number of students in a class administered by a young teacher with little experience is 35, the number of classrooms required for 950 to 1,000 students per school to afford an appropriate education is calculated to be 27 to 28.5 (= 1,000 - 35). Assuming that the school-age population is estimated to be 8,670 in 1995, the number of classrooms for the primary school to be constructed under this project, namely 28 classrooms, will be reasonable (4 classes/grade x 7 grades = 28 classes).

3-2-3 Teachers

The present number of teachers in the government schools is 427. Among them, teachers of foreign nationality is 146 (34% of the total number of teachers), almost all of whom are from Sri Lanka. It is estimated that it would take three or four years to replace all the Sri Lankan teachers for the lower grades (up to the third grade) with that of Maldivians, but it is estimated that it would take 20 to 25 years to do so for the upper grades. Consequently, no such target is presently set up.

In Male, the buildings for the Educational Development Center (E.D.C.) which trains teachers have been expanded, and presently 20 to 25 teachers are being trained per annum. Those students who have completed the tenth grade (equivalent to graduates of a lower secondary school in Japan) are admitted to the E.D.C., after they have passed the entrance examination. They are trained here for a year, but teachers thus trained are not qualified enough in teaching level that almost all of them are assigned to rural atolls. The majority of the teachers in Male are from Sri Lanka, and this fact is the main cause for teachers' salaries occupying 74% of the educational budget. The monthly salary for a Sri Lankan teacher is about 3,000 Rf. When compared with the average salary of doctors in the Male Hospital of about 2,500 Rf, it can be seen that the Sri Lankan teachers are paid a considerably high salary. Salaries for Maldivian teachers are something a little less than 3,000 Rf, also being fairly high. However, teachers from Sri Lanka are provided with lodging facilities, servants, and bicycles in addition to their salaries, and return airline fare is also paid for them every December so that they may return to their own country, thereby contributing to extremely high costs.

Examination for selecting teachers

The Ministry of Education of the Republic of Maldives gives oral tests in Colombo for those Sri Lankan teachers who have passed the screening test administered by the Government of Sri Lanka and selects about 60 teachers every year. The screening procedures are as detailed below. Generally the term of an initial contract is one year, and after confirming whether or not the candidates are able to adapt themselves to the environment in the country, the Government of Maldives enters into two or three-year contracts with them. The maximum contract period is five (5) years, but it may be renewed if both parties desired so.

Procedures for filling vacancies for foreign teachers

May to June	Determination of required number of teachers in coming year
June to July	Application for budget for hiring teachers (including recruitment expenses and oral test charges)
June to July	Publishing of vacancy announcement
August	Screening of applicants
September to October	Ora tests in Colombo
October to December	Selection, notification, and replacement of teachers to be let go.
December	Issuing of appointment certificates
December	Acceptance of appointment (by letter)
January	Notification of taking office and duties
February	Taking office

3-2-4 Activities of Japan Overseas Cooperation Volunteers

The Government of Japan has dispatched 17 Japan Overseas Cooperation Volunteers to the Republic of Maldives (as of March 1987) and they are positively working in the fields of nursing, agriculture, technology, and education. The activities of the Volunteers have been highly valued by the people of the Maldives as well as by Governmental officials concerned. Except for Volunteers who engage in agriculture, all the Volunteers are working in Male.

In the field of education, the Volunteers are working earnestly in music and physical training under hard conditions with a shortage of educational facilities and instruments. Although they do not engage in regular classes, they make rounds of each school to transfer their abilities to students. The educational effects of their activities are highly appreciated by the ministry of Education.

This project would be a great help to their activities. They may display their full abilities by utilizing special classrooms and other educational facilities and equipment which are to be provided.

3-3 Outline of the Project

3-3-1 Implementing agency and operating system

The agency implementing this project before the construction shall be the Ministry of Education, and that giving technical advice after the construction shall be the Office for Physical Planning and Design (OPPD).

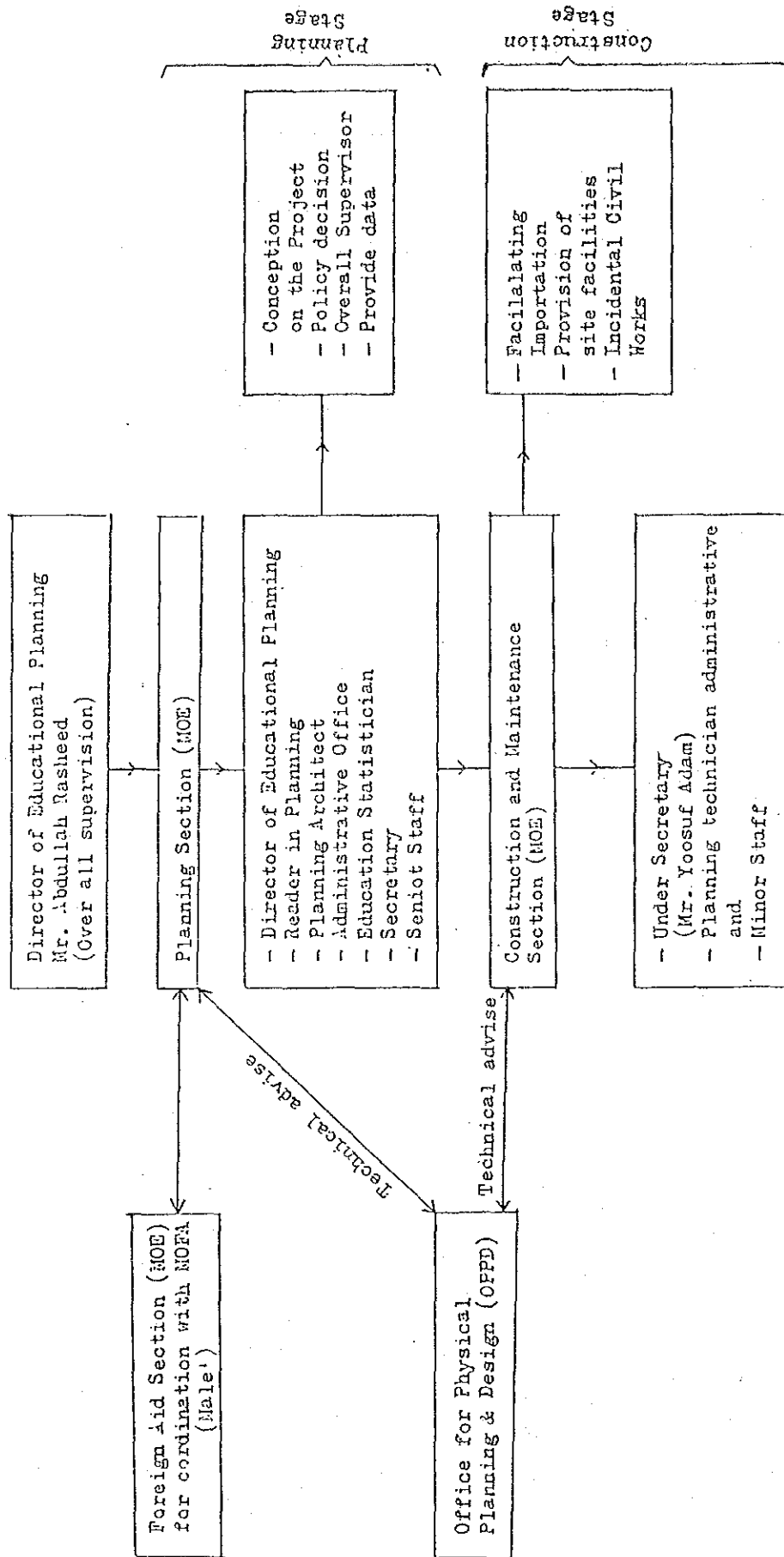
The Ministry of Education takes full responsibility for the administration of the school after completion of the Project, and the yearly budget is guaranteed by the Government of Maldives. The fiscal year of Maldives starts on January 1 and ends on December 31 every year. Each school requests its annual budget through the Ministry of Finance on or before August 1 of the previous year. The Government is determined to fully guarantee the annual budget for proper administration and maintenance of the schools.

Expenditure on primary and secondary education
as compared with the government budget
(from Educational and Human Resource Development Plan 1985 - 1995)

	1985	1990	1995
G.D.P	Rf 576,700,000	Rf 887,300,000	Rf 1,365,300,000
Annual expenditures of the Government (GDP x 24%) (A)	Rf 138,400,000	Rf 213,000,000	Rf 327,700,000
Primary education (first to seventh grades) (C)	Rf 12,500,000	Rf 24,200,000	Rf 549,200,000
Secondary education (eighth to tenth grades) (D)	Rf 2,200,000	Rf 3,600,000	Rf 5,800,000
Total (million Rf)	Rf 14,700,000	Rf 27,800,000	Rf 55,000,000
Ratio to the Govern- mental budget			
Primary education $\frac{C}{A}$	9.0	11.4	15.5
Secondary education $\frac{D}{A}$	1.6	1.7	1.8

1 Rf = ¥14.73

Organization for the Project



3-3-2 Basic Concept

Primary schools in the Republic of Maldives are the base of the educational administration as well as cultural and social centers. Therefore, the construction of primary schools requires broad consideration to secure both of the above functions. This project provides an excellent environment for the seven years of primary education and cultural activities for the society.

Since the project site is rather confined and there is not sufficient room for a playground, it is advisable to provide some quiet space like a patio surrounded by buildings with a cool environment shaded by buildings and trees to avoid strong sunlight during the daytime.

3-3-3 Location and Conditions of the Project Site

A) Location and area

The project site is located in the southeast of Male (Henveiru District) and is a block of 60 x 60 m dimensions under the New Urban Plan, surrounded by roads on each side. The southern side of the site faces a road running east to west which will be the main road in this district in the future, and electric poles have been built along this road. The southern side of the road is planned to be a large park facing the ocean, thereby giving the project site an excellent environment. Unfortunately, the park site was considerably damaged by the record high tidal waves in April 1987, but it is expected to be recovered soon.



(Photograph of the project site)

B) Outline of the climate

The Republic of Maldives belongs to the tropical monsoon climate peculiar to the Indian Ocean. The average atmospheric temperature ranges from 26° to 29°C throughout the year, indicating little change. The atmospheric temperature rises to around 30°C during the daytime, with a relative humidity of about 80%. The annual precipitation is approximately 2,000 mm, the majority of which is concentrated in the rainy season from May to October. It usually rains most heavily in October, when monthly precipitation records 300 mm or so. The largest daily precipitation in the past was 176 mm/day. Unlike the tropical squall, the characteristic pattern of precipitation in the Republic is intermittent rain for about a week. The number of days with precipitation during the rainy season is approximately 20. In male, average atmospheric temperature during the daytime is 30°, and average relative humidity is 78%, with annual precipitation of approximately 1,900 mm.

C) Ground

As a result of the boring and plate bearing tests conducted in the secondary field survey, it was confirmed that the ground at the project site possesses a ground bearing capacity of 8 to 11 tons/m², sufficient for the construction of three-storied concrete buildings. However, the layer from the ground surface to a depth of 1 m is a gravel layer containing refuse. It is necessary, therefore, to fully remove this layer within the construction site and replace it with good sand.

Data of boring and other tests are shown in Attachment No. 500.

D) Groundwater level

The groundwater level is quite shallow throughout Male, not only at the project site which is reclaimed land, but also in other locations. Groundwater appears at 60 to 100 cm from the ground surface. Sometimes at high tide in the rainy season, some roads in Male are flooded to about 10 cm deep. It is necessary, therefore, to add an earth fill about 60 cm high from the road surface when constructing a building on reclaimed land. (Filling expenses will be borne by the Government of Maldives.)

E) Present status of infrastructure

1) Power

Power supply is 50 kVA, 400 V, 4-wire, and 50 Hz. An electric pole has been built at the southern part of the project site. Since the total power requirement for this project is approximately 80 kVA, it is necessary to secure the balance from the power station about 1 km from the project site.

2) Water

Nothing is more important in the Maldives than to secure water. Groundwater contains so much salt that it is not potable. Well water is required for such purposes as flushing toilets. One of the key points in the design is how to collect rainwater and how to store water which may be used for drinking. Public buildings which have a large roof area are responsible to the whole society in this sense. It should be duly considered how to contribute water to the neighboring society as well as to the school itself during the dry season. The survey period of this project happened to be during the season with an extreme water shortage, and it was often seen that families were waiting in a queue to obtain a small amount of water from the public reservoir.

3) Drainage

Construction work on sewage draining facilities throughout Male is a large-scaled project and is now under way with the assistance of the Government of West Germany. It is expected to be completed by the end of 1987. House inlets for drainage have already been embedded adjacent to the project site. When these facilities are completed, all the households in Male will share in their benefit, thereby rapid improvements are expected from the point of hygiene.

When the high tidal waves did damage to Male, marine water adversely entered the work sites and damaged the drainage system under construction. All the damaged portions have been repaired and the work is proceeding toward the expected completion date. It is understood that the main drainage pipe will be serviceable by December 1988 when the construction work on this project will be completed.

3-3-4 Outline of Facilities and Equipment

As a result of studying and analyzing the details of the request, the primary school to be constructed under this project in Male, the Republic of Maldives should be outfitted as listed below:

A) Buildings

- 1) Classrooms 28 x 53.0 m²

Four classes per grade x 7 grades = 28 classes

Based on 36 students per class with some allowances.

Two document lockers because of the two-shift system

- 2) Library 1 x 82.0 m²

Open system.

Should include a stack room

- 3) Music room 1 x 70.0 m²

Due consideration should be given to the control of noise.

Should include an instrument storeroom.

- 4) Science room 1 x 82.0 m²

Sufficient space should be reserved for a preparatory room.

Should preferably be situated on the ground floor so that water supply and drainage facilities may be provided.

- 5) Practical Arts room 1 x 70.0 m²

Due consideration should be given to natural illumination.

Should include a preparatory room and a storeroom.

- 6) Player room 1 x 65.0 m²

Should be provided on the ground floor and be separated from classrooms so as to avoid noises.

The prayer room is required for giving religious education, but it should usually be employed as a playroom or a preparatory room.

- 7) School hall 1 x 410 m²

Should contain 500 movable chairs and be equipped with a room for keeping these chairs, a stage, a waiting room, a room for storing physical training equipment, and a projector room.

- 8) Toilets 6 x 43 m² & 48 m²

Should be separated for male and female use.

Customs prevailing among the Maldivian people should be observed.

- 9) Corridor

Should be designed to be wide.

B) Educational facilities and Equipment

Among the large variety of educational facilities and equipment requested by the Republic of Maldives, books for the library will not be included in this grant aid because they are not suitable for the objectives of the grant aid program.

- 1) Ordinary educational facilities and equipment
- 2) Facilities for practical training
- 3) Musical educational facilities and equipment
- 4) Emergency and medical room facilities and items

These facilities and instruments have been selected by fully studying the details of the request made by the Government of the Republic of Maldives and by considering the scale and the number of students in the school.

Details of the facilities and equipment are listed in Section 4-3-3 "Equipment Plan".

CHAPTER 4 BASIC DESIGN

CHAPTER 4 BASIC DESIGN

4-1 Design Policy

As described in Paragraph 3-3-2, Basic Plan, the building to be constructed under this project will not only be used as a primary school but will also serve as a social and cultural center in the Republic of Maldives. In view thereof, particular emphasis should be placed on the following considerations.

- 1) Seeing that the school, after completion, will be used for various purposes, it should be a primary concern that the school can be operated and maintained at minimal cost.
- 2) The construction of the school should reflect the local architecture to a reasonable extent, and should be simple and solid. Structural damage should be locally repairable.
- 3) The construction site being reclaimed land, the foundation should be made for maximum safety and solidness.

4-2 Examination of Design Conditions

The school is to be built with 100% imported materials, and will stand along the shore at an average annual atmospheric temperature of 30°C. These conditions require the following considerations for its construction.

- 1) The school structure should permit good natural ventilation.
- 2) The school should be sufficiently capable of withstanding southeast seasonal winds.

- 3) The school should stand elevated above the level of seawater at full tide.
The first floor level should be 100 cm above the road level.
A tidal seawall should be constructed, as a part of the construction of the school, along the contour of the premises of the school.
- 4) Consideration should be paid to possible damage from salt. The reinforced concrete foundation, in particular, which will be exposed to saline underground water, should be constructed of reinforced thickly covered concrete. Use of water proofing compound will be necessary.
- 5) Rainwater is the only source of drinking water for the people of Maldives. The water tank the school is to have should not only be capable of supplying water to the students but also be of a size capable of contributing to the needs of the community.
- 6) Building materials to be used should be as simple as practicable. No special materials should be used.
- 7) Maldivian children are unaccustomed to stairs. Utmost care should be paid to the design of the stairs handrails as well as to the windows on the second and third floors to prevent pupils from falling accidents.
- 8) The Republic of Maldives having no detailed building regulations, those of Japan should be used for reference.

4-3 Basic Plans

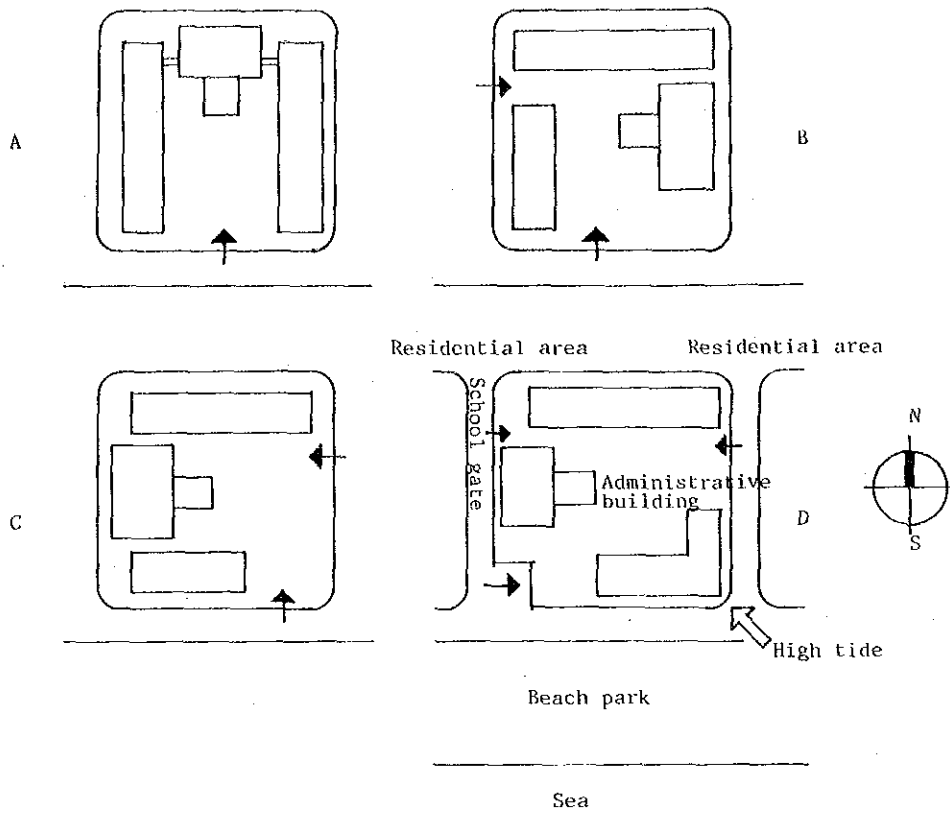
4-3-1 Arrangement Plan

On the relatively small 60 m x 60 m area of the school site, it is desirable that the playground be as large as possible, but the present circumstances of the site do not justify a many-storied school building.

The maximum number of stories of every building included in the Project should be limited to 3, and there should be two separate classroom buildings for the following reasons.

- 1) The ground being reclaimed land, the design of buildings on it must consider the strength of the ground.
- 2) Maldivian children having no social habit of using staircases, the danger of high buildings must be minimized.
- 3) Architecture and the term of construction work must be taken into account.

Quite important are consideration of the ground strength and high tides. In Maldives, no winds have ever exceeded the maximum instantaneous velocity of 30 m/sec, comparable to typhoons in Japan. Also in Maldives, it is common sense in view of the sunshine that general buildings have walls on their east and west sides with no large openings. When we compare arrangement plans A, B, C and D shown below, Plan D is considered most suited for the site as evaluated in table.



	A	B	C	D
Ground strength (differential settlement)	x	x	o	o
Resistance to monsoons	x	x	x	o
Protection against high tide	x	x	x	o
Back gate for pupils	x	o	o	o
Overlook from administrative building	o	o	o	o
Main entrance for cars, etc.	o	o	o	o

The results of the detailed investigation made of the site ground after actual damage by high tides indicate that the ground has sufficient strength to sustain a threee-storied concrete building on it.

It would be prudent to separate each of the classroom buildings and the school hall, placed in parallel with the coastline. All seasonal winds are southeast. One classroom building should preferably be located in an L shape in the southeast corner of the site so that its south and east sides can serve as windbreaks to protect the court and the administrative building against the thrust of winds.

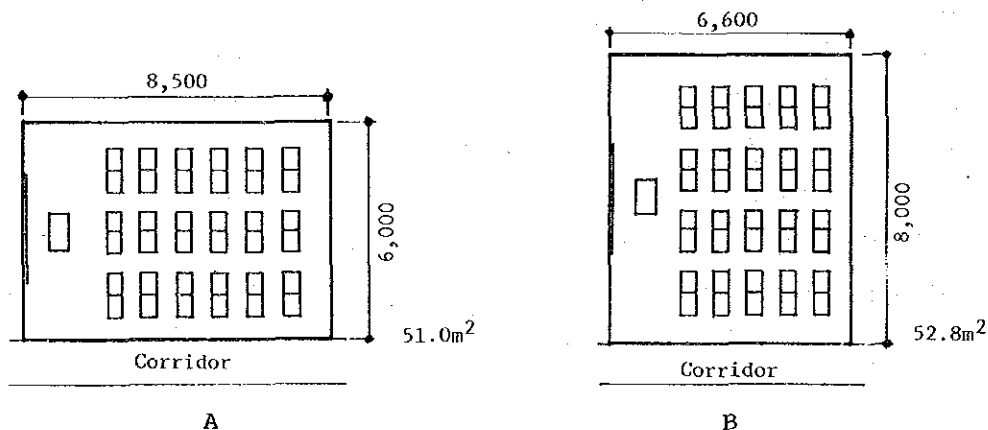
Maldivian building regulations permit the construction of buildings to cover the full site to its borders. Therefore, as an important arrangement, an embankment can be constructed along a part of the borders to prevent seawater from entering the school premises at high tides.

4-3-2 Building Plan

A) Plan Arrangements

Classrooms

The size of classrooms is a basic factor affected by the available area of the site. The size is determined not only by the number of pupils but the arrangement of desks as well. In Figs. A and B shown for comparison, Plan A covers 51.0 m² to accommodate 36 students, while area B 52.8 m² and 40 students. The ideal number of students per class proposed by the Government of Maldives is 36, but the capacity of a classroom will naturally need to accommodate an extra few students in preparation for the probable increase in number in the future. Plan B can accommodate the fixed number of 36 students plus an extra four.



Also, when the corridor/classroom area ratio and the possibility of how many classrooms can be contained in the limited site area extending 60 meters on each side are considered, Plan B offers much higher efficiency.

Thus, the classroom design under the Project is characterized by large column spacing of 8,000 mm x 6,600 mm, and an equally quartered size on either side of 2,000 x 1,650 mm is decided as a module for the plan arrangement.

School Hall

The school hall designed under the Project has a stage and 500 seats. As this hall will usually be used as a playground or an athletic field, storage is necessary for housing the 500 seats and sports equipment in.

This hall will also be used as a community center for the local people and, therefore, will need to be equipped with a simple kitchen and utensils for serving tea or something.

While the school hall cannot be spacious enough to permit the play of full-scale sports, it should be usable by primary school children as a playground for ball games.

The school hall will have a floor area of 311 m², excluding the stage and the storeroom. The area of the 500-seat place of assembly, calculated at a rate of 0.5 to 0.6 m²/student (seat), becomes 250 to 300 m².

For reference, the areas of the school halls of the existing primary schools in Male are 220 m² and 270 m².

Considering that the expected total number of students in this school with the double-shift system is about 1,800 to 2,000, the said area of the school hall having 500 seats is minimal.

Library

Located on the first floor, the library will have a bright, open atmosphere. The space design will provide an area of 2.5 to 3.5 m² per reader (as per Japan Architectural Design Data). Bookstacks will be mostly of the open type for easy use by primary school children. Securing a space for storing books and a guidance teacher's corner within the library should be considered.

An area of about 13 m² will be provided for bookstorage. The reading space will have a comfortable atmosphere, leading to an exterior terrace, and covering a floor area of about 69 m² excluding the terrace.

Science Room

In view of the necessity of water supply and drainage equipment for experiments, this room will be on the ground floor. Its area will be 1.3 times that of a general classroom, and a preparation room of about 12 m² will be necessary.

Music Room and Practical Arts Room

Each of these two rooms will have an area of approximately 1.3 times that of a general classroom. A preparatory and storage room of 6.5 m² will be necessary.

School buildings consisting of classrooms of the same size often tend to have a commonplace box style. Special schoolrooms having functions different from those of general classrooms can be treated in a special manner in this sense as well as in terms of location. As a symbolic feature of this school, these two rooms will be specially designed and located on either side of the second floor.

Prayer and Playroom

The prayer room is essential for Islamic education. This room, from which loud prayers from the Koran will emanate, must be away from the classrooms and teachers' room. Having the size of 8.0 x 8.0 m = 64 m², this room will be located on the ground floor, near the rear entrance.

When not used for prayers, this room may be used as a preparation room, playroom or small athletic room.

In the rainy season in Maldives, there will be squalls almost every day, and rains will sometimes last long. An indoor space for pupils to have gymnastic exercises or to play during recesses is very valuable. This room will not be furnished with religious ornaments or an altar, just as general classrooms.

Offices

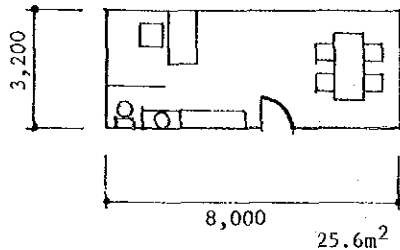
Principal's Office:

The principal's office, consisting of a principal's work space and a parlor space, is externally the most important part of the school, and should be as spacious as possible. It will be equipped with a washroom for visitors. A floor area of at least 25 m² will be necessary.

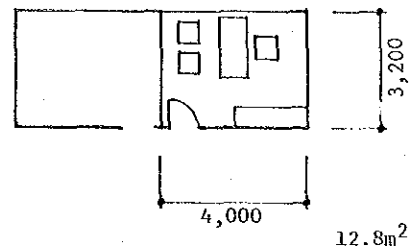
Assistant Principal's Offices:

Two assistant principal's rooms are necessary for the two-shift system. A simple parlor space as illustrated below is necessary. These two rooms, as well as the principal's office, should be at locations commanding as full a view as possible of the entire school for control and supervision.

Principal's Office
1st Floor



Assistant Principal's Office
Ground Floor



The areas of the single rooms for senior teachers at the existing primary schools in Male average 12 to 20 m².

Teachers' Office:

The number of teachers, including both homeroom teachers and assistant teachers, is about 50. Because of the double system, all desks and other furniture excepting those for the senior staff are for common use.

To secure one desk for each teacher, a fairly large space of 50 x 2 m²/teacher = 100 m² is needed, but a space something like an anteroom will suffice for assistant teachers.

A sufficient space for handling and the orderly filing of documents will be necessary.

General Office, Medical Treatment Room, etc.:

An area of 24 m² is required for a general office for clerks to handle operational, managerial, accounting and general affairs. In addition, a first aid and medical treatment room having an area of 11 m², a simple kitchen, storerooms, and a janitors' room will be needed.

Corridors, Staircases, Lavatories, Washstands, Drinking Fountain

Corridors are important spaces as sun-shaded areas and as areas for pupils to play in during recesses. The outer sides of these 2 m-wide spaces need not be fitted with windowpanes, but these spaces are indispensable as intermediate areas between the outdoors and the indoors.

Staircases must be safe and must not be steep.

Maldivian children are not accustomed to staircases in their daily lives, and this will be the first experience with them for many of the lower grade pupils. Staircases designed for bidirectional escape in emergencies will be provided.

A lavatory, well ventilated, designed to suit Maldivian custom, and having separated boys' and girls' sections, will be provided for each floor.

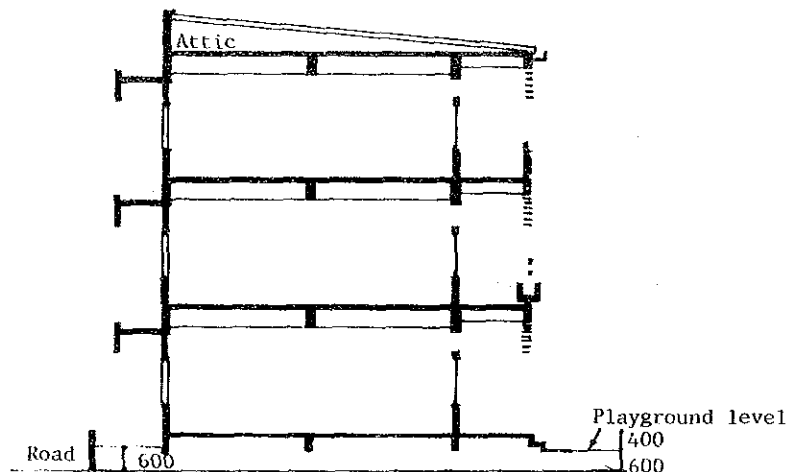
Water Tank

Maldivians depend solely on rainwater for their drinking water. A water tank to store rainwater need not be of a large size if it has only to satisfy the needs of the school. In Maldives, however, public facilities, particularly those buildings having a large roof area like this school, have a responsibility to have water tanks of sizes commensurate with the rainfall on their roofs.

The school under the Project will have a water tank having a capacity of about 200 tons to supply water for the school as well as to fulfill its social responsibilities.

B) Section Design

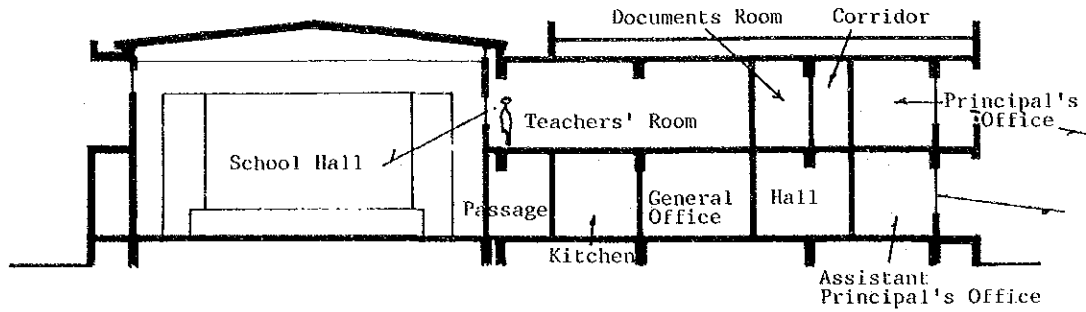
In order to secure adequate space for the required number of classrooms within the limited available area of the site, 60 x 60 m, it is necessary to construct three-storied classroom buildings. The idea of having a two-storied classroom buildings. The idea of having a two-storied building for the lower classes would inevitably result in a four-storied one for the higher classes, and had to be given up. Two, three-storied classroom buildings, therefore, will be constructed.



The administrative building will be two-storied to leave as large a space as possible for the playground.

The school hall, which is not intended to be solely a lecture hall but is intended to serve also as a play room and a small athletic room when it rains, will have a double-layer ceiling. In view of the added functions of this hall, the design will permit observation of the inside of the hall from the second floor of this building as illustrated below.

In view of the high natural atmospheric temperatures year-round, the ceilings of all the rooms in this building will be higher than those of general rooms to permit maximum natural ventilation.



C) Structural Design

1) Basic Considerations

- a) Structures suited for the sizes, types and uses of the buildings should be adopted.
- b) The structures should be designed with the local material supply situation, labor force levels and architecture fully taken into consideration.

2) Design Policy

a) Building Framing

In view of the local climate, site area and site geology, the buildings will have a rigid, reinforced-concrete, three-story frame. The roof will comprise a wooden roof truss structure formed on a concrete slab, and vinyl-coated, PCR (polyvinyl chloride resin) corrugated steel sheet will be used.

b) Foundation

As a result of the boring tests, the ground of the site is known to be a strong coral reef covered with a 1 m-thick surface layer of soil.

3) Foundation Work

The primary school site was formerly a seashore area and is now reclaimed land covered with filled earth. The filled earth consists principally of sandy soil mixed with coral gravel. Below the surface soil, in the locations PL-3 and PL-4 (Appendix 5), the filled earth is seen to contain a 0.6 to 1.0 m thickness of cloth pieces, plastic chips, bottles and other refuse. The average depth of the filled earth is estimated at 1.0 to 1.5 m. Although the land surface is compact, the soil below the surface is considered to be irregularly filled.

Laying the foundation directly on the less-compact, irregular filled earth is to be avoided in view of the possibility of differential settlement of the land in future.

Assume that the foundation width is 1.6 m, the weight of the building per story is 1.2 tons/m², the building has 3 stories, and column spacing is 6.0 m. Then, the load pressure (P) upon the latticed strip foundation is:

$$P = \frac{1.2 \text{ t/m}^2 \times 3 \text{ (stories)} \times 6 \text{ m} \times 6 \text{ m}}{6 \text{ m} \times 1.6 \text{ m} + (6 - 1.6) \times 1.6} = 7.8 \text{ tons/m}^2$$

The design load pressure of about 8 tons/m² will cause no problem in particular. Since the load pressure will be reduced to approximately one-fifth at a depth of about 5 meters below the bottom of the foundation, the bearing force of the soil below the bottom will be sufficient even if it should comprise a fine sand layer of about 30 in N value. The possible ground subsidence will also be negligible, though it may need to be determined by calculations.

4) Corrosion of Concrete

The total SO_3 content of the soil is 0.2 to 0.33%, and that of the water is 0.53 to 0.77 g/liter. Based on these figures, a minimum of 330 kg/m^3 of cement at a maximum water/cement ratio of 50% is required for the foundation, when an ordinary grade of portland cement is used. Similarly, when a sulfate-resistant (acid-resistant) cement is used, a minimum of 280 kg/m^3 of cement needs to be used at a maximum water/cement ratio of 55%.

5) Test Pit Water

The Cl concentration in water samples from the test pit is as high as 5.5 to 7.5 g/liter (= 5500 to 7500 ppm), disqualifying the water for use in reinforcement concrete. Water from a well in a central part of Male will be used.

D) Equipment Design

1) Electrical Equipment

a) Power Receiving and Distributing System

At a northwest part of the premises will be located an electrical room to house low-tension power receiving and distributing boards, from which power will be distributed to the buildings.

The power will be received at 304W, 400W/230V, 50 Hz.

The power capacity required for the school will be approximately 80 kVA.

b) Power Supply System

Part of the power supply is for the operation and control of the equipment for supplying drinking water and water for other purposes.

c) Lighting Equipment

Lights used at the school will mostly be fluorescent lamps. The lighting fixtures in rooms having a ceiling will be mounted directly under the ceiling, and those in rooms having no ceiling will be suspended with pipes.

The standard intensities of illumination will be as follows.

Classroom	300 to 400 Lux
Music Room	300 to 400 "
Library	300 to 400 "
Science Room	300 to 400 "
Practical Arts Room	300 to 400 "
Prayer Room	250 to 300 "
School Hall	250 to 300 "
School Personnel's Room	350 to 400 "
Corridor	30 to 50 "

d) Plug Receptacles

General plug receptacles or sockets as power supply outlets will be provided in the necessary locations. Each experiment desk will be equipped with an electrical outlet for experiments.

An outlet solely for an air conditioner will be provided in the teachers' room and the general office in preparation for future possible installation of an air conditioner.

e) Ceiling Fans

Ceiling fans will be installed in the classrooms, special classrooms, school personnel's rooms and school hall.

f) Telephone System

Telephones will be provided for the principal's office, the assistant principal's office, teachers' room, and general office.

g) Public-address Equipment

A public-address system will be installed to broadcast general information within the school, to broadcast chimes indicating the beginning/end of classes, and to provide loud speaker capability for the school hall.

Amplifying equipment will be installed in the school personnel's rooms for the control of broadcasting to the classrooms, special classrooms, school personnel's rooms, school hall, and court.

2) Water Supply and Drainage Equipment

a) Drinking Water Supply System

Rainwater is the source of drinking water in maldives. This project will also depend on rainwater for the drinking water source.

From the northern classroom building, administrative building and school hall building that constitute one block, and also from the southern classroom building constituting another block, rainwater piping (drinking water source piping) will be laid to a concrete water reservoir of the respective block, from which water will be pumped up into elevated FRP water tanks for the buildings. By gravity, water will be distributed to the necessary water taps. For easy workability and resistance to salt, hard vinyl pipes will be used.

b) Miscellaneous Water Supply System

To supply miscellaneous water, two wells will be drilled on the premises of the school; one for the northern classroom building and the administrative building, and the other for the southern classroom building. From each well, water will be pumped up to an elevated FRP water tank for distribution by gravity to taps. Hard PVC pipes will be used for the piping.

c) Drainage and Ventilation Systems

The drainage system will be designed to make both sewage and other miscellaneous waste waters flow through the same sewer main running underground along the road to the north of the school site. Ventilation will be effected by a loop vent system, and hard PVC pipes will be used for the drainage and ventilation systems.

d) Sanitary Ware Equipment

Sanitary ware suited to the living customs of the natives will be provided.

e) Gas Equipment

The kitchens for the school personnel will be equipped with LP gas steel cylinders and gas burners.

E) Planning of Building Elements and Materials

In the planning of the building elements, primary consideration must be given to the weather conditions of Maldives and the environmental requirements for the interior and exterior arrangements of the buildings.

For the planning of the buildings which are to stand contiguous to the sea and are subjected to high temperatures, the effects of the sun, winds, rain and salt upon the buildings must be considered first.

With design priority given to the ruggedness of the buildings, selection will be made of suitable elements, structures, materials, equipment and systems.

1) Roofs

Rainwater is a vital source of drinking water for the people of the country, and it is a mandatory requirement that buildings sanitarily collect the maximum possible amount of rainwater in their water reservoirs.

Solar radiations in Maldives are much more intense than that of Japan. To protect the buildings from such intense radiant heat, the top of each building will be covered with a horizontal layer of concrete slabs, and a sloped roof will be placed on the slabbed top to form between them a small attic, an air-filled plenum, to serve as a heat insulator. This plenum can also serve as a sound absorber in case of torrential rains and, furthermore, can be conveniently used for collecting rainwater.

For the maximal collection of rainwater, effective means will be employed, including the use of vinyl-coated, long steel panels and the use of rainwater pipes that have a sufficient capacity to handle even a large volume of rainwater suddenly falling at a high steady rate.

2) Outside Walls

Materials having a high resistance to heat transmission will be used to deal with intense solar radiations. Large eaves will be provided for maximal shielding from the direct sun.

While the sun shines from almost directly above in the daytime, the sunbeams come at an angle in the morning and evening. The buildings should be oriented east-west so that the rooms of the buildings will not be exposed to the morning and afternoon sun.

That part of the building up to 1 meter from the road level must not be made of brickwork but must be of concrete construction so that it can firmly withstand floods during full tides or high tides in rainy seasons.

3) Building Materials

Materials for reinforced concrete buildings in Maldives cannot but depend entirely on overseas sources. For this school, such materials will be imported from Singapore or Sri Lanka. The selection of proper materials from appropriate sources is an important consideration since it can affect construction costs and the term of the construction work.

a) Structural Materials

The main framing will have a reinforced concrete structure, and the inside and outside walls will be constructed of concrete blocks.

b) External Finish

Roofs : Sloped roofing of P.C.R. corrugated steel sheet placed over the concrete-slab.

Outside Wall: Mortar-finished, and paint-spray finish.

Sashes : Aluminum, wood

c) Internal Finish

Floors:

Colored cement mortar ----- General classrooms, science room, corridors, staircases

Vinyl floor sheets ----- Practical arts room, music room, school hall, administrative offices

Synthetic-fiber carpets ----- Library, principal's office, assistant principal's offices

Walls:

Mortar, coated with paint --- General classrooms, special
classrooms, rooms in
administrative building

Rockwool acoustic board ----- Music room

Flooring ----- School hall

Ceilings:

Rockwool acoustic board ----- Libarary, music room,
principal's office,
assistant principal's
room, school hall

4-3-3 Equipment Plan

The education given at this primary school must be supplemented by appropriate educational equipment.

The curriculum contemplated for the seven-year education at this primary school is fairly complicated, and the selection of equipment and components must be made flexibly to meet variations in quantity and size. Some of the educational materials requested by the Maldivian side include those extracted from American and European catalogs and photos, and appear to be inappropriate in this case in the light of the present situation or may not be easily replenishable.

All educational equipment and materials have been limited to those produced in Japan. In their selection, durability and the availability of backup supplies for keeping them in working order are taken into consideration.

Desks for pupils must be suited for the different body sizes of first-year to seventh-year pupils. Wooden desks, if employed, must be supplied in at least 3 or 4 different sizes, are inevitably heavy if they are to be built rugged, and will not therefore be easily movable. By contrast, chrome-plated steel desks for pupils, adjustable to 6 different sizes, are lighter in weight, sanitary, and are less liable to break. They are available at nearly the same price as wooden desks.

Although not completely impervious to damage by salt, chromeplated steel desks have a fairly high resistance to corrosion by acids. Considering the heaviness of wooden desks if built strong and their liability to break if made light in weight, Maldivian educators also prefer the adjustable height chromeplated steel desks. Since they are for primary education, desks of general grade, not of high grade, will be supplied.

P. E. EQUIPMENT

No.	Item	Quantity
EA- 01	Short ropes	50
02	Long ropes	15
03	lloops	50
04	Small bats	15
05	Softball bats	10
06	Basket	1
	Bean bags	1set (100)
07	Nerf balls	40
08	Small balls (rubber)	10
09	Basket balls	30
10	Volley balls	10
11	Witches hats	10sets (50)
12	Skittles	3sets
13	Quoits	6sets
14	Color braids	40
15	Whistles	5
16	Boxes	2
17	Mats (large)	15
18	Mats (small)	50
19	Benches	10
20	Trampetter and spring cover	1
21	Pump-Inflations	5
22	Frisbies	40
23	Volleyballs (rubber)	20
24	Iron Bar (High)	1
25	Iron Bar (Low)	1
26	Ball boxes	4

P. E. EQUIPMENT

TEACHING AIDS

No.	Item	Quantity
EA-27	Record board	1
28	High stand & bar	1set
29	Basket-ball goal	1set
EB-01	General purpose scales	5
02	Basic adjustable and counter balance scales	5
03	Hook spring balance	5
04	Set of brass masses (weights)	5sets
05	Measuring & comparison rods set	10sets
06	Learners metric measure set	10
07	1 Meter graduated paper	100
08	Square meter tiles :calibrated	1set
09	Plastic grids for area work	5sets
10	Geometrical shapes in cm Multiples	5sets
11	Areawork with square cm	5sets
12	16" Political globe	3
13	12" Physical raised relief globe	3
14	Ocean features and land mass globe	3
15	Chalk-markable outline globe	3sets
16	Markable cloth maps-world	3
17	World Map with wood rack	3
18	Individual map of Asia, Europe Africa, Australia, N & S America	2sets
19	Solar system planet model	1
20	Solar system simulator	3sets
21	Illuminated orbiter	1
22	Elementary microscope	2sets
23	Primary science kit	1

TEACHING AIDS

No.	Item	Quantity
EB-24	Geo-fix project globe	1
25	Wall Thermometer	5
26	Hand magnifiers	20
27	Aneroid barometer	2
28	Day & night Max & Min thermometer	3
29	Rain gauge kit	2
30	Plastic volume cubes	2sets
31	Cubic centimetre plastic cubes	3sets
32	Metric aluminium liquid measures	3sets
33	Plastic funnel	5
34	Jug and funnel	5sets
35	Multi-shape litre set	10sets
36	Clock face rubber stamps	100
37	Duplex geared clock face	5
38	Sand glass timer	2
39	Digital stop watch	4
40	Heur traditional stop watch	4
41	Variform inset placing trays	2sets
42	Plastic templates	20
43	Geometric model set	5
44	Structuring and appreciation of symmetry activity kit	2sets
45	Giant transparent, circular protractor	3sets
46	Geo-fix solid geometry construction	2sets
47	Visual fractions apparatus	5sets
48	Unifix terminal cubes	2sets
49	Unifix cubes different colours	10sets

TEACHING AIDS

No.	Item	Quantity
EB-50	Centicubes (various colours)	5sets
51	Paragon counting frames	5sets
52	100 Peg board of pegs	5sets
53	Pattern recognition, sorting and grouping material	2sets
54	Alphabet pictures and sounds teaching cards	5
55	Pictorial rubber printing stamps	5sets
56	Group material storage box	5
57	Letter tray	15
58	powder colours	5sets
59	Radial trays for painting	5sets
60	Bucket and design pallet	5sets
61	Duplex mounting and modelling board	48
62	Craft and modelling paper	400
63	Textured art paper	50sets
64	Modelling tools	40sets
65	Modelling clay	40
66	Wood block	40
67	Rotary paper trimmer	5
68	Mat cutter	5
69	Balance beam	5
70	Classroom film strip projectors	1
71	Overhead projector	1
72	Portable cassette tape recorder	2sets
73	Foam balls	5sets
74	Chalk board compass	5

TEACHING AIDS

MUSICAL INSTRUMENTS & ACCESSORIES

No.	Item	Quantity
EB-75	Chalk board drawing set	2sets
76	Colour TV and VHS VCR	1
77	Stereo	1
78	Screen	2sets
EC-01	Side drums with cross belts and sticks	4sets
02	Tenor drums with cross belts and beaters	4sets
03	Bass drums with cross belts and beaters	2sets
04	Melodicas	16
05	Melodicas (large)	4
06	Cymbal	2sets
07	Mouth organs	40
08	Small piano accordians	2
ED-01	Triangles with beaters	12sets
02	Tamborines	20
03	Clappers	8sets
04	Pairs shakers	6sets
05	Bells	12sets
06	Cymbals (small)	4sets
07	Cymbals (large)	1
08	Xylophone	1
09	Mini organ	1
10	Piano	1
11	Organ	1
12	Recorders	3sets
13	Metronome	2

EQUIPMENT AND SUPPLY FOR FIRST AID BOX

No.	Item	Quantity
EE-01	First aid box	1
	(contents)	5
02	Eyesight test chart	1
03	Scale (sitting height)	1
04	Scale (weight)	1
05	Scale (height)	1
06	Tonometer	1
07	Stethoscope	2sets
08	Mouth gag	2
09	Kidney tray	2sets
10	Urinal	1
11	Strecher	1
12	Clinical thermometer	1sets (50)
13	Measure	5
14	Storage box (chemical)	1
15	linen set	2sets (6)
16	Anatomical chart	1

EQUIPMENT AND SUPPLY FOR FIRST AID BOX

No.	Item	Quantity
EE-17	Hurdles	20sets
18	Portable car	1
19	Duplicator	1
20	Paper cutter	1
21	Stapler	1
22	Key cases	3
23	Business kitchen	1
24	Video	1
25	Spot lights	2
26	Lower horizont lights	4
27	Stethoscope	1
28	Nail clippers	2
29	Mattress	3
30	Pus trays	1
31	Soap dish	1
	Soap dish stand	1
32	Pincettes	2
33	Scissors	2
34	Scissors for surgery	1set
35	First aid box (large)	1
36	Cotton roles	24
37	Gauzes	2
38	First aid bandages	3
39	Splints	3sets
40	Clinical thermometers	2
41	Bowles	2
42	Clothes basket stands	2
43	Tape	3

MEDICINES

No.	Item	Quantity
EF-01	Surgical sprit	26
02	Crape bandage	2
03	Air salompus (spray type)	24
04	Plaster	20
05	Flame lotion	26
06	Optrex eye lotion	5
07	Visine eye drops	24
08	Band-aid	2
09	Burnol	12
10	Aspirin	6
11	Glycerin	15
12	Ethyl spray	24
13	Soap	24
14	Towels	24
15	Towels (small)	12
16	Itchy lotion	24
17	Insect spray	24

4-3-4 Basic Design Drawings

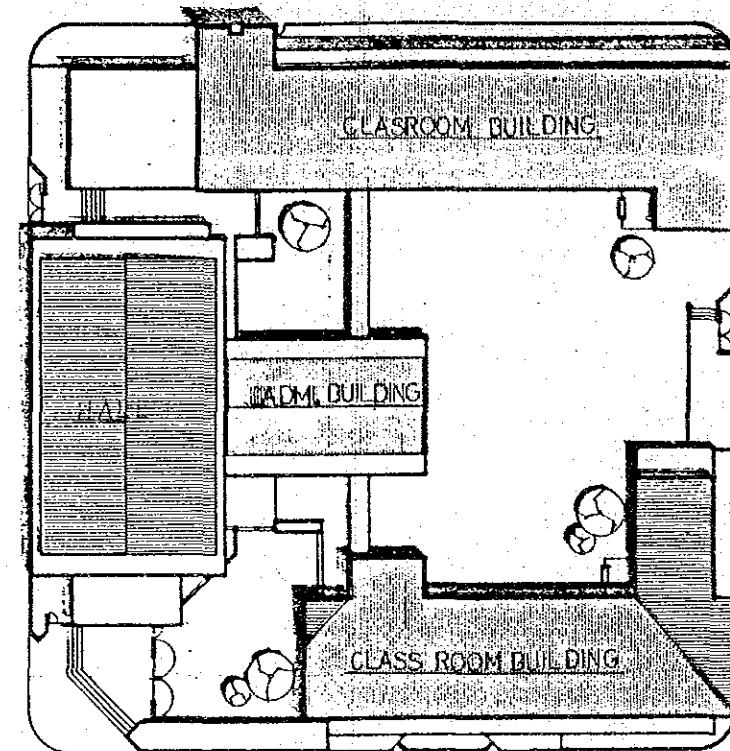
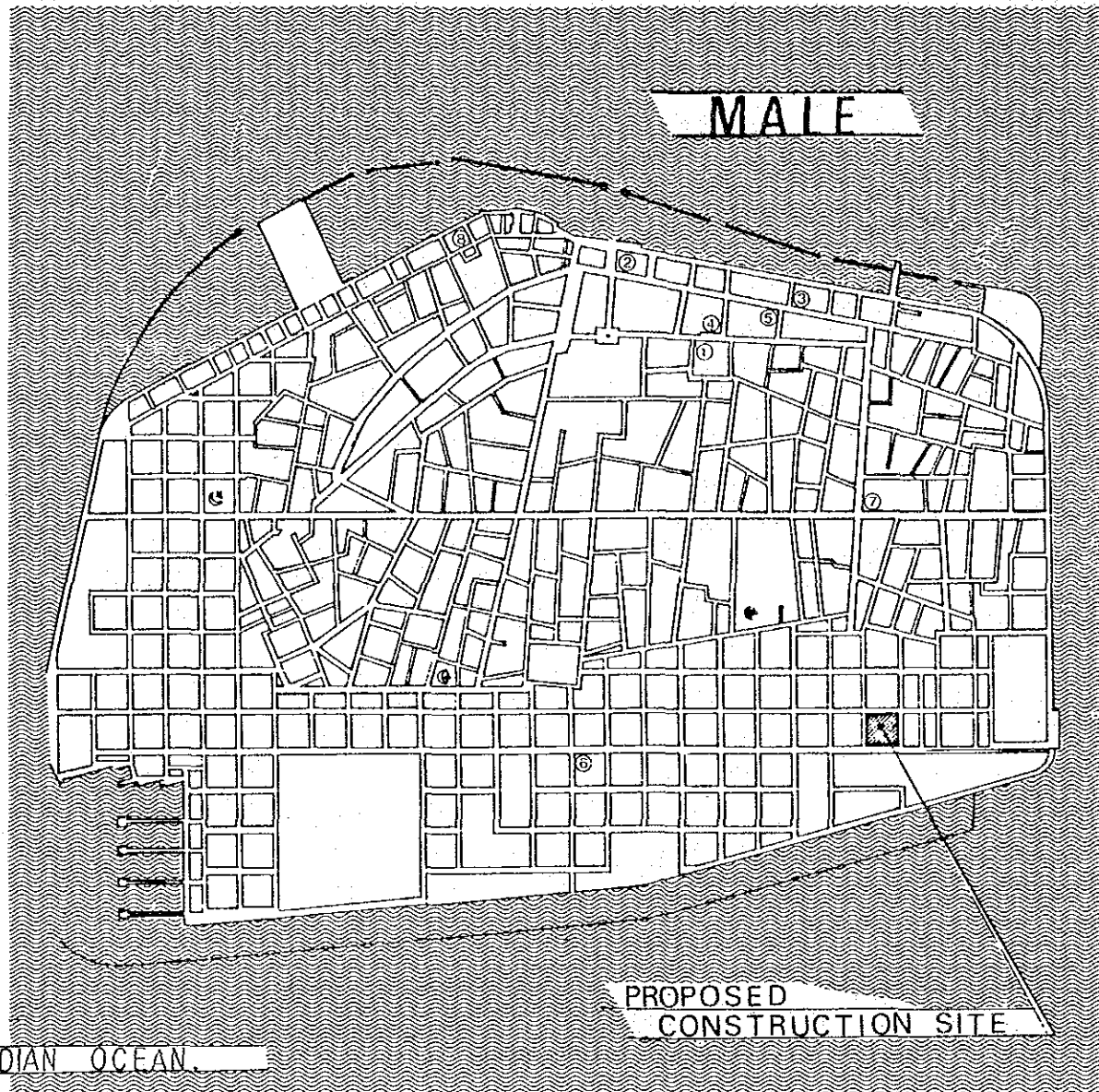
SITE PLAN

FLOOR PLAN

ELEVATION

SECTION

FURNITURE LAYOUT PLAN



BUILDINGS TOTAL FLOOR AREA 3,870.255 m²
 NUMBER OF STORIES 3 (PARTLY 2)

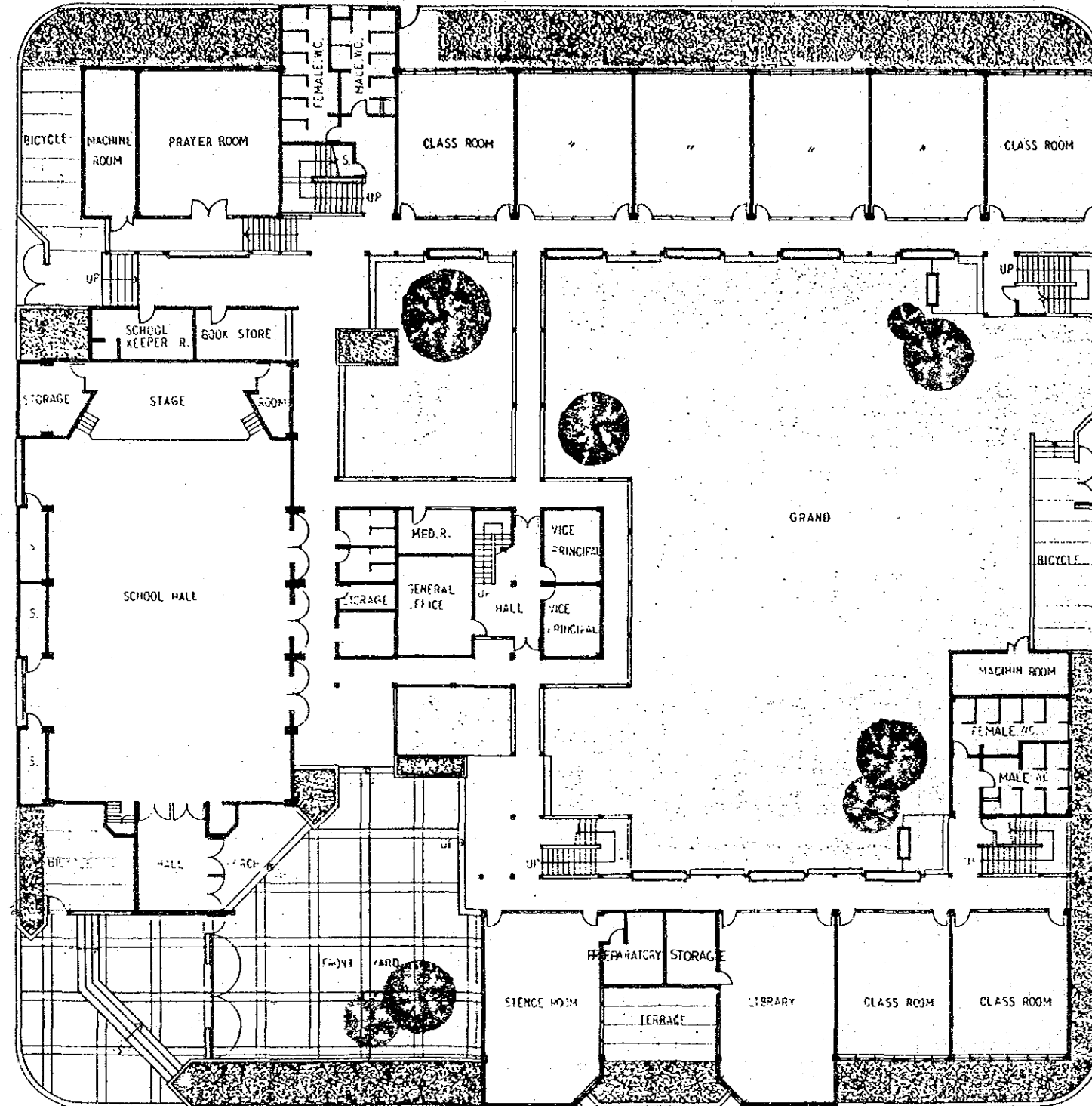
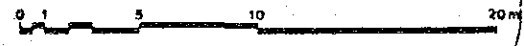
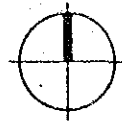
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CONTENTS OF MAIN BUILDINGS
 CLASSROOM Building 2,282.77 m²
 HALL Building 410.815 m²
 ADMINISTRATIVE Building
 and OTHERS 576.67 m²

1	OFFICIAL RESIDENCE OF THE PRESIDENT	5	TELECOM. CENTER
2	MINISTRY OF EDUCATION	6	T.V. MALDIVES
3	MINISTRY OF FOREIGN AFFAIRS	7	CENTRAL HOSPITAL
4	FRIDAY MOSQUE	8	MARKET

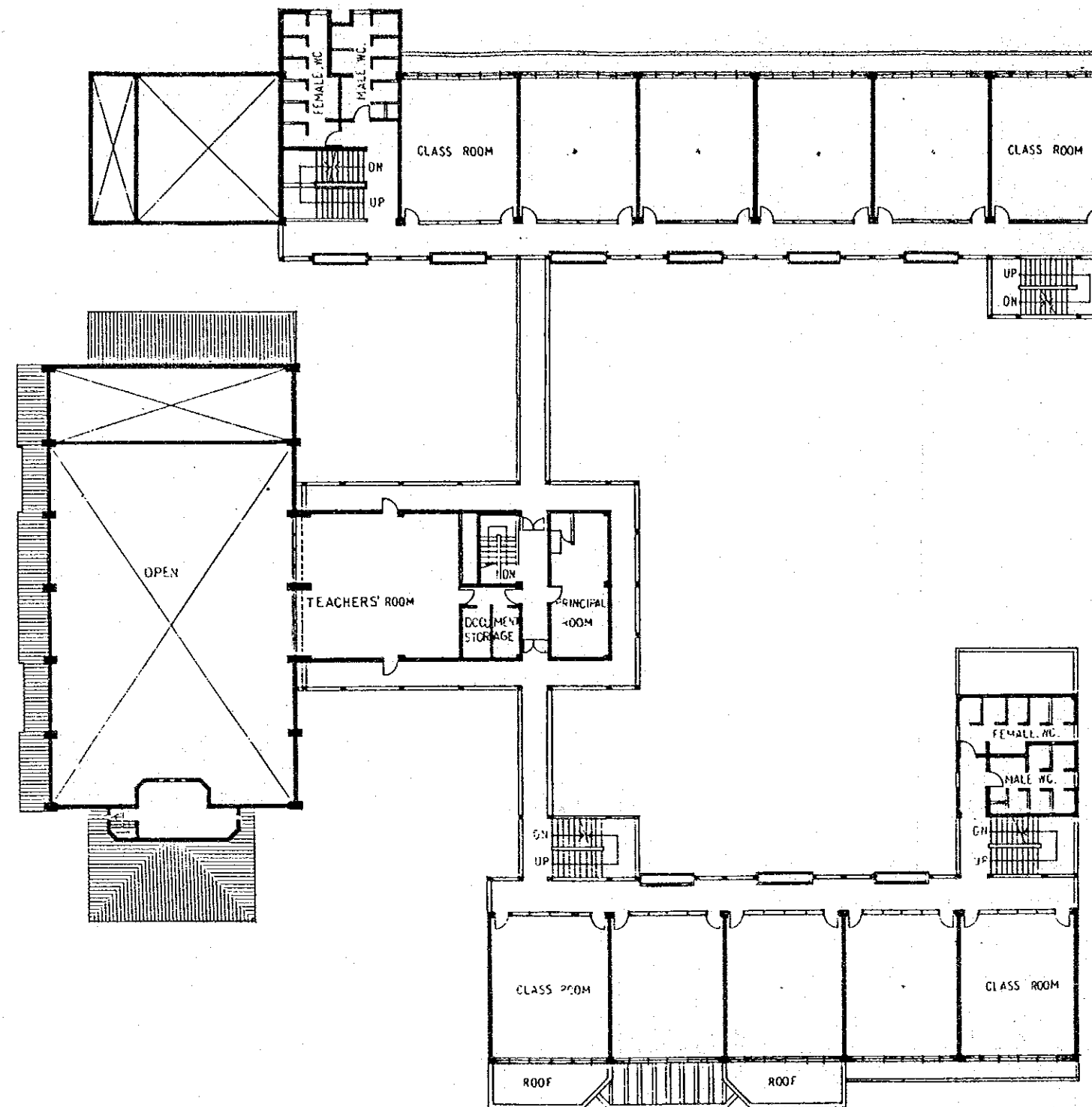
THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE SITE PLAN

01



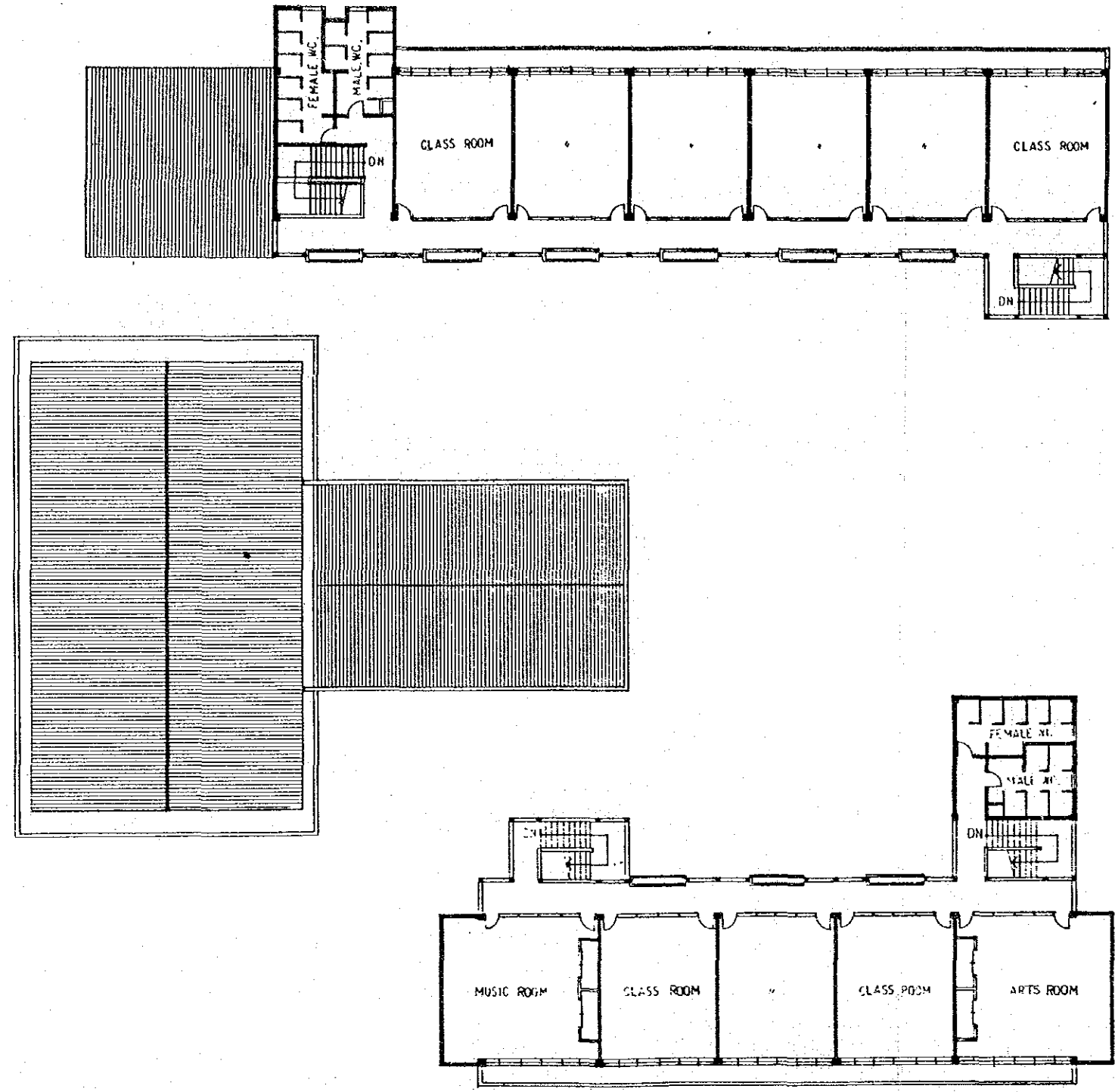
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02



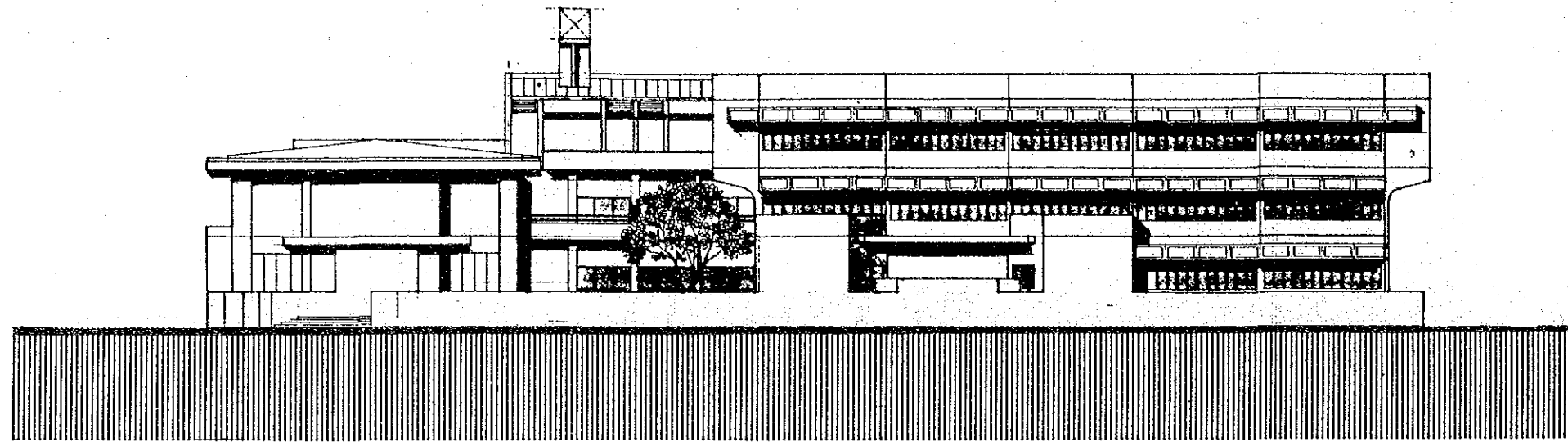
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03

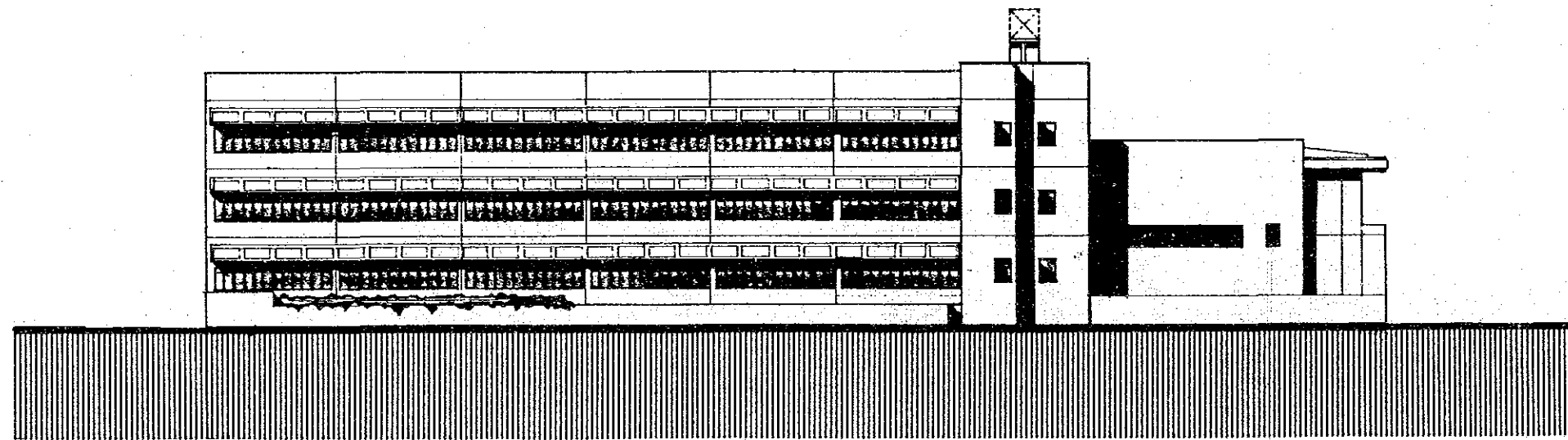


THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE 2ND. FL. PLAN

04



SOUTH SIDE

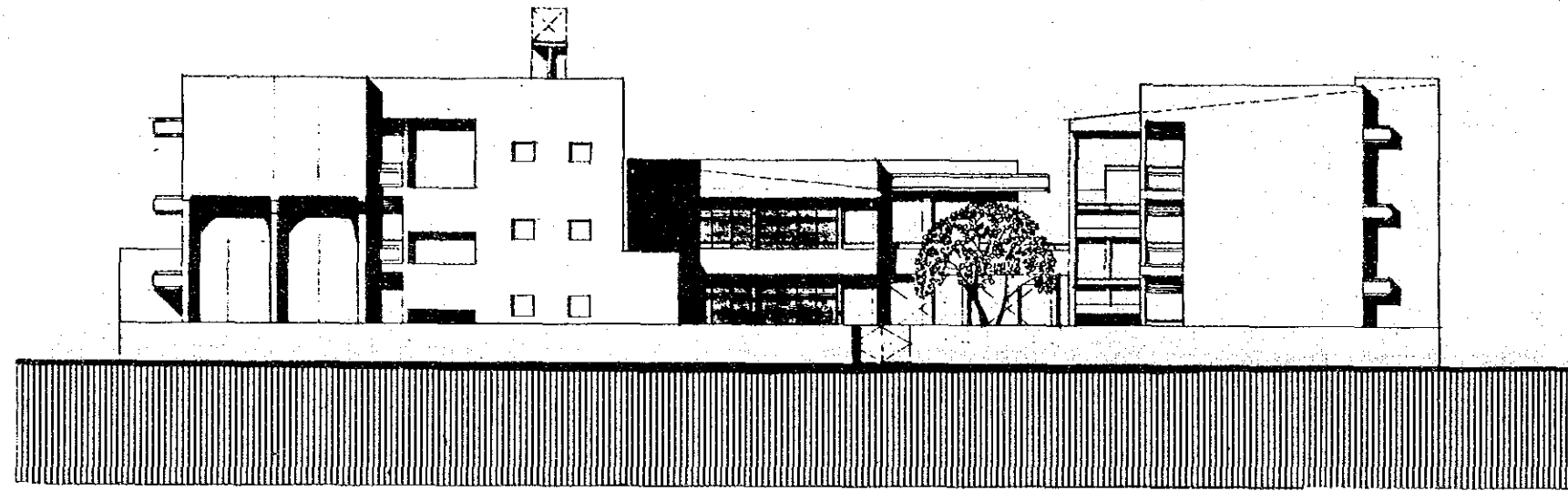


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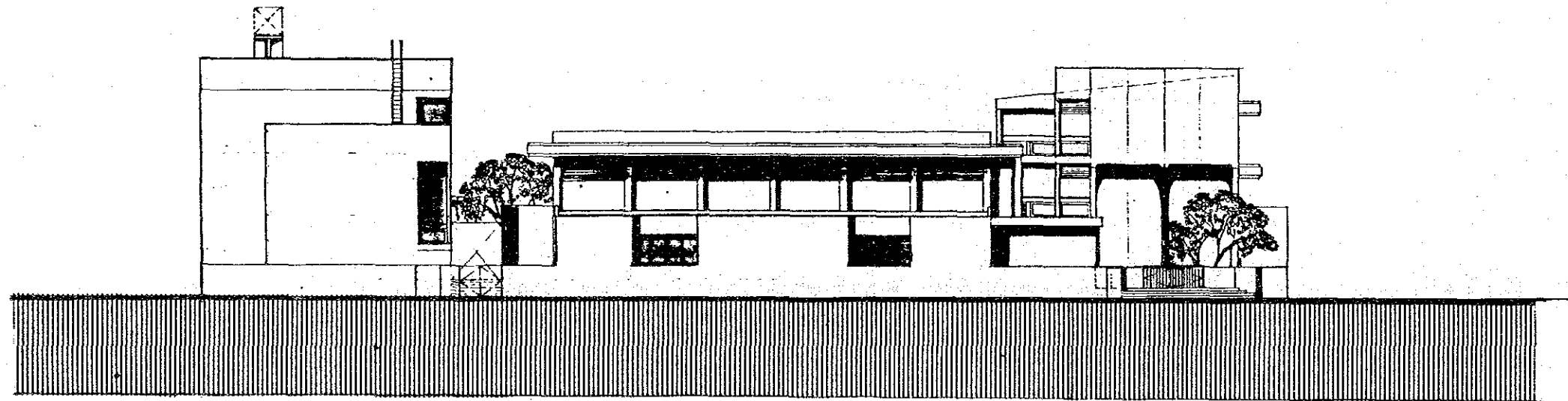
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THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE ELEVATION

05



EAST SIDE

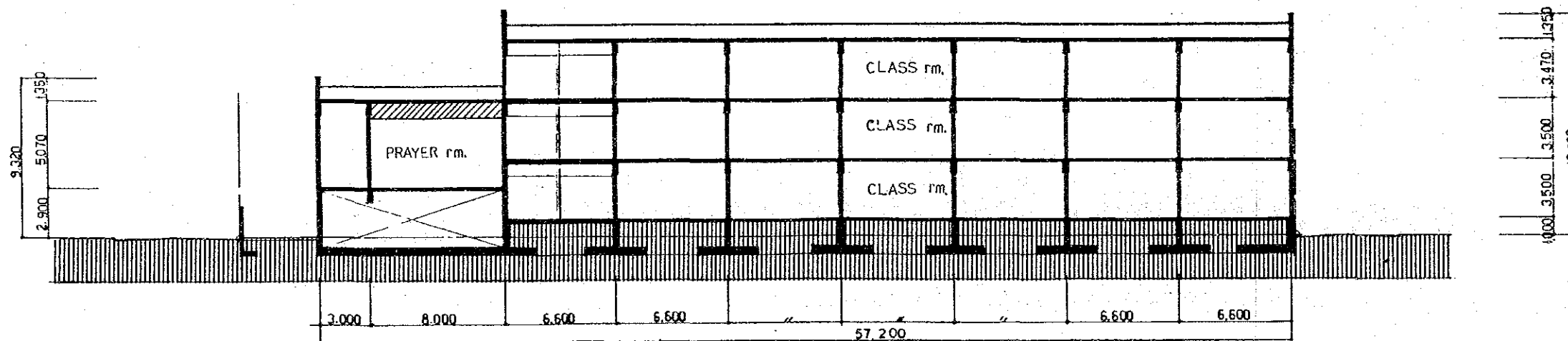
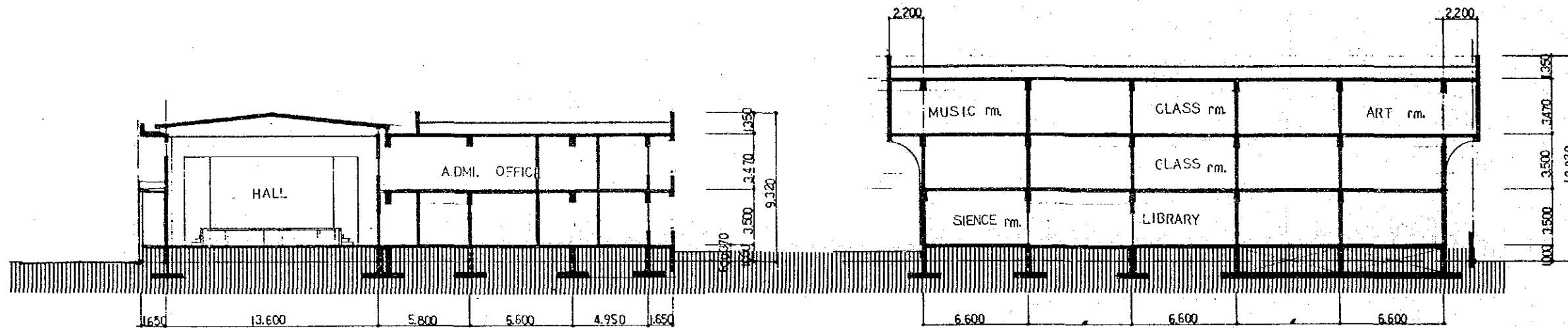


WEST SIDE

0 5 10 20m

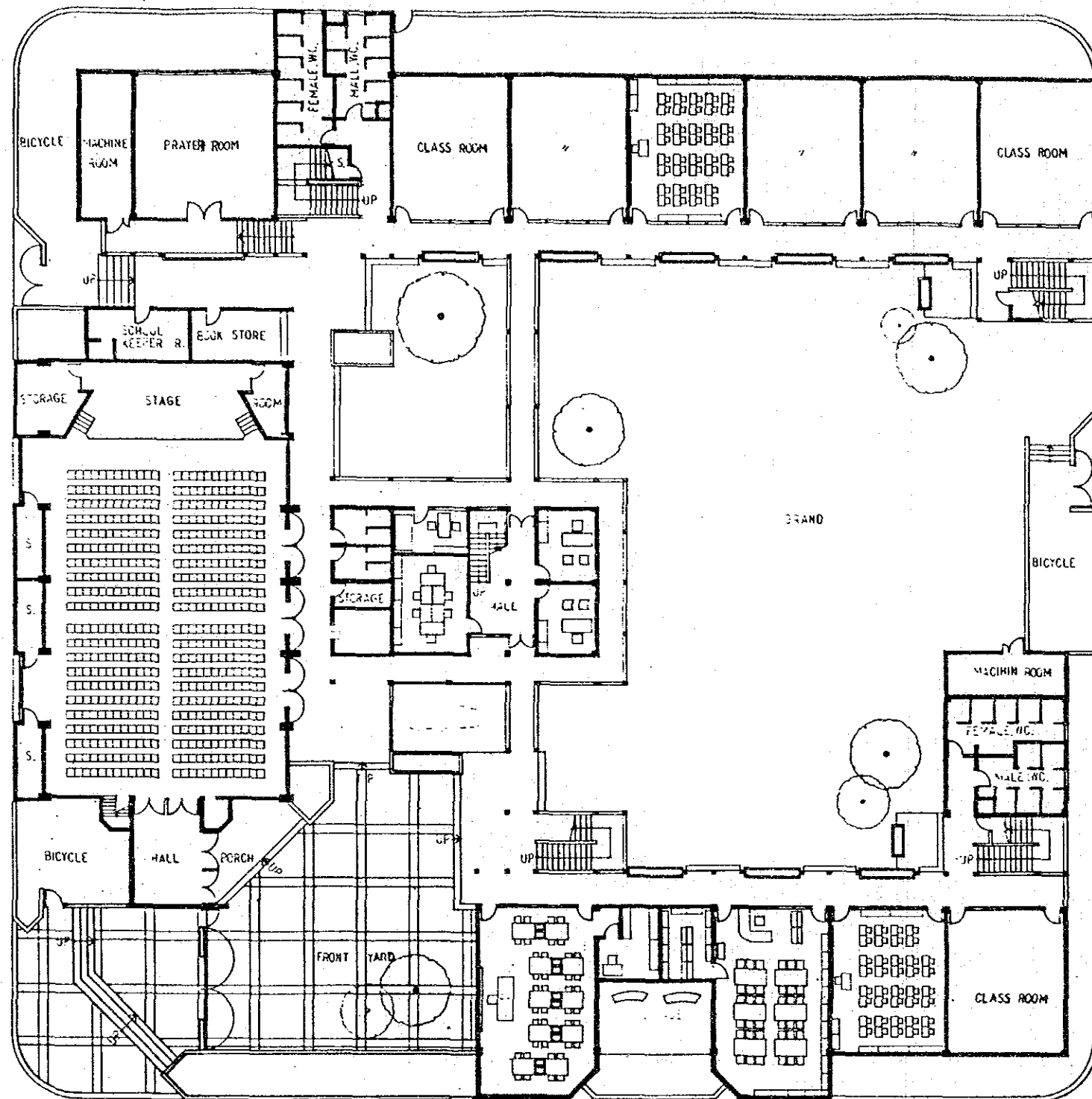
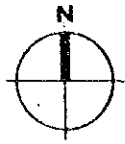
THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE ELEVATION

06



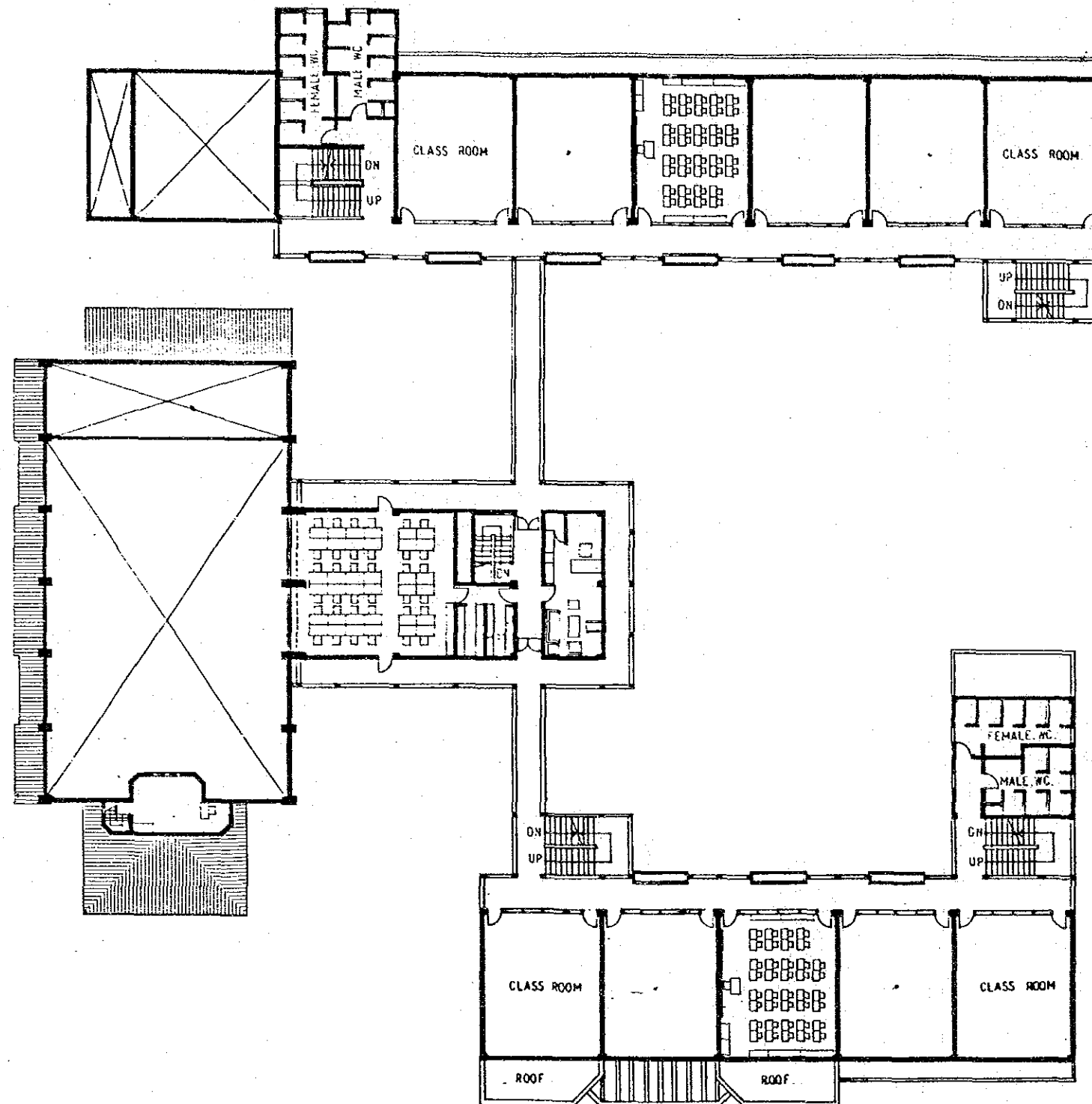
THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE SECTION

07



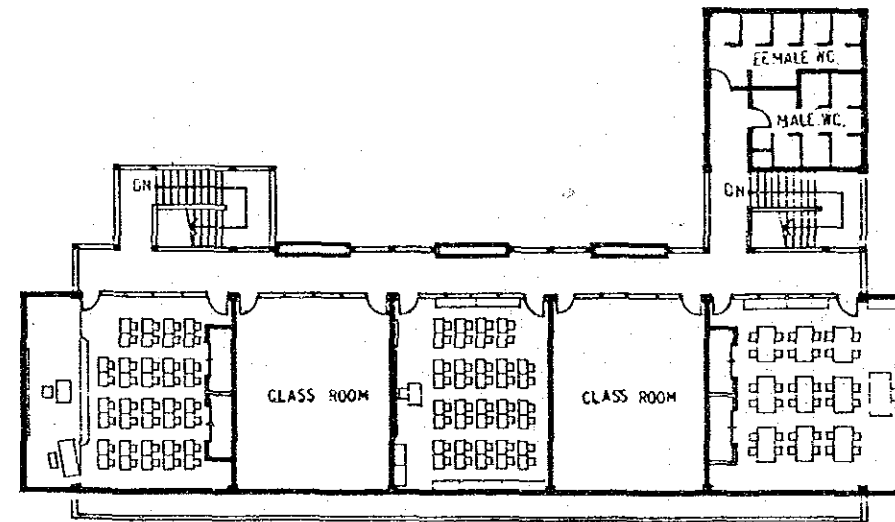
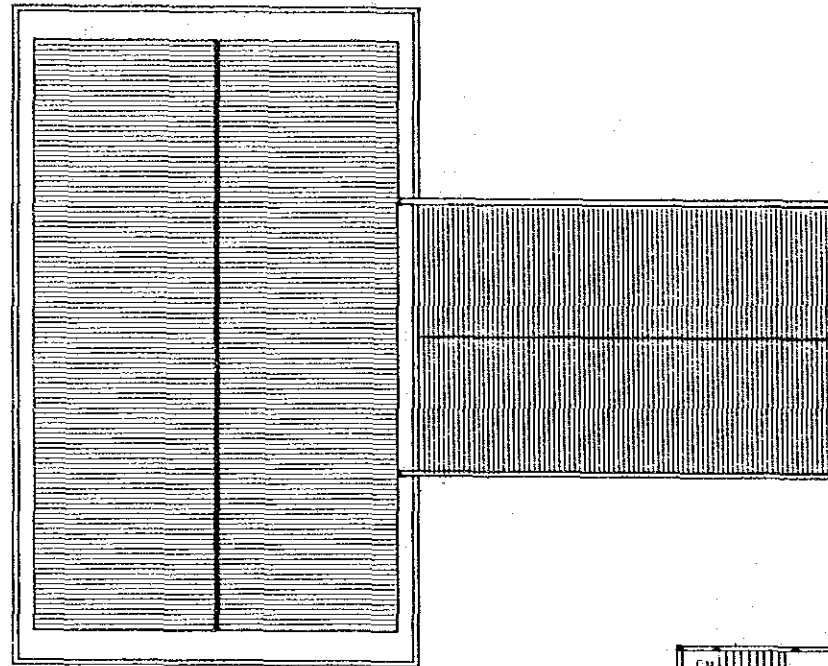
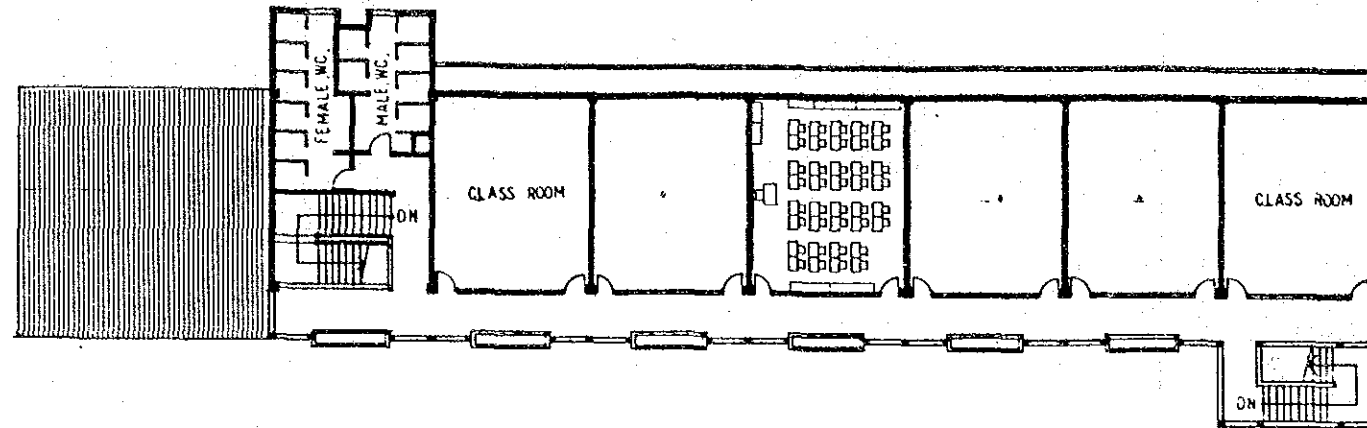
THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE. FURNITURE LAYOUT

G.F. 08



THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE FUNITURE LAYOUT

1.E 09



THE PROJECT FOR CONSTRUCTING THE PRIMARY SCHOOL IN MALE FURNITURE LAYOUT

2.F. 10

