

**Ministry of Education
The Republic of Maldives**

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR CONSTRUCTION OF
THE SECOND GIRLS SECONDARY SCHOOL IN MALE'
IN
THE REPUBLIC OF MALDIVES**

March 2007

**JAPAN INTERNATIONAL COOPERATION AGENCY
MOHRI, ARCHITECT & ASSOCIATES, INC.**

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PREFACE

In response to a request from the Government of the Republic of Maldives, the Government of Japan decided to conduct a basic design study on the Project for the Construction of the Second Girls Secondary School in Male' and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Maldives a study team from October 17 to November 9, 2006.

The team held discussions with the officials concerned of the Government of Maldives, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to the Maldives in order to discuss a draft basic design, and as this result, the present report was finalized.

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

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

March, 2007

Masafumi Kuroki
Vice-President
Japan International Cooperation Agency

March, 2007

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for the Construction of the Second Girls Secondary School in Male’.

This study was conducted by Mohri, Architect & Associates, Inc., under a contract to JICA, during the period from October, 2006 to March, 2007. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of the Maldives and formulated the most appropriate basic design for the project under Japan’s Grant Aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very Truly Yours,

Akira Yokoyama
Project Manager,
Basic design study team on
the Project for the Construction of the
Second Girls Secondary School in Male’
Mohri, Architect & Associates, Inc.

Summary

The Republic of Maldives lies between 7°6'N~0°42'S and between 72°33'~73°46'E, and is situated to the southwest of India and Sri Lanka in the Indian Ocean. The Maldives is an archipelago country consisting of 1192 coral islands, the total area of which is 298km². Of those islands, 199 are inhabited and the other 993 islands are not (2006). The total population of the Maldives is approximately 300,000, about 100,000 (or a third) of whom reside on Male' island, the capital of the country. Since Male' is the center of public administration, economy, culture and education, people keep moving in from remote islands. While the national population increases by 1.7% annually; the population on Male' island increases by 5.57% per year.

The Maldives faces the following issues: (i) limited capacity in providing good social and administrative services to remote islands; (ii) high cost to develop the country; (iii) small market dependent upon tourism and fishery; and, (iv) unemployment among the youth and women due to small labor market. The gap between the capital and remote islands is growing wider in population as well as in social and economic aspects.

Within the Maldivian economy, the tourism sector was the most negatively affected by the September 11 terrorist attack that took place in 2001. The tourism sector was recovering well afterwards; however, due to the Asian Tsunami in December, 2004, the GDP growth sharply fell to – 4.6% in 2005 from 9.5% GDP growth in 2004.

The Government of Maldives promulgated “Vision 2020,” a long-term national development plan, in July 1999. Regarding the education sector, “Vision 2020” envisages “10 years of formal schooling.” The primary school Net Enrolment Ratio (NER) in the country reached 100% in 2002. The secondary school NER is also rapidly increasing, from 18.9% in 1997 to 64.6% in 2005. Against this backdrop, “the Seventh National Development Plan (2006-2010)” addresses an issue of universal secondary education and sets “ensure all children have access to quality basic education” and “expand and improve the quality of vocational and technical education” as major policies.

At present, there are three government secondary schools on Male' island: two are for boys and one is for girls. The number of students at the government girls secondary school is about 2,600, which exceeds the 1500 figure for school enrolment capacity set by the Ministry of Education from the administrative viewpoint. Because of the resulting classroom shortage, the school uses temporary classrooms in addition to regular classrooms. Furthermore, the facilities were built about 60 years ago and many of them are decrepit. Lighting and ventilation are inadequate in many classrooms. On top of that, there is apparent water leakage and some buildings have structural defects. The Ministry of Education continually repairs and maintains

the school facilities. However, the Ministry considers it inappropriate to continue using the buildings with structural defects in the future. Therefore, the Ministry regards it an urgent issue to improve the learning environment at the government girls secondary school on Male' island.

Against this backdrop, the Government of Maldives requested the Government of Japan financial assistance through the Grant Aid program in procuring school facilities and equipment/furniture in order to establish a new government girls secondary school on Male' island.

Upon receiving this request, the Government of Japan decided to conduct a basic design study and Japan International Cooperation Agency (JICA) dispatched a basic design study team to the Maldives from October 17 to November 9, 2006. The basic design study team had a series of discussions with the concerned parties of the Government of Maldives, conducted site surveys, reviewed the requested contents, basic ideas on facilities and equipment, examined the Project background, and studied the necessity and appropriateness of the Project. Further study was carried out in Japan and the team put together a draft basic design study report. Then, the team visited the Maldives again from February 25 to March 2, 2007 to explain the draft report in order to finalize this basic design study report.

The Project sets "increasing facility capacity at government girls secondary school on Male' island" as the Project objective. The Project builds school facilities consisting of classrooms, special classrooms, and administrative and staff rooms, and provides furniture and equipment in the Second Girls Secondary School in Male' requested by the Government of Maldives.

By establishing a new government girls secondary school through the Project, the number of the government girls secondary school on Male' island will be two: Aminiya School and the Project school. The Ministry of Education clarified its intention to run the two schools equally in curriculum, size, educational level and such. In determining the number of Project school students, the base year is set at 2010, because the Government of Maldives has targeted that year to realize universal access to secondary education. The projected number of girl students at government secondary schools on Male' island is about 3,000. Hence, the number of Project school students is set at 1,500, half of 3,000. Assuming that the Project school adopts double shift system and 30 students study per classroom, the Project provides 25 classrooms. Each classroom is a 6 m x 8 m rectangle in accordance with the standard of the Ministry of Education. Also, regarding other rooms, specifications shall be the same as those of Aminiya School. However, as the Ministry is planning to introduce vocational education in the official secondary school stream and started pilot programs in 2006, the Project school provides a facility for

vocational education.

Besides government schools, there are community schools and private schools which provide secondary education on Male' island. Those schools target different students than government secondary schools do in terms of age and the primary school from which they graduate. Therefore, students enrolled in community and private schools are not targets of the Project school and are thus not counted in the number of the Project school students.

In regards to the facility plan, classroom buildings, the main buildings of the Project, shall be installed with windows on the south and the north sides, to avoid intense sunlight from the east and west during early mornings and late afternoons, and monsoons from the west. Moreover, eaves shall be installed above windows so that rain and sunlight do not come into rooms even when the windows are open. Further, the eaves shall block the sunlight at a high angle. As the groundwater table is about 1 meter on Male' island, roads often get flooded during the rainy season. Therefore, in order to take a provision for flooding, the ground floor of the Project school shall be built as high as 700mm above ground level.

The Project school facilities, furniture and equipment are outlined below.

<Facilities>

Name of Buildings	Structural Details	Rooms	Floor Area
Classroom Building-1	Reinforced Concrete, 5 Stories	Classrooms, Principal Room, Assistant Principal Rooms, General Office, Prayer Room, First Aid Room, etc.	2,091.71 m ²
Classroom Building-2	Reinforced Concrete, 3 Stories	Classrooms, Canteen, etc.	735.45 m ²
Special classroom Building	Reinforced Concrete, 5 Stories	Science Laboratories, Library, Audio Visual Room, Computer Room, etc.	1,366.20 m ²
School Hall Building	Reinforced Concrete, 1 Story	School Hall, Teachers Room, Supervisors Room, etc.	1,322.27 m ²
Total Floor Area			5,513.63 m ²

<Furniture and Fittings>

Furniture and Fittings	
Classrooms	Blackboards, Bulletin boards, Teacher's desks/chairs, Student's desks/chairs
Special Classrooms	Blackboards, Whiteboards, Bulletin boards, Teacher's desks/chairs, Students desks/chairs, Cupboards, Workbenches, Stools
Library	Bookshelves, Magazine holders, Librarian's desk/chair, Students' reading tables/chairs, Cupboards
School Hall	Podium, Student's chairs
Administrative Rooms	Teacher's workbenches/chairs, Lockers, Health assistant's table/chair, Patient beds, Counselor's desk/chair, Student's chairs

<Equipment>

	Item		No of Items
Science Laboratories Equipment	Physics	Science principle experiment kits, Meters, etc.	57
	Chemistry	Meters, Glass equipment (Flask, Cylinders), etc.	57
	Biology	Magnifiers, Models, Charts, Pre-prepared slide set, etc.	32
	Fisheries Science	Field compasses, Petri dishes, Mortar and Pestle	3
Audio visual equipment	Projector, Screen, Video Player		Each 1

In the case that the Project is implemented under the Grant Aid program, the total estimated cost is 691 million Japanese Yen (the Japanese side bears about JPY 660 million and the Maldivian side bears about JPY 31 million). The whole project implementation period is estimated to take about 18 months (detailed design: 3 months, tender/contract: 2nmonths, and construction/procurement: 13 months).

The implementation of the Project is expected to bring the following effects.

- (1) The number of students at the existing government girls secondary school on Male' island is approximately 2,600 and it is projected that the number will reach at 3,000 in 2010. By building a new girls secondary school, student enrolment per government girls secondary school on Male' island will be reduced to 1,500.
- (2) The existing government girls secondary school on Male' island conducts classes in

deteriorated facilities and temporary classrooms. By building 25 classrooms in the Project school, the number of sound classrooms at government girls secondary schools on Male' island will increase from 30 to 55, securing a sound learning environment for girl students at government girls secondary schools on Male' island.

- (3) Existing government secondary schools on Male' island do not have any facilities to conduct vocational education and, thus, outsource the vocational classes. By building a Home Science and Industrial Room for vocational education, the Project school is able to conduct vocational education within the school facility.
- (4) Public facilities available for use by the local residents are scarce on Male' because of the small land size of the island. However, by opening the school hall, schoolyard, etc of the Project school to the public, the project brings indirect benefits to the local residents, as the Project provides them with additional spaces for social activities including sports.

It is considered appropriate to implement the Project under the Japanese Grant Aid program for the following reasons.

- (1) The beneficiaries of the Project are the Maldivian citizens such as girl students and staff at secondary schools on Male' island.
- (2) The Project objective is to increase the facility capacity at government girls secondary schools on Male' island and is in line with the objectives of the Japanese Grant Aid which aims to promote Basic Human Needs (BHN), education and human capacity.
- (3) The Maldivian side has its own funding, staff, and techniques to operate and maintain the Project school and the Project does not require any high technical level.
- (4) The Project is in line with "the Ministry of Education Strategic Plan (2004-2006)" and assists in promoting its objectives.
- (5) The Project is expected to bring economic benefits from the macro and long-term points of views. However, the Project does not directly profit any parties financially.
- (6) The Project implementation does not negatively impact the natural environment.
- (7) The Project can be implemented without much difficulty under the Japanese Grant Aid program.

The Project is expected to bring the aforementioned benefits and widely promote the BHN of the residents. Therefore, it is deemed appropriate to assist in the Project implementation. In addition, regarding the operation and maintenance of the Project, the Maldivian side is considered to have sufficient staff and funding. Provided that the Maldivian side tackles the following issues, the Project objectives will be realized smoothly and effectively.

(1) Timely Preparation for the School Opening

The Maldivian side must finish exterior works, connect infrastructures, and procure furniture and equipment in a short period between the handover and the school opening. Hence, the Maldivian side must start working on those items as soon as the Project starts and be prepared for the project completion.

(2) Securing Additional Teachers and Staff

Prior to the Project school opening, the Maldivian side must recruit additional staff, as the opening of the Project school requires additional teachers and staff at government girls secondary schools on Male' island.

(3) Preparation for the Vocational Education

The Project school will conduct vocational education classes which have not been conducted at government secondary schools on Male' island. The Maldivian side must choose subjects to teach and procure necessary equipment and materials for the classes.

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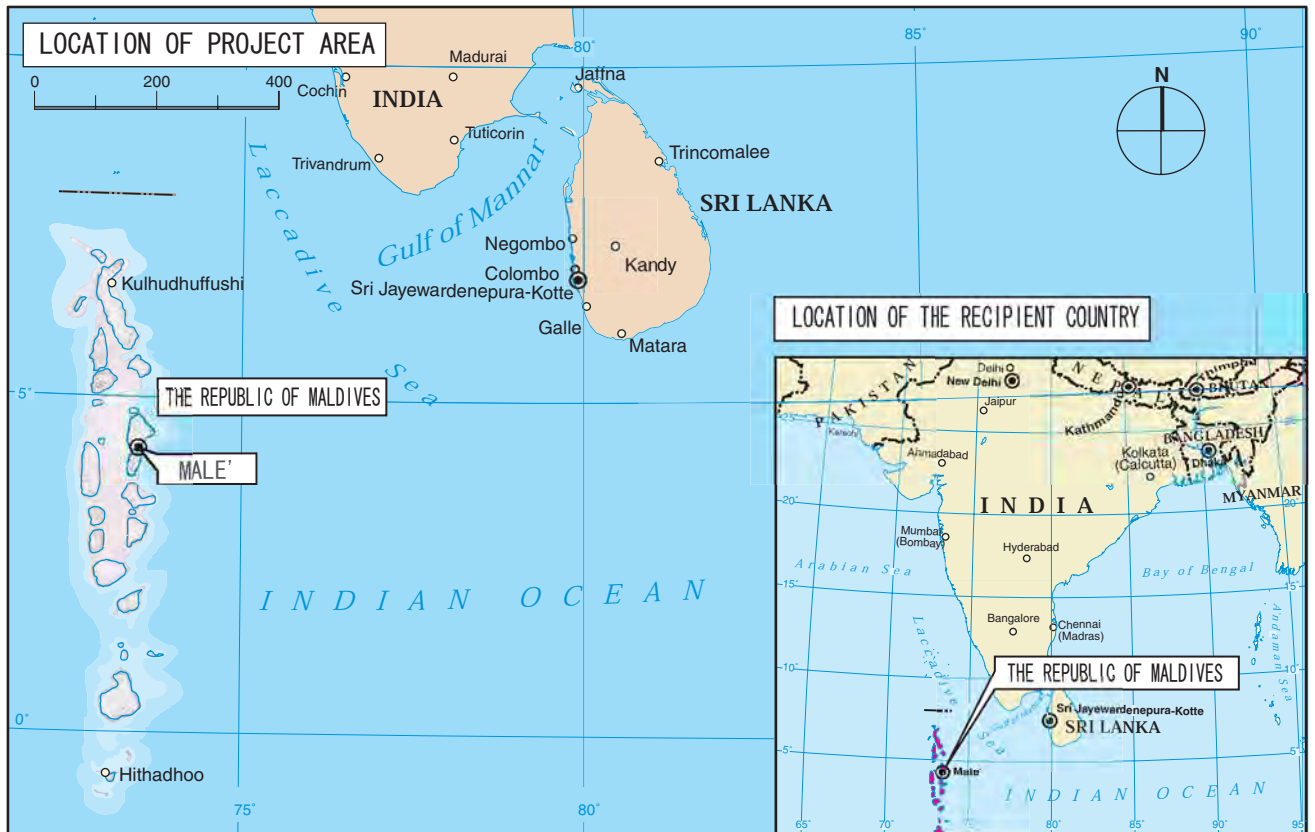
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LOCATION OF THE RECIPIENT COUNTRY AND PROJECT AREA



LOCATION OF THE PROJECT SITE



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PERSPECTIVE (SOUTHWEST VIEW)



PERSPECTIVE (COURTYARD)

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Abbreviations

MOE	Ministry of Education
DER	Department of External Resources
CCE	Center for Continuing Education
EDC	Educational Development Center
EPSS	English Preparatory and Secondary School
MES	Male' English School
STELCO	State Electric Company Limited
STO	State Trading Organization PLC
GCE	General Certificate of Education
GMD	Geometrical Drawing
MVR	Maldivian Rufiyaa
MCI	Ministry of Construction and Public Infrastructure
MCHE	Maldives College for Higher Education
JPY	Japanese Yen
JICA	Japan International Cooperation Agency
BS	British Standard
E/N	Exchange of Notes
GA	Grant Aid
BD	Basic Design Study
PTA	Parents Teacher Association
PQ	Pre-Qualification
GL	Ground Level
SPT	Standard Penetration Test
MOFA	Ministry of Foreign Affairs
JOCV	Japan Overseas Cooperation Volunteer
BHN	Basic Human Needs
NER	Net Enrolment Ratio
GDP	Gross Domestic Product

Chapter 1 Background of the Project

Chapter 1 Background of the Project

In July 1999, the Republic of Maldives promulgated “Vision 2020,” a long-term national development plan. Regarding the education sector, “Vision 2020” envisages “10 years of formal schooling.” The primary school Net Enrolment Ratio (NER) in the country reached 100% in 2002. The secondary school NER is also rapidly increasing from 18.9% in 1997 to 64.6% in 2005. Against this background, “the Seventh National Development Plan (2006-2010)” addresses an issue of universal secondary education and sets “ensure all children have access to quality basic education” and “expand and improve the quality of vocational and technical education” as major policies.

The Project site is located on Male’ island, the center of administration, economy, culture and education in the Maldives. Due to this, people move to Male’ from other islands and the annual rate of increase in population of the island is a quite high figure, 5.57%. Consequently, approximately 100,000 people (as of March, 2006), a third of the whole national population, live on this small island, the area of which is about 2km².

At present, there are three government secondary schools on Male’ island: two are for boys and one is for girls. The number of students at the government girls secondary school is about 2,600, which exceeds the 1500 figure for school enrolment capacity set by the Ministry of Education from the administrative viewpoint. Because of the resulting classroom shortage, the school uses temporary classrooms in addition to regular classrooms. Furthermore, the facilities were built about 60 years ago and many of them are decrepit. Lighting and ventilation are inadequate in many classrooms. On top of that, there is apparent water leakage and some buildings have structural defects. The Ministry of Education continually repairs and maintains the school facilities. However, the Ministry considers it inappropriate to continue using the buildings with structural defects in the future. Therefore, the Ministry regards it an urgent issue to improve the learning environment at the government girls secondary school on Male’ island.

Against this backdrop, the Government of Maldives requested the Government of Japan financial assistance through the Grant Aid program in building school facilities and procuring equipment/furniture in order to establish a new government girls secondary school on Male’ island.

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goal and the Project Objective

In the Maldives, “Vision 2020,” a long-term national development plan that emphasizes the importance of education, was put in place in 1999. Regarding the education sector, “Vision 2020” envisages “10 years of formal education,” “good quality of tertiary education,” “a system that provides nationals with technical skills to achieve social and economic development,” and “gender equality.”

With “Vision 2020” as its backbone, the “Seventh National Development Plan (2006-2010)” addresses an issue of universal secondary education and sets “ensure all children have access to quality basic education” and “expand and improve the quality of vocational and technical education” as major policies.

The Project site is located on Male’ island. Since Male’ island is the Maldivian capital and the center of the national economy, people move there to search for jobs, and consequently, the island has become densely populated. At present, on Male’ island, there are two government boys secondary schools on the one hand, but there is only one government girls secondary school (Aminiya School) on the other. At Aminiya School, there are about 2,600 students, approximately twice as many students as the limit (1,500 students per school for the sake of school administration) set by the Ministry of Education. Besides, the learning environment in the school is below the standard¹; for example, some classrooms are temporary ones and others are very old. Therefore, the Ministry of Education is urged to improve the learning environment for girls at secondary education on the island.

Against this backdrop, the Project sets “improving the learning environment at government girls secondary schools on Male’ island” as its overall goal, and “increasing facility capacity at government girls secondary schools in Male’” as the Project objective.

2-1-2 Outline of the Project

In order to realize the aforementioned Project objective, the Project builds school facilities consisting of rooms for education, administration and service, and provides furniture and

¹ There was only one government boys secondary school in 2001 and approximately 2,500 students were in the school. A new school was constructed in 2002 to divide the students.

equipment in the Second Girls Secondary School in Male' requested by the Government of Maldives.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policies

2-2-1-1 Basic Policies

By establishing a new government girls secondary school through the Project, the number of the government girls secondary school on Male' island will be two: Aminiya School and the Project school. The Ministry of Education clarified its intention to run the two schools equally in curriculum, size, educational level and such. Hence, the number of Project school students is set as half of the total of the government girls secondary school student population on Male' island. Also, the Project provides facilities, furniture and equipment needed to implement the same educational and school activities currently conducted at Aminiya School. At present, the Ministry is planning to introduce vocational education in the official secondary school stream and started pilot programs in 2006. Considering these points, the Project school provides a facility for vocational education. To add, in determining the number of Project school students, the base year is set at 2010, because the Government of Maldives has targeted that year to realize universal access to secondary education.

Besides government schools, there are community schools and private schools which provide secondary education on Male' island. Those schools target different students than government secondary schools do in terms of age and the primary school from which they graduate. Therefore, students enrolled in community and private schools are not targets of the Project school and are thus not counted in the number of the Project school students.

2-2-1-2 Policies for Natural Conditions

(1) Tropical Climate

The climate of the Project site is a tropical one featuring high temperature and humidity. When deciding the arrangement of buildings and rooms as well as their sizes and locations, special attention shall be given to allow for breezes and natural ventilation. Also, in choosing types of sashes with opening and closing functions, the following points must be examined: safety and keeping out the rain when they are open and possible opening width

of the windows. In addition, a ceiling fan shall be installed in each room in order to improve the ventilation in the rooms.

(2) Intense Sunlight and Monsoons

Classroom buildings, the main buildings of the Project, shall be installed with windows on the south and the north sides, to avoid intense sunlight from the east and west during early mornings and late afternoons, and monsoons from the west. Moreover, eaves shall be installed above windows so that rain and sunlight do not come into rooms even when the windows are open. Further, the eaves shall block the sunlight at a high angle.

(3) High Groundwater Table and Flooding

The groundwater table is about 1 meter on Male' island, as the island is approximately 2 meters above sea level. Naturally, roads often get flooded during the rainy season. The Project site is located on the west side of Male' island and close to open sea and water submerged 400mm above the ground when the Asian Tsunami hit in December 2004. However, the Third Primary School in Male', a past Japanese Grant Aid project, which is adjoining to the Project site was not damaged at all, since the ground floor of the school is 700mm above the road. Therefore, in order to take a provision for flooding, the ground floor of the Project school shall be built as high as 700mm above ground level.

(4) Salt and Termite Damage

The Project site is adjacent to the coast. This means that the Project facilities shall be exposed to salt breezes that cause rust on steel. Even inside of the buildings, steel rusts easily, as windows remain open to ease high room temperature and humidity. Especially, steel furniture rusts severely, as its coatings come off when it is moved from place to place. Therefore, the use of steel raw materials shall be limited to a minimum in order to minimize salt damage to the buildings. In addition, to prevent possible termite damage, the use of wood shall be limited and termite-proofing measures shall be undertaken.

(5) Reclaimed Land and Earthquakes

As the Project site is located on soft reclaimed land, the building foundations shall be designed by taking uneven settling into consideration. However, since the Maldives is positioned outside of the earthquake belt and has no history of earthquakes, only certain lateral wind force shall be considered.

2-2-1-3 Policies for Socio-Economic Conditions

(1) Small Land and High Population Density

On Male' island, available land is limited due to small land size and high population density and a large stretch of land for school is precious. Therefore, it is important that the Project site be used efficiently. Specifically, in the facility arrangement plan of the Project, the largest possible schoolyard land must be secured in order to prepare for any building extension demand in the future. In light of this viewpoint, the main Project buildings shall be five stories high, the limit of the secondary school building standard, in order to secure such a large open space.

(2) Religion

The Maldives is a pious Islamic country. Considering this point, a prayer room shall be provided so that staff and students can pray between and after classes. Male staff shall also use the prayer room. So, the room must be designed to enable males and females to use it at the same time.

(3) Consideration for the Handicapped

In the Maldives, public facilities are required to be barrier-free. Hence, a ramp shall be installed from the road to the ground-floor level of the school buildings. And a universal toilet, i.e. a handicapped accessible toilet, shall be installed on the ground floor.

(4) Multi-Purpose Use of School Facilities

Residents also use school facilities on Male' island since there are not many public buildings there. Against this backdrop, the Project school hall shall have an entrance close to the main gate so that residents can easily access the school. Also, a sub gate connected to the outside street shall be planned so that vehicles can enter into the schoolyard directly.

(5) Use of Natural Water Resources

There are no rivers on Male' island and rainwater and groundwater used by the residents are still very precious. Therefore, such natural water shall be used efficiently in order to control the maintenance cost. Processed city water on the island sold at high prices shall only be used for drinking purposes.

(6) Double Shift and Evening Use of the School

School facilities in Male' are commonly used in the evenings for afternoon sessions,

remedial classes, club activities, and residents' activities. Therefore, minimum lighting fixtures shall be installed in each space.

(7) Provision for Emergencies and Disasters

Automatic fire alarms, fire hydrants, fire extinguishers, exit signs and the like shall be installed in accordance with local fire regulations.

(8) Considerations for Surroundings

Classroom buildings of the Project shall not be constructed on the south side of the Project site in order to secure enough lighting and natural ventilation as well as quiet learning environment, since the abutting Third Primary School in Male' which is on the south side of the Project site has one of its classroom buildings on the north boundary of its compound.

Also, the schoolyard of the Project shall be on the south side should be connected to the schoolyard of the Third Primary School in Male'. This leaves future options for future land use for the two schools and aims to give a strong sense of open space.

The eastern side of the Project site faces a residential area. To maintain the privacy of the residents from sightlines of the students, the school hall shall be placed on the east side as the school hall has fewer windows and is lower rise than the classroom buildings.

2-2-1-4 Policies for Construction

(1) Construction Materials

The Maldives has virtually no natural resources other than precious trees and coral sand and stones, the mining of which is banned. Therefore, the Maldives imports almost all its construction materials such as sand, gravel, wooden form, reinforcing bars, metal sashes, wooden doors, cement board, ceramic tile, paint, electrical wires, sanitary pipes and other various service equipment. Those products are imported from Singapore, Sri Lanka, India, Malaysia, Indonesia and etc. Particularly high quality industrial products and equipment mainly come from Singapore.

On Male' island, several retail stores sell these imported construction materials. In addition, State Trading Organization Plc (STO), a local trading company, sells construction materials along with imported food and necessities. Especially, regarding raw materials for concrete such as cement, gravel, and sand, STO imports from India in bulk and is able to supply

stably. However, concerning other construction materials for the Project, it is clear that available varieties and stocks are short on Male' island. Therefore, the contractors must procure those necessary materials from a third country to secure materials of high quality in sufficient quantity and in a timely manner.

(2) Supply of Labor

The construction industry is not the main industry in the Maldives and securing sufficient numbers of construction labor is difficult in the country. Generally, most of the skilled workers and engineers come from neighboring countries such as Sri Lanka, India and Bangladesh. Even big construction companies based on Male' island dispatch teams to neighboring countries to recruit workers.

Hence, hiring foreign construction workers is inevitable for the Project and a foreign worker recruitment permit from the Ministry of Labor must be obtained to employ them. As a foreign worker recruitment permit is issued for each project, it is crucial that the contractor estimates the number of workers needed and must gain the understanding in advance from the Ministry of Labor through the Ministry of Education.

Besides, there are 23 annual public holidays including religious ones. In setting up the construction period, these holidays must be taken into consideration. Usually, the labor productivity during Ramadan decreases, but Ramadan does not affect non-Muslim foreign workers.

(3) Transportation

Being an island country, the Maldives imports mostly by ship, though air-shipment has been increasing recently. Vessels with a crane coming into the Male' Port unload on barges.

In the Project, construction materials and equipment are imported by ship. The transportation between the Male' Port and the Project site shall be by road. No problem is anticipated regarding land transportation, because Male' island is small and the Project site is close to a paved peripheral road of the island.

For the sake of smooth customs clearance for imported construction materials and equipment, necessary shipping documents as well as transportation booking must be properly arranged in advance. Regarding this matter, full cooperation from the Government of Maldives, especially assistance from the Ministry of Education, is necessary.

The whole transportation process, i.e. from loading materials in foreign countries to delivering materials to the Project site, is estimated to take about one month, two weeks, and three weeks from Singapore, India, and Sri Lanka respectively. Upon examining best timing of delivering products to the Project site, a careful and efficient transportation plan must be made so that there shall be no delays in shipping arrangement and customs clearance.

(4) Rules and Regulations Regarding Building Construction and Permits

Thus far, there are no rules and regulations similar to the Japanese “Building Standards Act” in the Maldives. Currently, the Government of Maldives has been developing a building standards act on the one hand, while rules and regulations regarding school facilities have not yet been discussed on the other. Therefore, in the Project, the structural design follows Japanese standard as that of the Third Primary School in Male’ project did.

Reviews and approvals of construction projects used to be under the jurisdiction of the Maldives Housing and Urban Development Board. However, from mid-2006, these were placed under the jurisdiction of the Building Section at the Male’ Municipality. Regarding structural design, the Ministry of Construction and Public Infrastructure is the authority in charge of review. And, as to emergency provisions and electrical design, the Fire Department of the National Security Service and Maldives Energy Authority are assigned to scrutinize the contents respectively. In this project, the time period between the Exchange of Notes and the commencement of construction work is short because the handover timing is fixed due to the school opening timing. Hence, in order to obtain necessary permits in time, the drawings and the load calculation for “electrical design permit” that takes longer time to be issued must be prepared first. The application procedure for the necessary permits must be started earlier through the Ministry of Education.

2-2-1-5 Policies for Local Contractors

(1) Local Contractors

There are 26 local and 4 foreign contractors that are registered with the Ministry of Construction and Public Infrastructure. Of those, only 5-7 companies have sufficient capacity to undertake large-scale governmental projects. The following list details the numbers of registered companies by specialization: concrete work, 5; masonry structure, 10; tile/painting work, 7; reinforcing bar arrangement/welding work, 1; carpentry work, 7;

air-conditioning work, 3; electrical system work, 7; mechanical work, 2; and plumbing work, 6. As described in “Supply of Labor,” each company depends upon foreign skilled labor from Sri Lanka and India. Nevertheless, those companies have sufficient capacity to work with Japanese construction companies, so they shall be contracted in the Project.

(2) Local Consultants

On Male’ island, private architectural design firms, individual or small-group engineers and architects carry out architectural consulting works. Of those, there are engineers who belong to the Ministry of Construction and Public Infrastructure. It can be said that consultants work on various projects regardless of whether they are private or governmental projects. Since their professional abilities are relatively high, they can be assigned to assist the Japanese consultant in the Project. For reference’s sake, 23 architects are registered with the Ministry of Construction and Public Infrastructure in the Maldives.

2-2-1-6 Policies for Operation and Maintenance

In the Maldives, the Ministry of Education and each school are responsible for operation and maintenance of government schools. The Project aims to ease congestion and improve learning environment of the existing government girls’ school, and the Ministry of Education plans to transfer about half of the school staff from the existing school to the Project school upon completion. In addition, the Ministry plans to recruit new staff from overseas to cover the shortage. However, the percentage of recurrent cost increase shall not be big, as the recurrent cost makes up more than 90% of the school budget. So, the Project does not financially impact the Ministry of Education very much.

At public schools on Male’ island, daily cleaning and minor maintenance are taken care of by janitors, while large-scale maintenance and repair are assigned to outside private contractors. With regards to the maintenance of buildings, the attitude and ability of the Government of Maldives are quite good. This helps to explain why schools constructed under Japanese Grant Aid have been well maintained thus far. Regardless, in the Project, a building design that keeps maintenance cost low shall be made to ease any financial burden on the Government of Maldives, because the maintenance expense is not given priority in the budget allocation. For example, the Project tries to suppress costs by using steel as little as possible in consideration of the natural conditions of Male’ island.

2-2-1-7 Policies for Deciding Grade of Facilities and Equipment

The grade of facilities shall be similar to the ones adopted by the Third, the Fourth, and the Sixth Primary Schools in Male' built under Japanese Grant Aid, and other existing three government secondary schools. However, an optimal decision shall be made upon examining the balance between the initial cost at the time of construction and the future maintenance cost, which is affected by the durability of construction materials used.

The Project tries to keep costs low by adopting minimum specifications as other existing secondary schools do. Specifically, the finishes shall be: paint on cement mortar for exterior walls; cement mortar for classrooms and corridors; paint on cement mortar for internal walls; ceilings and ceramic tiles for toilets; and so on. Nevertheless, the floors of the science laboratories and the administrative rooms shall be finished with ceramic tiles, the same specification adopted by other existing public schools, so that janitors can clean these rooms easily. This is because electrical equipment and science laboratory equipment need to be kept clean and saved from being damaged by coral particles that enter into classrooms.

2-2-1-8 Policies for Construction Method, Procurement Method, and Construction Period

(1) Policies for Construction Method and Procurement Method

The main structure of the Project buildings shall be reinforced concrete, which is generally adopted for local buildings. Since the Project site is reclaimed land and not very solid, in order to reduce cost and lighten the weight of the buildings, the frame structure shall be adopted for reinforced concrete, concrete block masonry for walls and steel structure for long span roof of the school hall respectively.

As mentioned, construction materials and equipment shall be imported. In selecting suppliers, the price is the primary concern; however, in addition, the quality of products, supply capacity, credibility in delivery time and ease of maintenance are also to be scrutinized.

In regards to education equipment, it is possible to buy foreign equipment such as British goods locally from STO, just as the Ministry of Education procures.

(2) Policies for Construction Period

The construction period of the Project is estimated at 13 months. As construction workers

employed in the Project are mostly Sri Lankan and/or Indian, it is unnecessary to take Ramadan into consideration in planning the construction period.

In addition, the Maldivian side strongly wishes to open the Project school in January 2009, since the new academic year begins in January in the Maldives. In other words, the commencement of work cannot be set later than December 2007 and the completion of the work shall be set at late December 2008.

2-2-2 Basic Plan

2-2-2-1 Contents and Size of the Project Components

(1) Projected number of students

The Ministry of Education projects the number of government girls secondary school students will reach 2,883 on Male' island in 2010. This projection does not assume any repetition; however, approximately 10% of the 8th graders usually repeat class. Assuming that the same number of the 8th grade repeaters in 2006 (about 80 students) continue to repeat classes in the future, the number of government girls secondary school students on Male' island can be predicted at about 2,976.

Table 2-1 The projection of the number of students studying in the government girls schools (Gr. 1- Gr.10) on Male' island between 2007 – 2014.

		2006	2007	2008	2009	2010	2011	2012	2013	2014
Primary School	GR.1	657	730	750	770	790	810	830	850	870
	GR.2	692	707	780	800	820	840	860	880	900
	GR.3	822	742	757	830	850	870	890	910	930
	GR.4	897	922	842	857	930	950	970	990	1,010
	GR.5	839	997	1,022	942	957	1,030	1,050	1,070	1,090
	GR.6	867	839	997	1,022	942	957	1,030	1,050	1,070
	GR.7	847	867	839	997	1,022	942	957	1,030	1,050
	Subtotal	7,627	7,811	7,995	8,227	8,321	8,410	8,599	8,793	8,934
Secondary School	GR.8	804	907	927	899	1,057	1,082	1,002	1,017	1,090
	GR.9	907	804	907	927	899	1,057	1,082	1,002	1,017
	GR.10	890	907	804	907	927	899	1,057	1,082	1,002
		Subtotal	2,601	2,618	2,638	2,733	2,883	3,038	3,141	3,101

Source: The Ministry of Education

Note:

- The projection is based upon the 2006 student enrollment in the government girls school on Male' island.
- The number of Grade 1 students in 2007 is based upon the number of applicants for the

- government primary school on Male' island.
- Each year projection assumes that all the students are promoted to the next grade. However, as transfers from other islands, the following numbers are added: Grade 2-3:50students; Grade 4-5:100 students; and Grade 8:60 students.
- Repetitions are not assumed.

As the number of government girls secondary school students on Male' island is expected to stay at about 3,100 after 2010, the Project sets 3,000 as the student number for government girls secondary school in 2010. Assuming that the number of students is equally divided between the Project school and Aminiya School, each school will have 1,500 students, the school capacity limit set by the governmental policy. Thus, the projected number of students in the Project school shall be 1,500.

(2) Facility Components

The necessity of requested rooms is stated below. The number in parentheses beside each room name indicates the number of rooms to be built.

(i) Classroom (25)

There is no need to state the necessity of classrooms. According to the Maldives' standard, each class has 30 students. The Project school shall adopt double shift and accommodate 1,500 students in total. Therefore, 25 classrooms are needed.

(ii) Science Laboratory (Physics, Chemistry, Biology, Fisheries Science: 1 laboratory for each subject)

Science subjects consist of physics, chemistry, biology and fisheries science in secondary education in the Maldives. While physics and chemistry are required subjects for Science Stream students, biology and fisheries science are optional subjects for all the students. These science subjects are taught in laboratories equipped with specimens, models, charts, and laboratory equipment. All the government secondary schools have a preparation room attached to each science laboratory and laboratory assistants are staffed to manage the equipment and chemicals.

Thus, in the Project school, each science laboratory is appropriate in order to conduct science classes.

(iii) Library (1)

At libraries of the government secondary schools on Male' island, English classes are held regularly in addition to regular library functions such as book reference and

lending. Other existing government secondary schools also have their own libraries. Hence, a library is indispensable in the Project school. Two librarians (1 for each shift) shall be staffed to manage the library and books.

(iv) Audio Visual Room (1)

At Aminiya School, VCRs and PCs are frequently utilized for presentations in classes. The existing audio visual room is reserved to use due to its popularity. In general, classes utilizing audio-visual equipment appeal to students' interests and are very effective. Regarding teaching aids, the school owns some but rents often from the Education Development Center (EDC) or dubs teaching materials.

In light of the fact that the audio visual room in Aminiya School is frequently used and other government schools have own audio visual room, it is appropriate to build an audio visual room in the Project school.

(v) Computer Room (1)

Computer studies is included in the secondary school curriculum as an optional subject. In contrast, at the primary level education on Male' island, computer studies is not included in the curriculum. However, each primary school collects fees from students and assigns private companies to furnish equipment, send instructors, and run computer sessions. As the computer studies is officially in the secondary school curriculum, each school is responsible for furnishing equipment, staffing instructors, and running classes.

At the existing secondary schools on Male' island, computer science classes are taught in the computer rooms. To conduct computer studies classes, it requires an equipped room exclusively used for the computer studies. Therefore, providing a computer room is appropriate.

(vi) Art Room (1)

Art is taught as an optional subject in the secondary school curriculum. Watercolor painting is often taught and is one of the subjects in the GCE/O level examination. Each government secondary school owns drawing tables and easels and displays artworks on walls and/or in showcases in its art room.

It is appropriate to build an art room, considering the facts that: the purpose of use is

very clear; it is desirable to have an art room to conduct art classes; and, all the government secondary schools have their own art rooms.

(vii) Home Science and Industrial Room (1)

Pilot projects of vocational education at the secondary education have been undertaken and these subjects will certainly be included in the official curriculum. Therefore, a space for vocational education is highly desirable. In the meantime, the contents of vocational education in the Project school have not been specified yet, so the space for vocational education shall be adaptable to various types of vocational education activities. Out of 10 planned courses, subjects such as computer hardware, electrical wiring, dressmaking, masonry, engine repair, and welding work, are likely to be introduced. Therefore, it is appropriate to set up a space for these vocational subjects as a home science and industrial room.

(viii) Multi Purpose Room (2)

At the government secondary schools on Male' island, besides regular classes, extra classes are held for the 10th graders in order to get them prepared for the GCE/O exam. In addition, remedial and refresh classes are conducted for the 8th and 9th graders who cannot keep up with classes. These classes are continually taught, using available classrooms in the evenings and/or on weekends. The Ministry of Education desires these classes to be held during the daytime by building rooms along with classrooms so that students do not get burdened. It is assumed that the multi purpose rooms shall also be used as drawing rooms for geometrical drawing (an optional subject). Hence, it is appropriate to build multi purpose rooms.

(ix) Activities Room (1)

Opportunities for entertainment and sports are limited for the Maldivian young people, so they actively participate in school extracurricular activities. All the students and staff shall participate in school extracurricular activities and those activities are recognized as equal to the educational curriculum. Additionally, brass band, cadet, and scout (girl guide) are very common in secondary schools. Therefore, it is essential to build a room to store musical instruments, equipment, uniforms, etc in order to better manage those extracurricular activities.

(x) School Hall (1)

School halls of each secondary school on Male' island are used for various purposes

such as holding school meetings, sport activities, club activities, and examinations. From this viewpoint, it is appropriate to build a school hall large enough to accommodate sports activities as well as other activities.

(xi) Principal Room (1)

It is indispensable for the school principal to have his/her own room, as his/her work requires some privacy from students and staff. In accord with the Maldivian customs, it is appropriate to attach a toilet to the room as in other schools.

(xii) Assistant Principal Rooms (2)

While the principal controls the whole school, an assistant principal shall be responsible for one of the two shifts. A total of two assistant principals shall be staffed and each shall take responsibility for his/her own shift. It is appropriate for the assistant principals to have their own rooms, as their work also requires some privacy. And, a toilet shall be attached to each room in accordance with the Maldivian customs.

(xiii) Supervisors Room (1)

Supervisors are staffed in each government secondary school to manage graders and streams. In the Project school, 10 supervisors will be staffed. As the supervisors do not teach in classrooms, and have their own desks to do management work relating to students and teachers, it is appropriate to build a supervisors room.

(xiv) Teachers Room (1)

A total of 126 teachers are planned for the Project school and it is appropriate to build a room for them. Teachers shall not be provided with their own desks and share workbenches to do deskwork. Their own belongings and teaching aids shall be stored in their own locker in the room.

In addition, at secondary schools, the heads of department are selected and supervise teachers of each department. In the existing government secondary schools, a separate space and individual desks are provided for the heads of department. In line with other schools, the Project follows this practice.

As an addition, built-in shelves shall be provided in the room on which to place teaching aids.

(xv) Sports Room (1)

Though sport is not included in the secondary education curriculum in the Maldives, sports activities are very common as students' extracurricular activities at government secondary schools. Due to this, sports supervisors are staffed at each government secondary school. According to the Ministry of Education, a sports room is needed so that the sports supervisors can do deskwork and store sports equipment. Unlike teachers, the sports supervisors work during evenings and on weekends and go back and forth between the schoolyard, the school hall and outside sports centers. Hence, from an administrative point of view, it is appropriate to build a sports room in addition to the teachers room.

(xvi) General Office (1)

General office is a room where staff do general affairs, accounting and miscellaneous task work. In the Project school, about 23 administrative staff in total are planned. It is appropriate to build a general office for them. Additionally, an individual space for the administrator who supervises the staff shall be planned in the general office, as his/her work requires some privacy from the staff.

(xvii) Print Room (1)

A large volume of copies are made for student guidance, teacher guidance, some booklets regarding school management, and day-to-day copies in the print rooms of government secondary schools. In addition to these copies, exam sheets are printed, sorted, and stored in the room. Therefore, it is necessary to build a print room, and a storage area for exam sheets shall be attached to the room.

(xviii) Meeting Room (1)

At each government secondary school on Male' island, 1) administrative staff meetings, 2) supervisors' meetings, 3) department head meetings, and 4) teachers' meetings are held regularly. In addition to these regular meetings, concerned parties, such as the PTA, meet continually around the time of school events for discussion and preparation. Therefore, it is appropriate to build a meeting room.

(xix) First Aid Room (1)

At each government secondary school on Male' island, 2 health assistants are staffed (1 assistant for each shift) to give first aid. Especially, girls tend to visit the first aid room more often than boys do, so, it is appropriate that the Project builds a first aid

room. A toilet will not be installed in the first aid room but a universal toilet, for both patients and the handicapped, shall be placed adjacent to the first aid room.

(xx) Counseling Room (1)

At each government secondary school on Male' island, 2 counselors are staffed (1 assistant per shift) to counsel students on matters of school life, study, career, and family problems. As counseling work demands privacy and staff is on duty daily, it is appropriate to build an individual room for counseling.

(xxi) Prayer Room (1)

All Maldivian nationals are Muslims, so, it is appropriate to build a prayer room for staff and students.

(xxii) Pantry (1)

The Project school plans to employ about 200 staff for both shifts and the Maldivian custom being considered, it is appropriate to build a pantry where staff can sit and have snacks.

(xxiii) Canteen (1)

At the government secondary schools on Male' island, students have snacks during a break in the middle of each shift. Some students bring snacks from home, while other students buy snacks and drinks at the school canteen. Canteens at three existing government schools are run by private companies. The canteen at Dharumavantha School has a space where several students can sit and eat. However, the other two schools' canteens only have a small space with a sales counter. In light of the local customs, a canteen is appropriate in a government secondary school and shall be built also for the Project school.

(xxiv) Toilet

Student toilets, staff toilets, and a universal toilet shall be installed in suitable places.

(xxv) Stores

Storage areas shall be set by taking advantage of spaces under stairs and so on.

In addition to the aforementioned rooms, a machine room and an electric room shall be built, since they are indispensable for the facility operation.

(3) Furniture and Fittings Components

Necessary furniture will be selected based upon the request list from the Maldivian side. However, furniture for the computer room, the home science and industrial room, administrative and staff rooms, and the pantry shall be procured by the Maldivian side.

(4) Equipment Components

The following are selection criteria regarding laboratory equipment (Physics, Chemistry, Biology, and Fisheries Science) and audio-visual equipment requested by the Maldivian side.

(i) Laboratory Equipment

Equipment matching the following criteria shall be provided.

- 1) Teaching aids for teacher demonstrations, similar to those provided at Aminiya School
- 2) Necessary equipment for science experiments that cannot be substituted by other equipment
- 3) Equipment to safely conduct experiments

The following shall not be provided in the Project.

- *Software such as VHS videos, CD-ROMs, OHP sheets, etc.
- *Consumables and spare parts
- *Laboratory equipment which can be substituted by other equipment
- *Teaching aids for teacher demonstrations which are not provided at Aminiya School

(ii) Audio Visual Equipment

Minimum equipment to view and listen to VHS videos, CDs, DVDs, CD-ROM soft shall be provided.

2-2-2-2 Facility Arrangement Plan

The Project site is situated on the northeastern corner of a block adjacent to a peripheral road that runs along the west coastline of Male' island. The Project site is a 60m x 60m square and has a small substation on its southeast corner. The site faces about 10-meter-wide streets on its east and north sides; there is the Third Primary School in Male' on its south; and, there is a plot

for a children's park on its west side.

The Project facilities consist of a three-story classroom building, and a five-story classroom building that includes administrative rooms, a five-story special classroom building, and the school hall. The arrangement plan of facilities is summarized as follows:

- (1) Each building shall be arranged close to site boundary lines in such a way that the schoolyard remains as large as possible and has a shape that enables the most practical use. By doing so, the Project school can be prepared for possible building expansion demand in the future.
- (2) Windows of the classroom buildings shall be installed on the north and the south sides in order to avoid the glare caused by the intense sunlight in the mornings and evenings and to prevent the west monsoon from coming into the classrooms. This window arrangement secures a comfortable learning environment, as it helps to block the strong sunlight reflection on blackboards and allows natural ventilation in the classroom.
- (3) The classroom buildings shall be divided between a five-story building and a three-story building to secure the necessary number of classrooms. The five-story building shall be situated to the north street alignment, and the lower three-story building shall be built parallel on the schoolyard side in the south to reduce the feeling of oppression. About a 10-meter-wide courtyard between the buildings will secure ventilation and natural sunlight at the corridor side of the two classroom buildings.
- (4) The special classroom building that includes the science laboratories and the library etc. shall be located between the two classroom buildings in order that movement to and from the classrooms on both sides shall be convenient. In addition, the special classroom building shall be located on the west side of the site and its corridors shall be on the east side so the corridors and the courtyard shall be saved from monsoon rain as much as possible.
- (5) The school hall, a low-rise building in the Project, shall be located on the southeastern side of the site. This arrangement of the school hall location shall lessen possible problems regarding privacy and the feeling of oppression of the residents on the east side, and maintain natural lighting and ventilation for the abutting Third Primary School in Male'.

In addition, the longer frontage of the school hall shall be on the schoolyard side to enable the school to make integrated use of the two spaces.

- (6) The main entrance shall be by the east main street. The school hall entrance shall be close to the main entrance, as the hall shall be used for various purposes by residents as well as students. The school administrative section shall be concentrated around the main entrance in order that the staff could overview school circumstances easily.
- (7) Vehicles need to access the schoolyard in times of events and for unloading goods. To provide easy access for such vehicles, a space for an access road shall be kept between the school hall and the south boundary of the site, and a sub entrance shall be built on the east main street.
- (8) By having the schoolyard on the side of the Third Primary School in Male' and by arranging facilities around the yard, the two schoolyards - relatively big, open spaces on congested Male' island - connect to give a strong sense of open space.

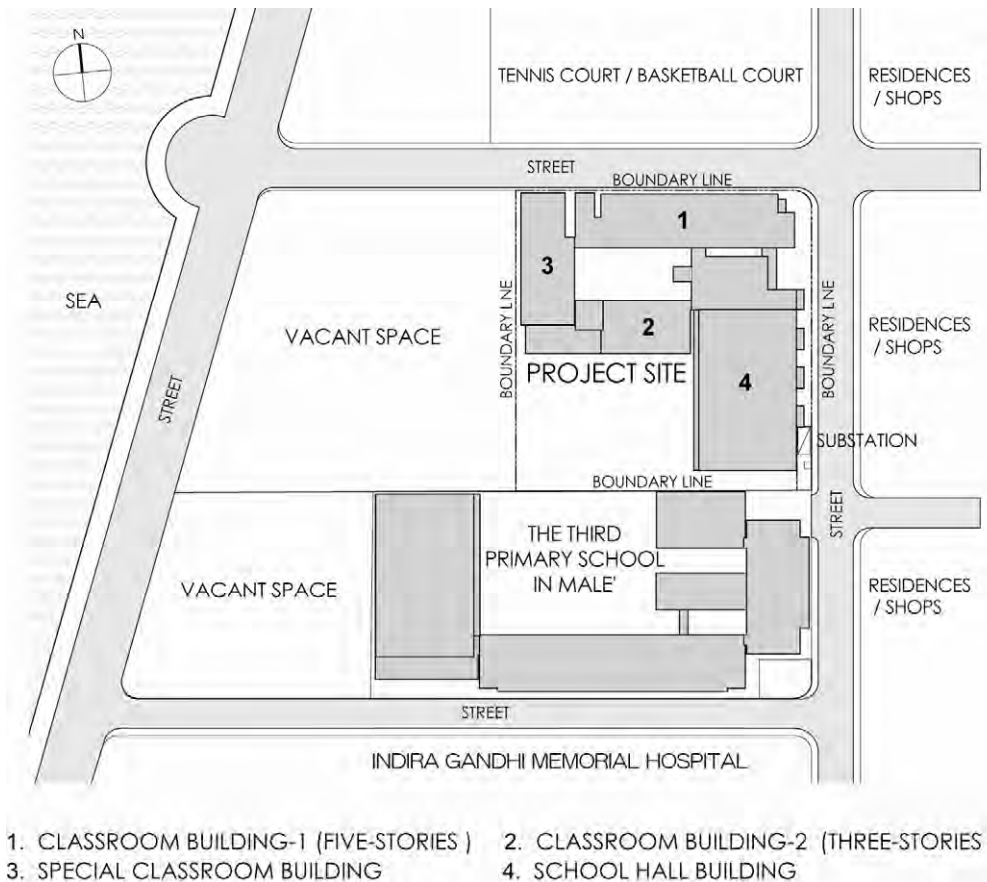


Figure 2-1 Facility Arrangement Plan

2-2-2-3 Architectural Plan

2-2-2-3-1 Floor Plan

Basic ideas regarding floor plans for all the facilities are described below.

- The educational zone, the administrative and staff zone and the service zone are clustered together within each zone not only as a horizontal zone but also as a vertical block in the facilities.
25 classrooms shall be situated from the first floor to the fourth floor in the two classroom buildings. Special classrooms consisting of the science laboratories and the library etc. shall cluster between the ground floor and the fourth floor in the special classroom building. Rooms for the staff shall be located nearby the main entrance. And those rooms shall be situated from the ground floor to the second floor in the five-story classroom building and the school hall building. These arrangements allow administrative convenience and cost reduction by minimizing plumbing-fixture length.
- The buildings shall be L-shaped on their third and fourth floors. Stairs shall be placed in the ends and the center of the L-shape for the sake of convenience and security in case of emergency. A student toilet shall be installed in the center of each floor for convenient use and cost reduction. Also, staff toilets shall be built on each floor.
- While the third and the fourth floors shape “L,” the levels lower than the second floors form the courtyard with two additional buildings. In order to allow smooth student and staff circulation in the corridors that encircle the courtyard and vertical movement between the administrative rooms near the courtyard, an additional staircase shall be placed in the courtyard at about the center of the facilities.
- One of the two pilotis is by the main entrance and the other is located on the ground floor of the three-story classroom building and faces the prayer room across the courtyard. This pilotis arrangement aims: to smooth the circulation from the main entrance to the schoolyard in the time of events and students coming to and leaving school, and; to allow a pleasant wind from the north and the south, and visa versa, to allow a breeze through from the north street to the schoolyard.

The floor plans concerning main rooms are as follows:

(1) Classrooms

Each classroom shall be a 6m x 8m rectangle in accordance with the standard of the Ministry of Education. A blackboard shall be furnished on the longer side of the rectangle so that more students can sit closer to the blackboard. Windows shall be installed on the north and south sides so that intense sunlight from the east and the west during early mornings and late afternoons, and the west monsoon shall not enter into the classroom. The window arrangement also allows natural ventilation in the classrooms.

Of a total of 25 classrooms, 19 shall be located from the first floor to the fourth floor of the five-story classroom building, and 6 shall be on the first and the second floor of the three-story classroom building. One of the classrooms shall be nearby the administrative section on the first floor, i.e. the principal room, the assistant principal rooms and the supervisors room, as some of the students shall need special attention from the supervisors.

(2) Special Classrooms

Science laboratories for Chemistry, Biology, Physics and Fisheries Science shall be built from the first floor to the fourth floor on the south side of the special classroom building. Each laboratory is 8 m x 12 m in size and connected with a preparation room. In each laboratory a blackboard shall be furnished on the shorter side of the rectangle. In front of the blackboard, a platform with a sink for the teacher shall be provided. On the west and the south walls, a total of six sinks shall be installed. In the chemistry laboratory, one of the six sinks shall be placed in the draft chamber. The chemistry laboratory, in which chemicals are used, is most likely to have incidents such as fire and, therefore, it shall be located on the first floor for easy fire fighting.

The library, the audio visual room, the computer rooms and the art room shall be situated by order from the first floor to the fourth floor on the north side. The arrangement of these special classrooms was made upon consideration of frequency of use. The art room floor size is 8 m x 9m, and the other three rooms are 8 m x 12 m in size. The library, the audio visual room, and the computer room do not need much natural lighting, and the Maldivian side will install air conditioners in each room. Hence, these three rooms shall be on the north side, where natural ventilation and lighting are less than on the south side of the building.

On the ground floor of the special classroom building, there shall be the following rooms: the home science and industrial room is 8 m x 9 m with a store; and the activities room and two multi purpose rooms, all of which are 6 m x 8 m in size, as the classrooms are. Those rooms are situated on the ground floor for easy administration and access because: there will be a lot of noise on the floor in class in the home science and industrial room; big musical instruments and equipment shall be carried into and out of the activities room; and, students and staff use the multi purpose rooms irregularly in terms of time for various purposes such as remedial classes and vocational education.

(3) School Hall

The school hall shall be large enough to accommodate a basketball court, as the school hall shall be used for sport activities. Other than sports equipment storage, a store for chairs and a stage shall be provided, considering that the school hall will be used for concerts, meetings, and extracurricular activities. As stated in the Facility Arrangement Plan, community residents will also use the school hall. So, for easy access from outside, the school hall entrance shall be on the side of the school main entrance and there shall be provided sub-entries at the sides of the stage. For natural ventilation and simultaneous use with the schoolyard, double-swing doors shall be installed on the schoolyard side. In addition, toilets shall be furnished on the west side of the stage.

(4) Administrative and Staff Rooms

For easy administration and intercommunication, administrative and staff rooms shall be situated from the ground floor to the second floor nearby the main entrance. Especially, the principal room, the assistant principal rooms and the supervisors room shall be on the first floor to further enhance convenience. As the supervisors need to oversee school circumstances, the supervisors room shall face by the piloti. This arrangement allows the supervisors to check people coming and going, and to watch the corridor in front of the principal room over the piloti.

The teachers room shall be on the second floor where they can easily go back and forth between the rooms and the classrooms, as most of the classrooms are situated on the second floor or above. Also, this room location allows the teachers to supervise their students easily. Furthermore, by using the stairs, the teachers can easily access the supervisors room which is located right under their own room, the principal room and the assistant principal rooms.

The general office shall be located beside the main entrance on the ground floor in order that administrative staff can do reception work and check people coming in. The general office shall be by the stairs that allows administrative staff to easily shuttle among the general office, the principal room and the assistant principal rooms. Inside of the general office, the administrator's room shall be set up.

The print room, adjoining to the general office, shall be used not only by administrative staff but also by teachers. Therefore, the print room shall be by the stairs for convenient access from upstairs.

Lastly, the sports room shall be on the south end of the special classroom building so that the room is close to the school hall and the schoolyard where sport activities shall take place.

(5) Prayer Room

The prayer room shall front the courtyard and be situated on the ground floor level in the five-story classroom building. This location secures a quiet environment for prayer, as circulation is expected to be less in this location than in other places. The planar shape of the prayer room shall be a circle without a specific axis, because the axis toward Mecca differs from the grid line direction of the main structure. In the direction of Mecca (65 degrees westward of due north), a wall that upholds the Quran shall be provided and windows shall be installed on both left and right sides for natural sunlight. On the opposite side of the wall, two separate entrances shall be built to enable simultaneous use by males and females. Moreover, a round independent column which is indispensable for the building structure in the very center of the circle will imply psychological separation of the space between males and females in a random direction.

Devotees must prostrate themselves when praying. To protect the devotees from outside sightlines, low-rise windows shall be installed along the floor. This window arrangement also allows natural ventilation and lighting that reflects on the white coral sand outside. Additionally, the floor level shall be little higher than that of the corridor, as devotees must take off their shoes when entering the prayer room. And, the ablutions shall be provided in the entrance hall of the prayer room in order that devotees can purify themselves.

(6) Service Rooms

Some of the service rooms shall be located in the northwest corner on the ground floor. As the corner is relatively quiet, the counseling room for the students shall be located since it

requires privacy. The first aid room shall be on the same corner, as the location has easy access to the courtyard as well as the schoolyard where sports activities take place. In addition, a universal toilet shall be installed nearby the first aid room to better serve the handicapped and patients of the first aid room.

In the Maldives, students and staff eat snacks between classes, as do their counterparts in neighboring countries such as Sri Lanka. On Male' island, each school assigns a catering company to such a snack service and has a canteen where the company can prepare snacks and store beverages. Hence, in the Project, for the sake of many students who eat out even in the rain, a canteen and its sales counter will be provided in the location that faces the piloti between the schoolyard and courtyard.

A pantry where staff have snacks shall be provided next to the canteen in front of the schoolyard. The staff can receive service directly from the catering company.

(7) Roof Terrace

The roof of the three-story classroom building shall be utilized as a roof terrace, which can be approached from stairs. The roof terrace shall serve various activities such as musical instrument practice as well as a supplementary space for the school hall and the schoolyard.

(8) Schoolyard and Courtyard

A rectangular space surrounded by the Third Primary School in Male' in the south and by the school hall that separates the space from outside street in the east shall be used as the schoolyard. The courtyard, four sides of which are surrounded by the classroom buildings etc, shall also be utilized as a part of the schoolyard, as the courtyard shall have comfortable shade.

Table 2-2 Planned Rooms by Zone

Planned Rooms 1 (Educational Zone)

Name of Room	Nos.	Floor Area (m ²)	Purpose of Use, Users, and Attachments
Classroom	25	1,200	<ul style="list-style-type: none"> · To conduct classes (For all grades) · 30 students and 1 teacher/class
Science Laboratory (Physics, Chemistry, Biology, and Fisheries Science)	4	395.44	<ul style="list-style-type: none"> · To conduct science classes · 30 students and 1 teacher/class · Sinks and a demonstration table for teacher to be provided · A draft chamber for the Chemistry Laboratory

Name of Room	Nos.	Floor Area (m ²)	Purpose of Use, Users, and Attachments
Preparatory Room	4	98.88	<ul style="list-style-type: none"> · To prepare for experiments, and to store chemicals and materials · 2 lab assistants (1 each shift) to be stationed · A sink to be stored
Library	1	100.46	<ul style="list-style-type: none"> · To lend and allow students to read books, and to conduct English classes · 30 students to be accommodated · 2 librarians to be stationed (1 for each shift) · Approximately 10,000 volumes to be stored
Audio Visual Room	1	100.46	<ul style="list-style-type: none"> · To conduct classes using AV equipment · 30 students and 1 teacher/class
Computer Room	1	100.46	<ul style="list-style-type: none"> · To conduct computer studies classes · 30 students and 1 teacher/class
Art Room	1	100.46	<ul style="list-style-type: none"> · To conduct art classes · 30 students and 1 teacher/class · Storage to be attached for artworks and teaching aids
Home Science and Industrial Room	1	90.17	<ul style="list-style-type: none"> · To conduct vocational education (subjects to be decided) · 30 students and 1 teacher/class · Sink(s) to be provided · Storage to be attached for equipment
Multi Purpose Room	2	98.86	<ul style="list-style-type: none"> · To conduct extra classes, remedial classes, Geometrical Drawing classes, etc. · 30 students and 1 teacher/class
Activities Room	1	51.03	<ul style="list-style-type: none"> · To store equipment for extracurricular activities
School Hall	1	594.29	<ul style="list-style-type: none"> · To hold meetings and extracurricular activities · 750 seats for all the students in a shift · A basketball court to be provided · A stage, stores, and toilets to be attached
Educational Zone	Sub Total		2,930.51 m ²

Planned Rooms 2 (Administrative and Staff Zone)

Name of Room	Nos.	Floor Area (m ²)	Purpose of Use, Users, and Attachments
Principal Room	1	38.75	<ul style="list-style-type: none"> · The principal's space for work · A toilet to be attached for exclusive use
Assistant Principal Room	2	50.00	<ul style="list-style-type: none"> · The assistant principal's space for work (1 room for each) · A toilet to be attached for exclusive use
Supervisors Room	1	64.71	<ul style="list-style-type: none"> · Room for 10 supervisors for work · Each supervisor shall have own desk
Teachers Room	1	147.1	<ul style="list-style-type: none"> · Work room for 12 department heads and 114 teachers · Each head of department shall have own desk · Teachers to share workbenches · Separate spaces to be provided for heads of department and teachers · Shelves for teaching aids to be attached
Sports Room	1	25.34	<ul style="list-style-type: none"> · Sports supervisors' space for work · To store sports equipment · Two sports supervisors (1 for each shift) to be stationed
General Office	1	122.07	<ul style="list-style-type: none"> · Work room for 23 administrative staff · The administrator shall have own space · Each staff shall have own desk · Toilet and storage to be attached to the office
Print Room	1	31.49	<ul style="list-style-type: none"> · To copy documents, booklets, exams, etc. · Storage to keep consumables and printed materials to be attached to the room
Meeting Room	1	48.00	<ul style="list-style-type: none"> · To conduct various kinds of meetings · The room can accommodate about 20 persons

Administrative and Staff Zone	Sub Total	527.46 m ²
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Planned Rooms 3 (Service Zone)

Name of Room	Nos.	Floor Area (m ²)	Purpose of Use, Users, and Attachments
First Aid Room	1	30.16	<ul style="list-style-type: none"> · To give first aid · Room for 2 health assistants (1 for each shift) · 2 beds to be furnished
Counseling Room	1	10.56	<ul style="list-style-type: none"> · Counselors counsel with students · Rooms for 2 counselors (1 for each shift)
Prayer Room	1	40.48	<ul style="list-style-type: none"> · Students and staff to pray

Name of Room	Nos.	Floor Area (m ²)	Purpose of Use, Users, and Attachments
			· The ablutions to be provided
Pantry	1	44.56	· Staff to dine · To be operated by outside companies
Canteen	1	17.02	· Drinks and snacks to be sold for students · To be operated by outside companies
Student Toilet	7	111.66	· 1 toilet for the ground, third, and fourth floors. 2 toilets for the first and second floors
Staff Toilet	5	29.27	· 1 toilet per floor
Universal Toilet	1	5.64	· A handicapped accessible toilet
Store	2	16.69	· To be placed under stairs etc.
Machine Room	1	18.40	· Water pumps, control panels, etc. to be installed
Electric Room	1	12.75	· Transformer and main distribution board to be installed
Corridor, Stairs, Piloti	-	1,720.47	
Service Zone		Sub Total	2,057.66 m ²
Total Floor Area			5,515.63 m ²

2-2-2-3-2 Section Plan

(1) Ground Floor Level

The ground floor level shall be 700mm higher than the ground level in order to avoid water submersion during the rainy season. In addition, the floor level of each room shall be set 20mm higher than the corridors so that rainwater shall not come into a room from a gap under a door.

(2) Floor Height

The floor-to-floor height of the buildings shall be 3.2m, shorter than 3.5m of the Third Primary School in Male' and other Japanese Grant Aid project schools. This helps in suppressing the construction cost. At the same time, in order to secure a comfortable learning environment in the tropical climate, the ceiling height between a floor to upper floor slab shall be no shorter than 3m. In addition, the floor-to-floor height in the school hall shall be 7m high, as sport activities shall take place there.

(3) Floors and Roofs

Floors of each level shall be slab with reinforced concrete in order to vertically cut noises from floor to floor. Moreover, with heat insulating materials and spaces under the roofs, there shall be sufficient heat insulation effect.

Considering the necessity of collecting rainwater and for easy maintenance, the roof shall be a pitched roof, except for certain flat portions where some activities shall take place.

(4) Windows and Eaves

In main rooms such as classrooms, the window openings shall be up to the bottom of the beam to secure effective areas for natural lighting. The window sill shall be basically as high as 900mm so that the natural lighting on students' desk and safety are secured. In addition, regarding handrails in the corridors, they shall be set up as high as 1100mm, the Japanese standard, for the sake of safety.

Eaves shall be installed above the windows to prevent the direct sunlight from coming into the rooms. The eaves shall allow staff and students to enjoy natural ventilation even in rains because the eaves block rain coming into the rooms. Moreover, to prevent low angle sunshine from the east and the west during mornings and evenings, sunshade walls with regular intervals shall be vertically installed perpendicular to the windows on the north and south sides of the classroom buildings. As the windows of the special classroom building face the west, walls shall be installed at some angles so that windows could be left open even in monsoons and gentle sunlight could be allowed in. In addition, wooden louvers shall be set up on the corridor side to block the direct sunlight.

(5) Stairs

The cost for staircases shall be reduced as the floor-to-floor height is set 3.2m, shorter than that of other Grant Aid projects. With economic efficiency and comfort being considered, the number of steps between two floors shall be 18. Openings in the upper part of the half-landing secure natural lighting and ventilation and there shall be no aluminum sashes installed for a cost savings, as they are not necessary from the functional point of view.

2-2-2-3-3 Structural Plan

(1) Soil Condition

The Project site is reclaimed flat land adjacent to the coast and about 60 m x 60 m in size. Boring tests to the depth of 10m were conducted at 3 spots very close to the planned building locations. The Standard Penetration Test (SPT) was conducted at 1 m intervals.

According to the boring test, the depth from the ground level (GL) down to the soil layer, which bears the weight of the building, varies among the boreholes. N-values of SPT are: 11~28 at GL -1.0m (medium sand); approximately the same value at GL -2 to -3m; and medium sand mixed with cobble stones at GL -4 to -5m.

The soil is mainly composed of medium to hard compacted, weathered coral sand. The layers of the soil do not vary among the three boreholes. The groundwater table in the bore holes is GL - 0.74 to -0.82 m and can be considered relatively high.

(2) Foundation Type

The Project facilities consist of: a five-story classroom building, a five-story special classroom building, a three-story classroom building, and a one-story school hall. All of them are reinforced concrete buildings. The heaviest building of all is the five-story classroom building, weighing approximately 8.7t/m². The classroom buildings and the special classroom building shall be built with a mat foundation above the existing soil layer at GL -1.45m. The school hall, weight of which is lighter, shall be built in the same manner. Since the groundwater table is high, reinforcing bars for foundations shall be laid above GL -1.25m.

(3) Allowable Weight Bearing Capacity of the Soil

From the aforementioned N-values, the bearing strength of the soil shall be set 10.0t/ m².

(4) Building Structural System

The Maldives is located to the south of India and to the west of Sri Lanka and is not on the earthquake belt. This means that lateral forces to the structural design are only from wind. Therefore, the structures of the Project buildings shall be reinforced concrete frame structures. In principle, walls to resist lateral force shall be non-bearing ones made of reinforced concrete blocks. Considering the bearing strength of the Project site soil, lightweight hollow blocks shall be used for the buildings.

The structural types of the Project buildings are as follows:

- (i) Classroom Building: Five-story building
 - Reinforced concrete frame structure
 - Walls: Hollow concrete blocks (non-bearing type)
- (ii) Classroom Building: Three-story building
 - Reinforced concrete frame structure
 - Walls: Hollow concrete blocks (non-bearing type)
- (iii) Special Classroom Building: Five-story building
 - Reinforced concrete frame structure
 - Walls: Hollow concrete blocks (non-bearing type)
- (iv) School Hall: One-story building,
 Some Administrative Rooms: three-story building
 - *Cross section:
 - Column: Reinforced concrete structure (independent type)
 - Beam: Steel frame lattice structure
 - *Gable at cross section
 - Reinforced concrete structure
 - Walls: Concrete block masonry
 - *Longitudinal section
 - Reinforced concrete structure
 - Walls: Concrete block masonry
 - * Administrative Rooms
 - Reinforced concrete frame structure
 - Walls: Concrete block masonry (non-bearing type)

(5) Standards to be Followed

In principle, the general structural design of the Project facilities shall follow Japanese structural design standards:

- (i) Architectural Institute of Japan: Reinforced Concrete Structure Design Standard
- (ii) Architectural Institute of Japan: Steel Structure Design Standard

(6) Building Materials

- (i) Concrete:
 - Compression strength $f_c=210\text{kg/cm}^2$ or $f_c=180\text{kg/cm}^2$
 (strength of cylindrical section)
 - As the soil and groundwater in the Project site contain sulfate, sulfate-resistant cement shall be used for the foundations. The

water cement ratio shall be less than 50%.

- (ii) Steel bars: Yield strength: $f_y \geq 420\text{N/mm}^2$
- (iii) Steel frame: Yield strength: $f_g \geq 2,400\text{kg/cm}^2$
- (iv) Concrete blocks: JIS A 5406 Hollow Block 08 or equivalent

(7) Design Load

(i) Live Load

Table 2-3 Design Load (unit: N/m²)

Structural Member	Floor/Small Beam	Main Frame/Foundation
Roof truss	600	300
Flat roof; no walking	800	600
Terrace and walking area on roof	2,300	1,800
Floor	2,300	2,100
Library	4,000	3,000

- (ii) Seismic Forces: Not applicable
- (iii) Wind Load: 100kg/m^2 (equivalent to wind speed of 40m/second)

2-2-2-3-4 Electrical Facility Plan

(1) Power Transformer Facility

An electric room shall be placed nearby the existing substation on the adjoining site. A 3-phase 4-wire 400/230V power shall be received then distributed to each room through the main distribution board.

(2) Main Wires

In accordance with the BS standard, electrical wires shall be installed in conduits and connected from the electrical room to each distribution board.

(3) Power Facility

Power shall be supplied and controlled for the following equipment.

- (i) Well water pumps: One set of two automatic switching pumps
- (ii) Rainwater pumps: One set of two automatic switching pumps
- (iii) Fire hydrant pumps: Two sets and one set for backup
- (iv) Pit water pumps: Four sets of automatic and individual operation

The well water pumps, the rainwater pumps, and the fire hydrant pumps as well as their control panels shall be installed in the machine room of the three-story classroom building. In addition, the pit water pumps shall be installed in a pit of each building.

(4) Lighting Fixtures

Lighting fixtures shall basically be fluorescent tubes and the ceiling-mounted type. A pipe hanging type shall only be used for blackboard lights. Exit signs shall be installed to take a provision for emergencies. Illumination in each room shall be as follows.

Classrooms, special classrooms and library	: 250~350Lux on desks
Administrative and staff rooms	: 250~350Lux on desks
School hall	: 250~350Lux on floors
Corridors and pilotis	: 30~50Lux on floors

(5) Outlets

Each room shall be provided with an adequate number of outlets. The special classrooms shall be equipped with additional outlets for equipment along with general type outlets. In the canteen an outlet for heaters shall be provided. Also, conduits for electric wires will be installed for air-conditioner spots, as the Maldivian side shall install air-conditioners after completion of the Project.

(6) Broadcasting System

A broadcasting system with a chime shall be installed for general announcements and class starting and ending bells. Speakers shall be installed not in each classroom but in the corridors. The broadcasting equipment shall be provided in the general office.

The school hall shall be provided with its own broadcasting equipment including microphones and wireless microphones. The equipment shall be an external input connection capable type and its amplifier shall be placed at the end of the stage.

(7) Telephone

Telephone outlets, either for telephone handsets or LAN cable, shall be provided in the following rooms. Conduits that connect each room and telephone exchange, routing the terminal board on each floor shall be installed for connection.

Ground floor: The general office, the print room, the counseling room, the first aid room, the activities room, and the home science and industrial room.

First floor: The principal room, the assistant principal rooms, the meeting room, the supervisors room, the library, and the chemistry science laboratory.

Second floor: The teachers room, the audio visual room, and the biology laboratory.

Third Floor: The computer room and the physics laboratory.

Forth Floor: The art room, and the fisheries science laboratory.

The telephone exchange (to be installed by the Maldivian side) shall be installed in the general office. Telephone sets and LAN-related equipment are excluded from the Project.

(8) Lightning Conductor

A lightning conductor shall not be installed, as the Maldivian standards do not require it.

(9) Automatic Fire Alarm System

In accord with the Maldives' regulations, an automatic fire alarm system shall be set up after laying conduits and connecting wires.

2-2-2-3-5 Water Supplies and Drainage Plan

(1) Water Supply Facilities

(i) City Water Facility

City water is basically used for drinking purposes. However, when rainwater is short, the city water shall be used to fill fire hydrants and rainwater tanks. The city water shall be directly connected to each faucet, as there is adequate pressure. Additionally, the city water shall be provided for the ablutions beside the prayer room and water coolers the Maldivian side provides after the completion of the Project.

(ii) Well Water Facility

The Maldivian side shall dig a self-financed well on the Project site. The well water shall be pumped up into an elevated water tank by two automatic-switching water pumps in the machine room then distributed to toilets for flushing.

(iii) Rainwater Facility

By taking the soft reclaimed land into consideration, a rainwater tank and a fire hydrant

tank shall be placed in a pit underneath the three-story classroom building to collect rainwater falling from the building roof. A set of two automatic-switching water pumps stored in the machine room shall pump up water from the rainwater tank to an elevated water tank and it shall then be used for hand washing, toilet bowl cleaning, sprinklers, etc.

(2) Hot Water Supply

An electric water heater shall be provided for the faucet in the canteen.

(3) Water Drainage System

Sewage and wastewater shall be drained directly from each drain outlet to sewage pipes laid underneath the eastern and the northern side streets. They are connected at the eastern and northern points. Inside of the buildings, sewage and wastewater run in separate drain pipes, while they shall be flowing in the same pipe outside of the buildings.

(4) Sanitary Wares

Toilet bowls shall be of western type, which is commonly used in households. A low tank shall be placed in each stall in order to flush the toilet with well water. Each stall shall have a water faucet that is connected to the rainwater tank for washing, in accord with the local custom.

In addition, sinks shall be provided for the following rooms: the chemistry laboratory/the preparatory room, the biology laboratory/the preparatory room, the physics laboratory/the preparatory room, the fisheries science laboratory/the preparatory room, the multi purpose rooms, and the home science and industrial room.

(5) Fire Hydrant System in the Buildings

In accordance with the administrative guidance, a fire hydrant tank shall be placed in a pit under the three-story classroom building so that it can take an advantage of the lighter weight of the building to reserve rainwater. When the rainwater is short in the tank, the city water shall be used to refill it. Water pumps and the control panel shall be set up in the machine room and 2 or 3 water hydrants per floor shall be placed to comply with the regulations.

(6) Ventilation Facility

Exhaust fans shall be provided in the following rooms:

the electric room; the machine room; the universal toilet; toilets by the stairs in the three-story classroom building; the staff toilets on the first and the second floor; and the draft chamber for the chemistry laboratory.

(7) Ceiling Fan

A ceiling fan shall be provided in each room. The school hall also shall be furnished with ceiling fans.

2-2-2-3-6 Building Materials and Equipment Plan

(1) Floors

In principle, floors shall be of reinforced concrete slab with a mortar finish. To prevent surface cracking, contraction joints shall be provided. Floors of some portions such as science laboratories, the prayer room where devotees take off their shoes etc., as well as floors of toilets, shall be finished with tile so that they don't get dirty and can be cleaned easily. The floor of the school hall shall be of polyurethane resin finished with a slip-proofing treatment, as the hall shall be used for sports activities. The floor of the stage shall be finished with wooden flooring.

(2) Walls

Walls shall consist of reinforced concrete columns and beams to form frame structures and then filled with hollow concrete blocks. In principle, the exterior and the interior walls shall be of paint coating on the mortar finish base. To prevent surface cracking, contraction joints shall be installed properly between different materials. The paint color shall be a bright whitish color to balance illumination distribution inside of the buildings. Walls of some rooms, such as the toilets, which easily get stained, shall be finished with tiles.

(3) Doors and Windows

All the windows regardless of the corridor side or the external wall side shall be of aluminum sash, as it is relatively durable against the salt-damage. The windows basically shall be a friction-stay type, as it is superior in terms of the effective opening area for natural ventilation. Considering economic efficiency, the window size shall be approximately 600 mm in width and 1200mm in height. For the sake of pedestrians' safety, the type of windows installed along the corridor shall be a sliding type that does not project into the corridor.

Doors of each room shall be a wooden flush type. To be termite-proof, the doors shall be made of hard wood and termite-proofing measures shall be taken. Doors facing outside shall be of aluminum as they are relatively durable in rain.

(4) Ceilings

Suspended ceilings shall not be set in the classrooms, the administrative rooms, the corridors, etc. in order to reduce cost. Even in rooms on the highest floor, the ceiling of the structural slab shall be applied with thin mortar and painted with a bright color to balance the illumination of the rooms.

The school hall shall have suspended ceilings of rockwool acoustic board to absorb noise. Also, the toilets where drain pipes are visible shall be provided with painted ceilings of fiber-reinforced cement board.

(5) Roofs

Considering the basic plan for collecting rainwater from the roof and for easy maintenance, metal roofing, commonly used in the Maldives, shall be installed on the reinforced concrete roof slab. As steel roofing is vulnerable to salt-damage, the material will be aluminum-zinc alloy plated steel sheet due to its cost effectiveness and durability. For some portions of flat roofs where activities take place, asphalt waterproofing and a protective concrete layer shall be applied on reinforced concrete slab.

Lastly, the following table summarizes major construction materials for the Project and their justifications.

Table 2-4 Construction Materials for the Project and Justifications

Parts	Local Standard Materials	Material adopted for the Project	Justification
Main Structures			
Foundation	Reinforced concrete	Same as at left	Follow local standard
Column/Beam	Reinforced concrete	Same as at left	Follow local standard
Roof/Floor	Reinforced concrete	Same as at left	Follow local standard
Wall	Concrete block	Same as at left	Follow local standard
Exteriors			
Exterior wall	Paint on mortar	Same as at left	Follow local standard
Roof	Galvanized steel sheet	Aluminum-zinc alloy plated steel sheet	Rust proof characteristic and durability considered

Parts	Local Standard Materials	Material adopted for the Project	Justification
Window	Aluminum sash	Same as at left	Follow local standard
Interiors			
Classroom floor/Corridor floor	Mortar finish	Same as at left	Follow local standard
Special classroom floor	Tile	Same as at left	Follow local standard
Toilet floor	Tile	Same as at left	Follow local standard
Interior wall	Paint on mortar	Same as at left	Follow local standard
Ceiling	Paint on mortar	Paint on thin mortar	Removal of danger of mortar falling and cost reduction
Classroom door	Wooden door	Same as at left	Follow local standard

2-2-2-4 Furniture and Equipment Plan

(1) Furniture and Fittings

The furniture in table 2-5 shall be provided in the Project. The Project assumes 30 students per class, and 1,500 students in total (750 students for the morning shift and 750 students for the afternoon shift).

Table 2-5 Furniture and Fittings List

Room Type	Number	Item(s)	Quantity	Remarks
Classroom	25	Blackboard	1	
		Bulletin Board	2	
		Teacher's Desk	1	Wooden
		Teacher's Chair	1	Plastic
		Student's Desk	30	Wooden
		Student's Chair	30	Plastic
Science Laboratory (Physics, Chemistry, Biology, Fisheries Science)	4	White Board	1	
		Bulletin Board	2	
		Teacher's Desk	1	Wooden
		Teacher's Chair	1	Plastic
		Cupboard	2	Wooden, With glass front
		Workbench	10	Wooden
		Stool	30	Plastic
Library	1	Librarian's Table	2	Wooden
		Librarian's Chair	2	Plastic
		Cupboard	2	Wooden, With glass front
		Bookshelf (6 stories)	54	Wooden
		Bookshelf (2 stories)	6	Wooden
		Magazine Holder	2	Wooden
		Student's Reading Table (4 seats)	3	Wooden
		Student's Reading Table (6 seats)	3	Wooden
		Student's Chair	34	Plastic

Room Type	Number	Item(s)	Quantity	Remarks
Audio Visual Room	1	White Board	1	
		Bulletin Board	2	
		Teacher's Desk	1	Wooden
		Teacher's Chair	1	Plastic
		Cupboard	2	Wooden, With glass front
		Student's Desk	30	Wooden
		Student's Chair	30	Plastic
Computer Room	1	White Board	1	
Art Room	1	Black Board	1	
		Teacher's Desk	1	Wooden
		Teacher's Chair	1	Plastic
		Showcase	2	Wooden, With glass front
		Student's Desk	30	Wooden
		Student's Chair	30	Plastic
Home Science and Industrial Room	1	Black Board	1	
		Bulletin Board	2	
Multi Purpose Room	2	Black Board	1	
		Bulletin Board	2	
		Teacher's Desk	1	Wooden
		Teacher's Chair	1	Plastic
		Cupboard	2	Wooden, With glass front
		Student's Desk	30	Wooden
		Student's Chair	30	Plastic
Activities Room	1	White Board	1	
		Bulletin Board	2	
School Hall	1	Podium	1	
		Student's Chair	750	Plastic
Teachers Room	1	Teacher's Workbench (4 seats)	4	Wooden
		Teacher's Workbench (6 seats)	4	Wooden
		Teacher's Chair	40	Plastic
		Locker	12	Wooden
Sports Room	1	Bulletin Board	2	
		Teacher's Desk	1	Wooden
		Teacher's Chair	1	Plastic
		Cupboard	2	Wooden, With glass front
First Aid Room	1	Health Assistant's Table	1	Wooden, Same as Teacher's Desk
		Health Assistant's Chair	1	Plastic
		Patient's chair	2	Plastic
		Patient's bed	2	Wooden
Counseling Room	1	Counselor's desk	1	Wooden, Same as Teacher's Desk
		Counselor's chair	1	Plastic
		Student's Chair	2	Plastic

(2) Equipment

(i) Science Laboratory Equipment

The following policies have been applied for the quantities.

- 1) Equipment which teachers use to demonstrate: 1 piece or 1 set
- 2) Equipment to be used when 30 students are divided into 5 groups and conduct an experiment: 5 pieces, 5 sets or multiples of 5.
- 3) Equipment to be used when 30 students are divided into 2 groups and conduct an experiment: 2 pieces, 2 sets, or multiples of 2.

Table 2-6 Science Laboratories Equipment List

No.	Item	Unit	Qty.
Physics			
P1	Micrometer (screw gauge)	pc	5
P2	Dynamics System	set	1
P3	Timer	set	5
P4	Metre Rule	set	5
P5	Lever Equipment	set	1
P6	Lever Kit	set	2
P7	Mass Set	set	5
P8	Metal Cubes Set	set	1
P9	Pulley	set	5
P10	Spring Balance	set	5
P11	Pendulum Bob	pc	15
P12	Solids Materials Kit	set	2
P13	Dry Vacuum Pump	pc	1
P14	Magdeburg Hemispheres	pc	1
P15	Ball & Ring	set	5
P16	Bar & gauge	set	5
P17	Conductivity Apparatus	pc	1
P18	Joule Calorimeter	pc	2
P19	Wire for Flame Test	pc	5
P20	Boyle's Law Apparatus	pc	1
P21	Tuning Forks Set	set	2
P22	Bell in Vacuum	set	1
P23	Direct Vision Spectroscope	pc	2
P24	Cylindrical Mirror	pc	5
P25	Prism	set	5
P26	Lens Set	set	5
P27	Optical Bench System	set	1
P28	Ray Optics Kit	set	1
P29	Set of Mirrors & Lenses	set	1
P30	Ripple Tank	set	1
P31	Spring	pc	5
P32	Electrostatic Kits	set	2
P33	Electrostatic Materials	set	5
P34	Electroscope	set	2
P35	Van de Graph Generator	pc	1
P36	Compass	set	5
P37	Demagnetizing solenoid	pc	1
P38	Induction Coil	set	1
P39	Oscilloscope	pc	1

No.	Item	Unit	Qty.
P40	Fleming's Apparatus	set	1
P41	Power supply	set	2
P42	Magnetic field viewer	pc	5
P43	Magnet	set	5
P44	Magnetizing coil	pc	1
P45	Bicycle Dynamo	pc	2
P46	Multimeter	pc	2
P47	Resistance Box	pc	2
P48	Sliding Resistor	pc	2
P49	Voltmeter	set	2
P50	Crocodile clip	pc	30
P51	Ammeters	set	2
P52	Digital Ammeter	set	2
P53	Leads, stackable plug	pc	30
P54	Leads, stackable and crocodile plug	pc	40
P55	Switch	set	5
P56	Communicating Vessel	pc	1
P57	Convection Tube	pc	1
Chemistry			
C1	Polythene aspirator	set	2
C2	Digital Balance	set	2
C3	Balance lever	pc	1
C4	Precision Balance	pc	1
C5	Balance Mass Set	set	2
C6	Bell Jar	set	1
C7	Desiccator	pc	2
C8	Conductivity/pH meter	pc	5
C9	Cork Boring Machine	set	1
C10	Cork Ring	set	5
C11	Combustion Spoon	pc	10
C12	Heat of Combustion Apparatus	set	1
C13	Electrolysis Cell Set	set	1
C14	Jack	pc	5
C15	Retort stand	set	5
C16	Gauze, steel wire with ceramic center	pc	30
C17	Periodic Chart	pc	1
C18	Eye Shield	pc	30
C19	Face Shield	pc	10
C20	Gloves	set	5
C21	Safety Screen	pc	1
C22	U Form Tube	set	5
C23	Beaker, PMP	set	5
C24	Beaker, Pyrex	set	5
C25	Tong for beaker	pc	5
C26	Burette	pc	5
C27	Condenser, Liebig	pc	5
C28	Crucible and lid	set	5
C29	Tong for Crucible	pc	5
C30	Dropping bottle	pc	5
C31	Dropping funnel	set	5

No.	Item	Unit	Qty.
C32	Evaporation Basin	set	5
C33	Conical Flask	set	5
C34	Buchner/Filter Flask	set	5
C35	Flat bottom Flask	set	5
C36	Round bottom Flask	pc	10
C37	Volumetric Flask	set	5
C38	Flask distillation with tubulature	pc	5
C39	Fractionating Column	pc	5
C40	Funnel	set	5
C41	Separating Funnel	pc	1
C42	Thistle Funnel	pc	5
C43	Measuring Cylinder	set	5
C44	Petri dish	pc	10
C45	Bulb Pipette	set	5
C46	Graduated Pipette	set	5
C47	Pipette relative goods	set	2
C48	Test tube	set	5
C49	Test tube with side arm	pc	10
C50	Test tube relative goods	set	5
C51	Thermometer	set	5
C52	Delivery Tube Set	set	5
C53	Tubing	set	1
C54	Tubing connector	set	5
C55	Visking Tubing	pc	1
C56	Watch glass	set	5
C57	Mortar and Pestle	set	5
Biology			
B1	Magnifier	set	5
B2	Clinostat	pc	2
B3	Dissecting Instrument Set	set	5
B4	Microscope	set	5
B5	Pre-prepared slide set (Basic cells)	set	1
B6	Pre-prepared slide set (Food Science)	set	1
B7	Pre-prepared slide set (Human Biology)	set	1
B8	Pre-prepared slide set (MITOSIS and MEIOSIS)	set	1
B9	Pre-prepared slide set (Protozoa and algae)	set	1
B10	Cell Model	set	1
B11	Plant Model	pc	1
B12	Flower Model	pc	1
B13	Dicotyledon leaf Model	pc	1
B14	MITOSIS Model	pc	1
B15	MEIOSIS Model	pc	1
B16	Brain Model	pc	1
B17	Heart Model	pc	1
B18	Kidney Model	pc	1
B19	Human Ear Model	pc	1
B20	Human Eye Model	pc	1
B21	Digestive System Model	pc	1
B22	Endocrine System Model	pc	1
B23	Human Skeleton	pc	1

No.	Item	Unit	Qty.
B24	Torso	pc	1
B25	Nervous System Model	pc	1
B26	Skin Model	pc	1
B27	Respiratory System Model	pc	1
B28	Urinary System Model	pc	1
B29	Plant Chart	set	1
B30	Human Chart	set	1
B31	Human Reproductive System Chart	set	1
B32	Potometer	pc	5
Fisheries Science			
F1	Field Compass	pc	5
F2	Petri Dish	pc	30
F3	Mortar and Pestle	set	5

(ii) Audio visual equipment

The equipment in table 2-7 shall be provided by the Project.

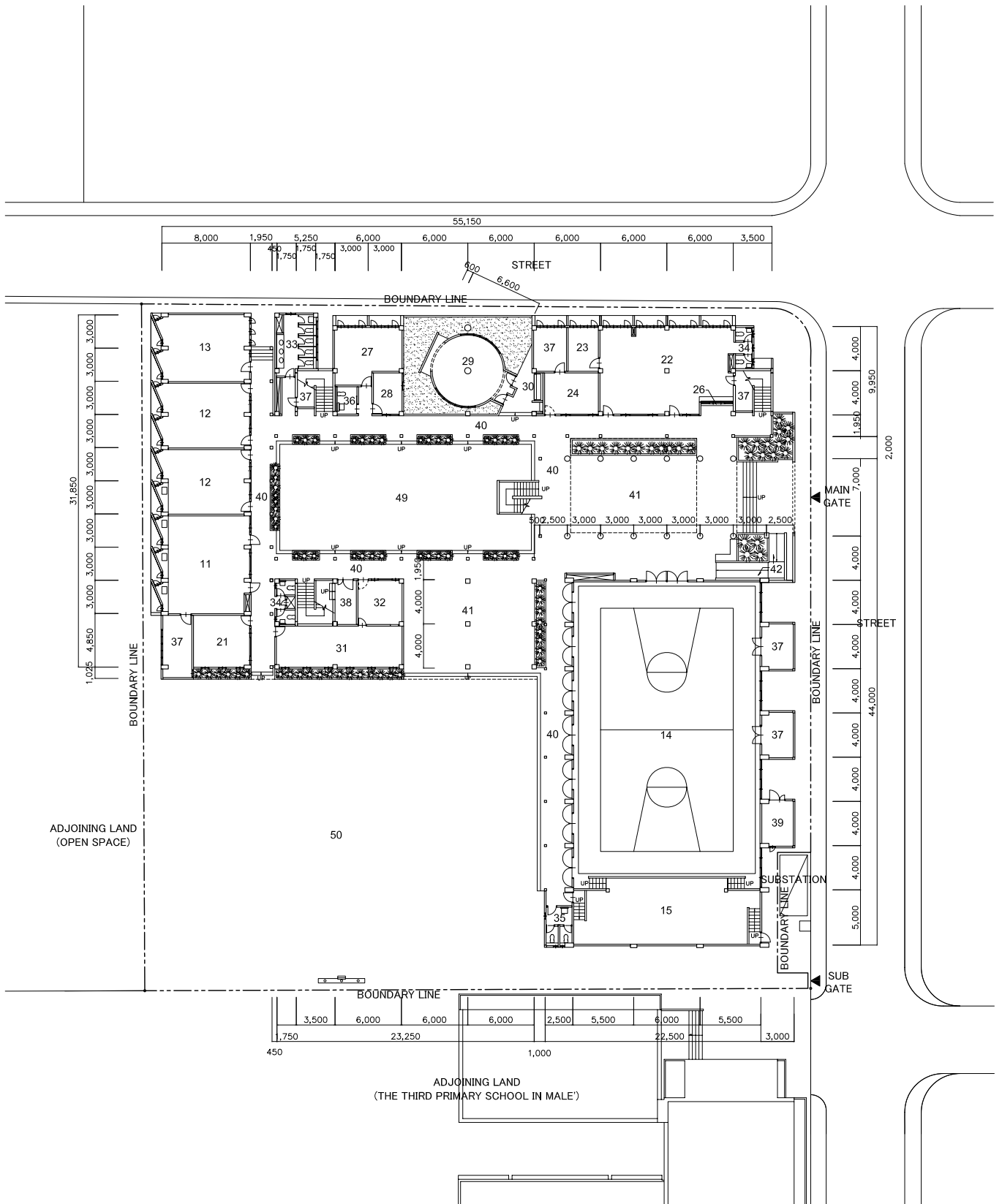
Table 2-7 Audio Visual Equipment List

No.	Item	Unit	Quantity
AV 1	Projector	pc	1
AV 2	Screen	pc	1
AV 3	Video player	pc	1

2-2-3 Basic Design Drawings

The basic design drawings of the Project facilities are shown in the following pages.

- Site Plan and Ground Floor Plan
- First and Second Floor Plans
- Third and Fourth Floor Plans
- Elevations
- Sections



Educational Zone

- 1 Classroom
- 2 Physics Laboratory
- 3 Chemistry Laboratory
- 4 Biological Laboratory
- 5 Fisheries Science Laboratory
- 6 Preparatory Room
- 7 Library
- 8 Audio Visual Room
- 9 Computer Room
- 10 Art Room
- 11 Home Science and Industrial Room
- 12 Multi Purpose Room
- 13 Activities Room
- 14 School Hall
- 15 Stage

Administrative and Staff Zone

- 16 Principal Room
- 17 Assistant Principal Room
- 18 Supervisors Room
- 19 Teachers Room
- 20 Head of Department
- 21 Sports Room
- 22 General Office
- 23 Administrator
- 24 Print Room
- 25 Meeting Room
- 26 Reception Counter

Service Zone

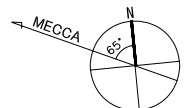
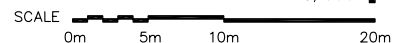
- 27 First Aid Room
- 28 Counseling Room
- 29 Prayer Room
- 30 Ablution
- 31 Pantry
- 32 Canteen
- 33 Student Toilet
- 34 Staff Toilet
- 35 Toilet for School Hall
- 36 Universal Toilet
- 37 Store
- 38 Machine Room
- 39 Electric Room
- 40 Corridor
- 41 Piloti
- 42 Ramp
- 43 Catwalk

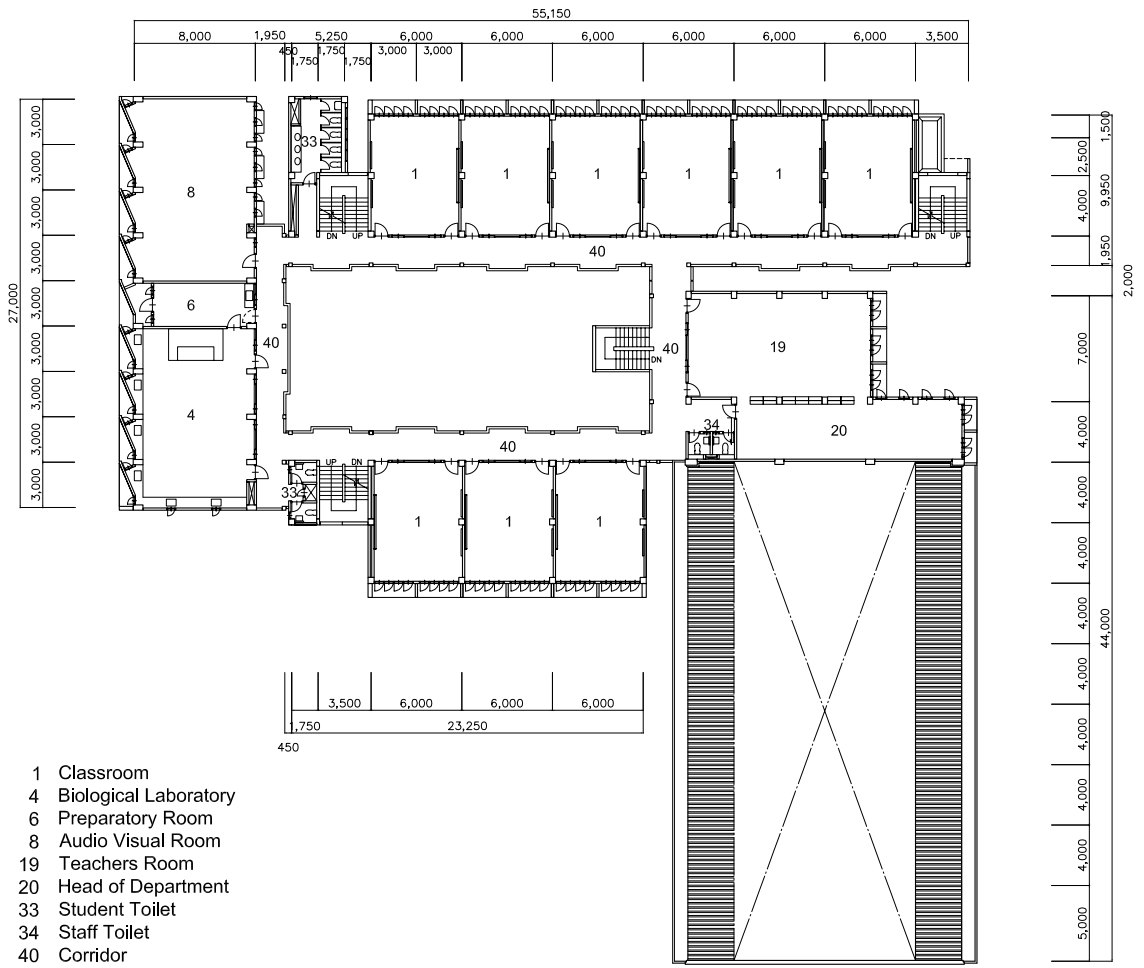
Others

- 44 Water Tank
- 45 Rain Water Tank
- 46 Pit
- 47 Roof Terrace
- 48 Void
- 49 Courtyard
- 50 Schoolyard

SITE PLAN & GROUND FLOOR PLAN

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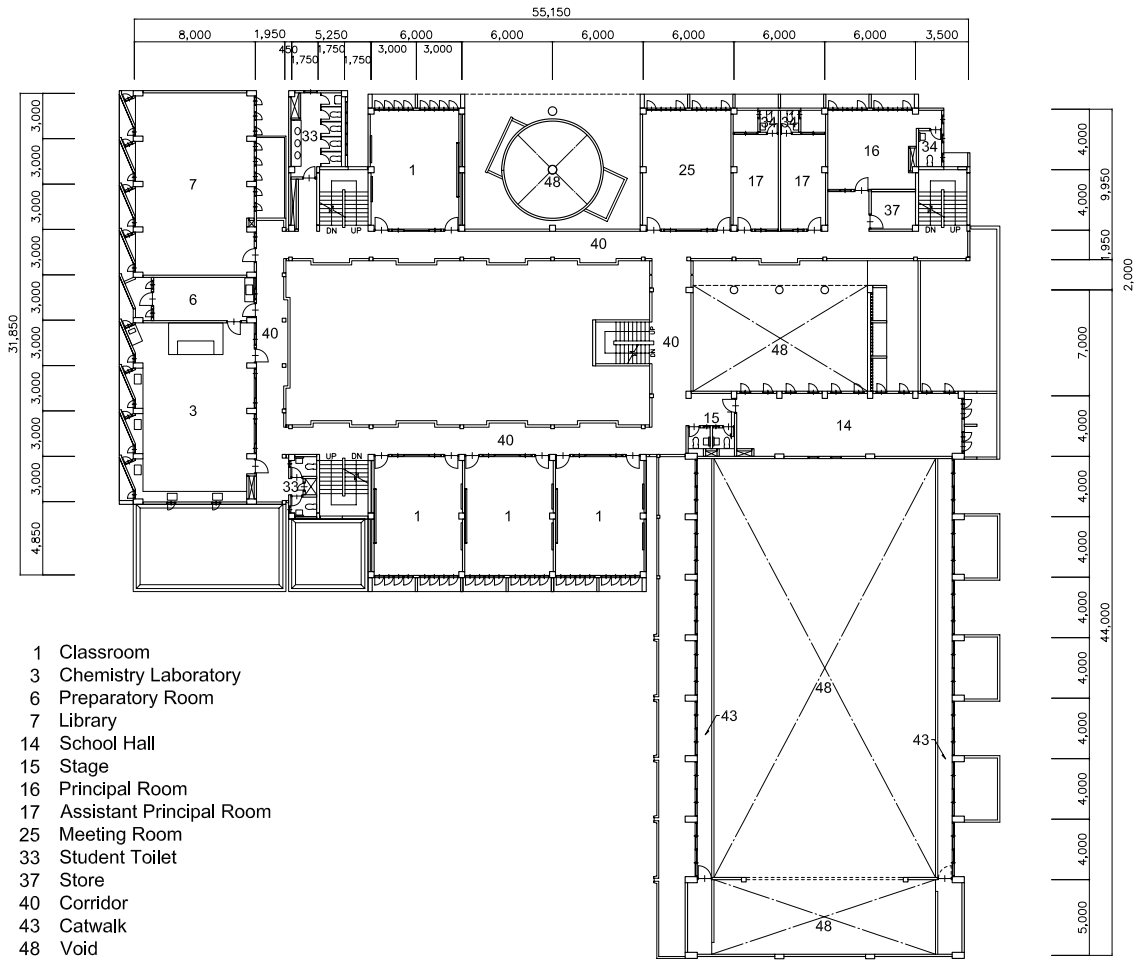




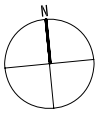
- 1 Classroom
- 4 Biological Laboratory
- 6 Preparatory Room
- 8 Audio Visual Room
- 19 Teachers Room
- 20 Head of Department
- 33 Student Toilet
- 34 Staff Toilet
- 40 Corridor

SECOND FLOOR PLAN

1/500

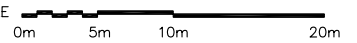
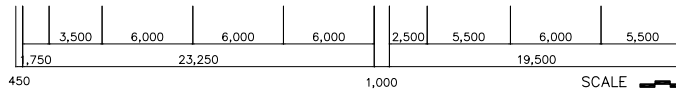


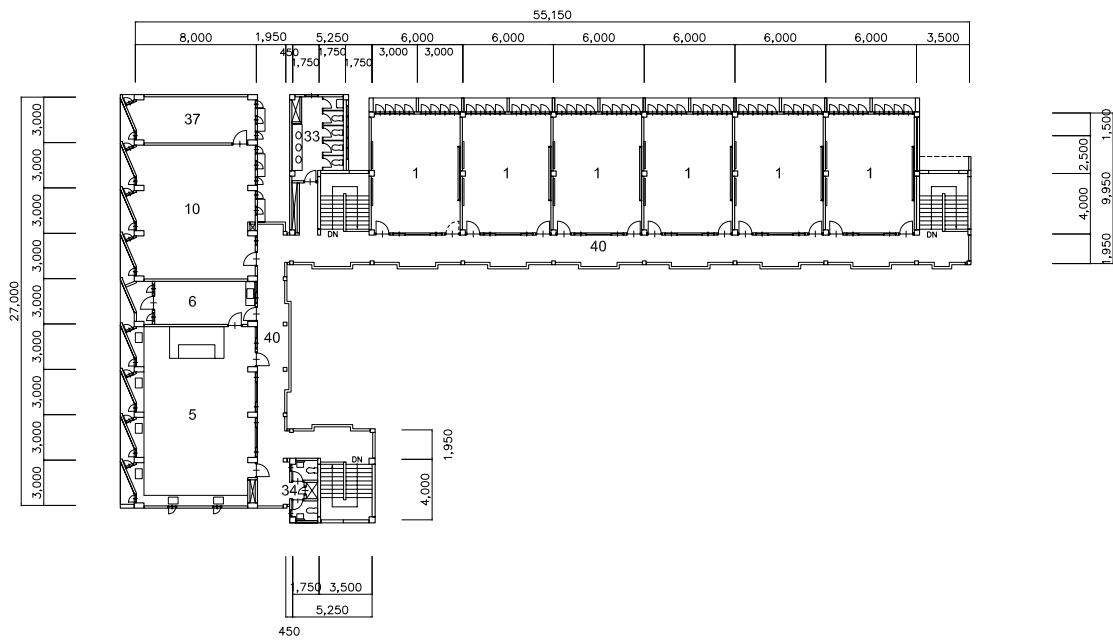
- 1 Classroom
- 3 Chemistry Laboratory
- 6 Preparatory Room
- 7 Library
- 14 School Hall
- 15 Stage
- 16 Principal Room
- 17 Assistant Principal Room
- 25 Meeting Room
- 33 Student Toilet
- 37 Store
- 40 Corridor
- 43 Catwalk
- 48 Void



FIRST FLOOR PLAN

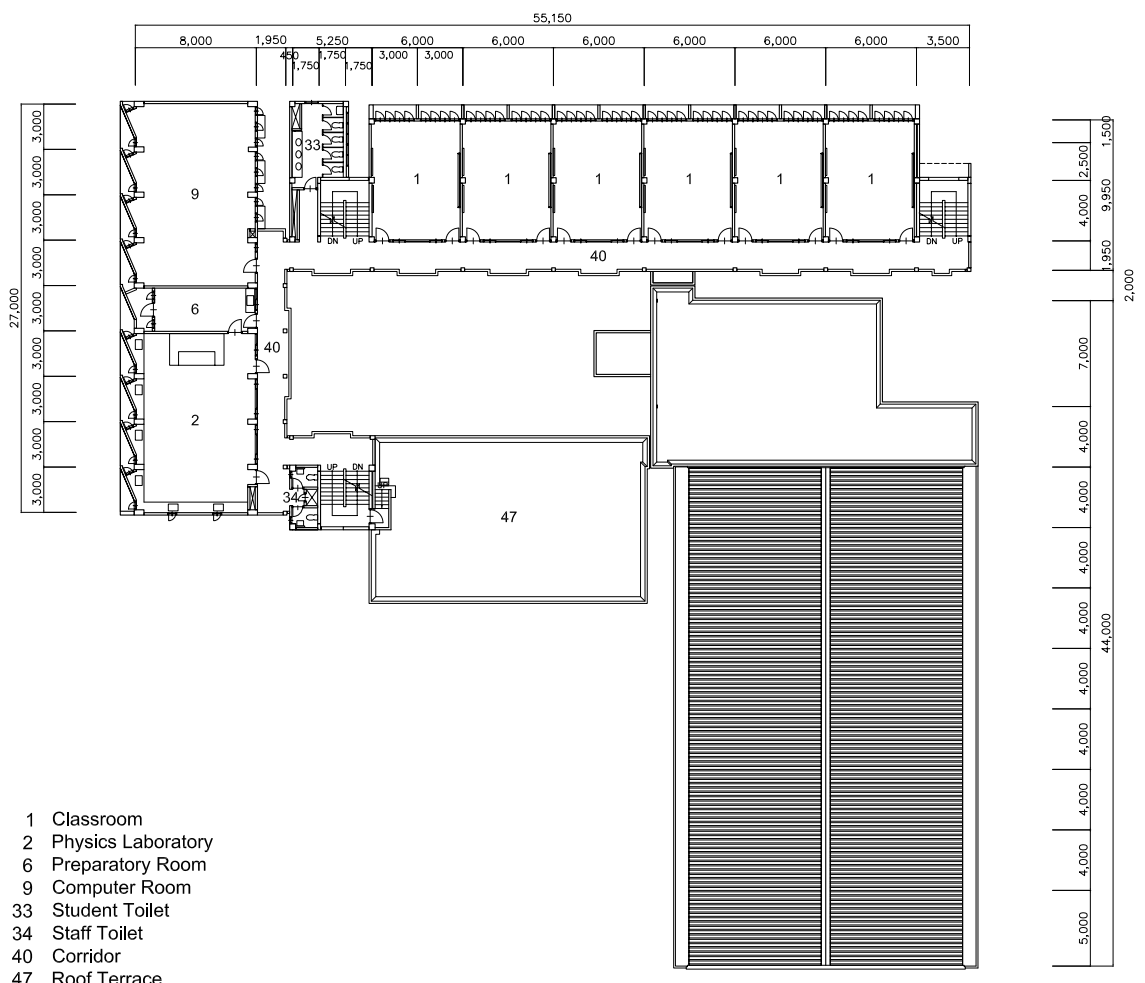
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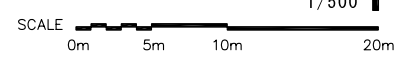
- 1 Classroom
- 5 Fisheries Science Laboratory
- 6 Preparatory Room
- 10 Art Room
- 33 Student Toilet
- 34 Staff Toilet
- 37 Store
- 40 Corridor

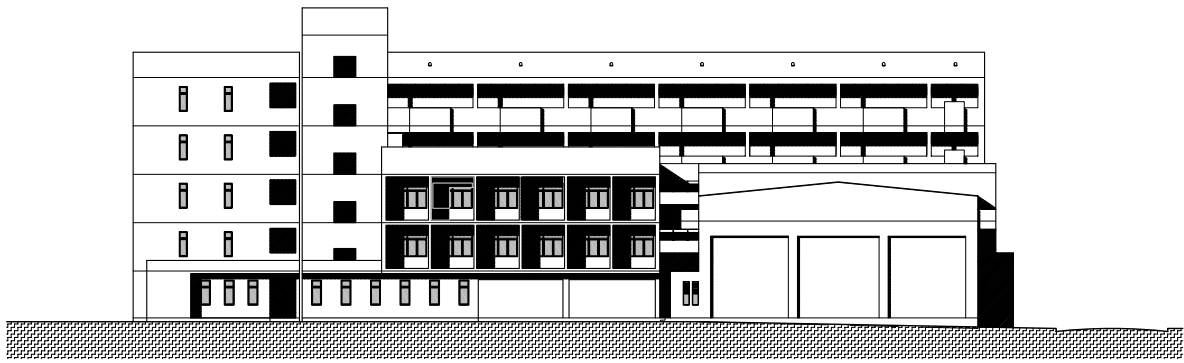
FORTH FLOOR PLAN
1/500



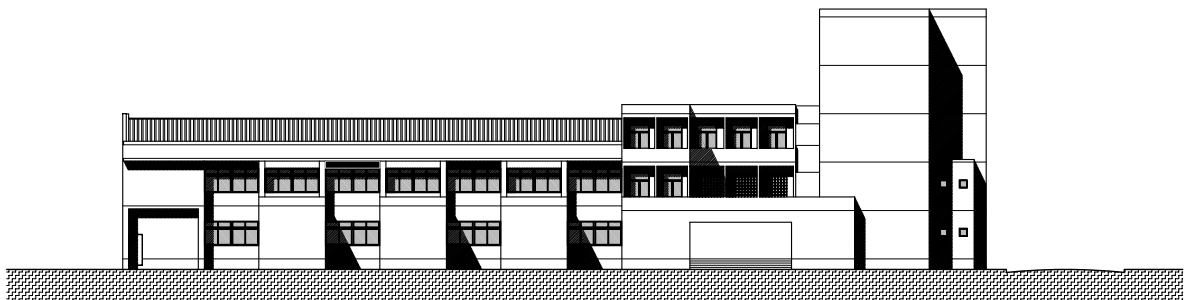
- 1 Classroom
- 2 Physics Laboratory
- 6 Preparatory Room
- 9 Computer Room
- 33 Student Toilet
- 34 Staff Toilet
- 40 Corridor
- 47 Roof Terrace

THIRD FLOOR PLAN
1/500

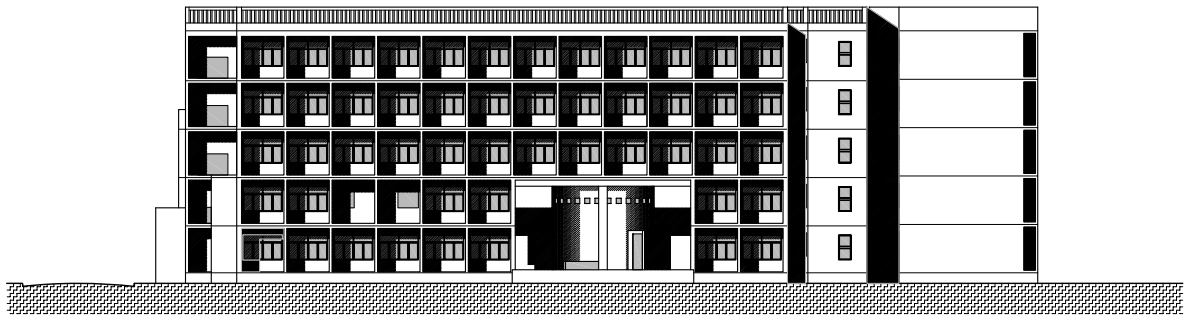




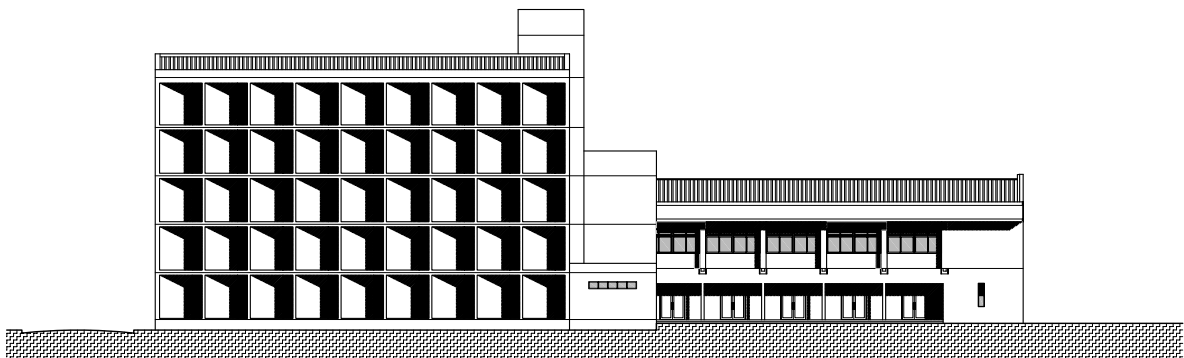
SOUTH ELEVATION



EAST ELEVATION



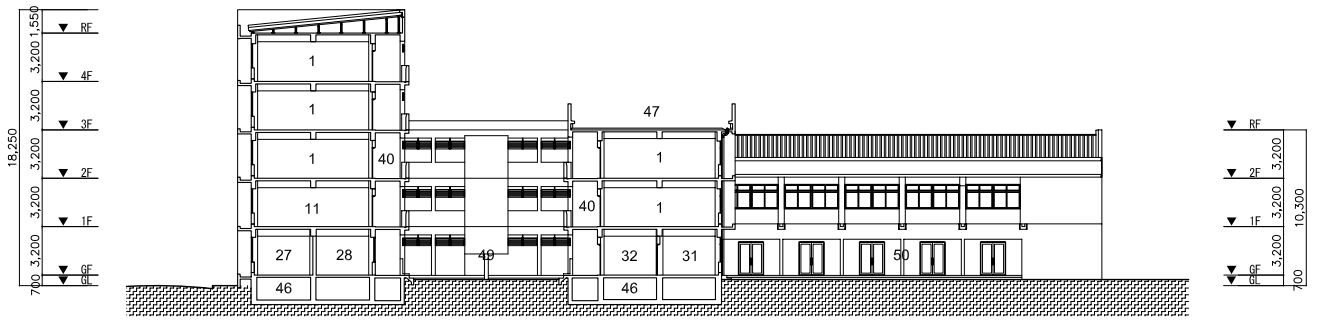
NORTH ELEVATION



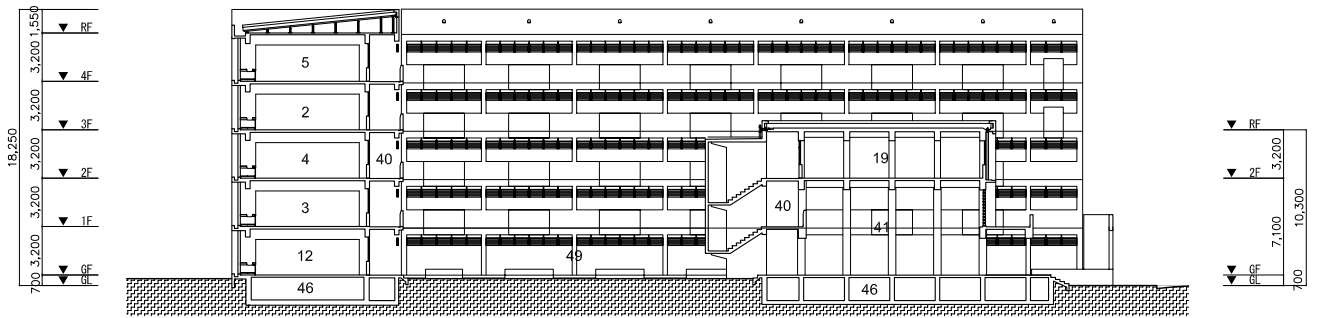
WEST ELEVATION

ELEVATIONS
1/500

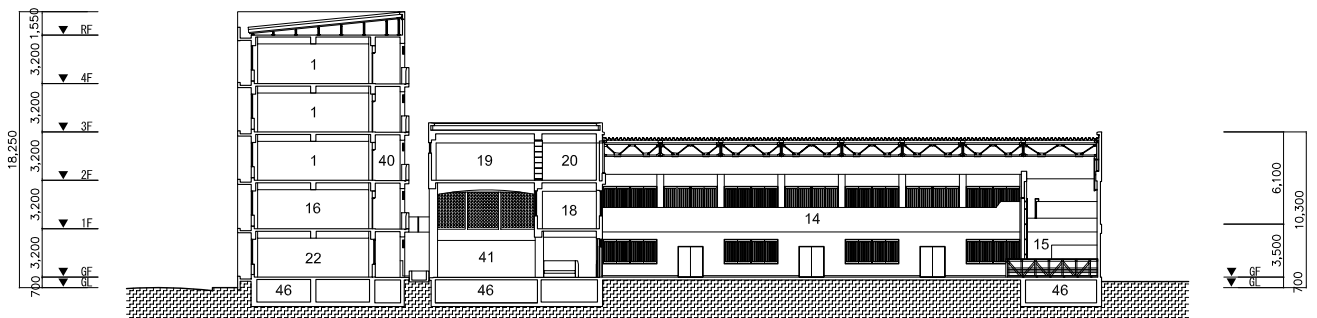
SCALE 0m 5m 10m 20m



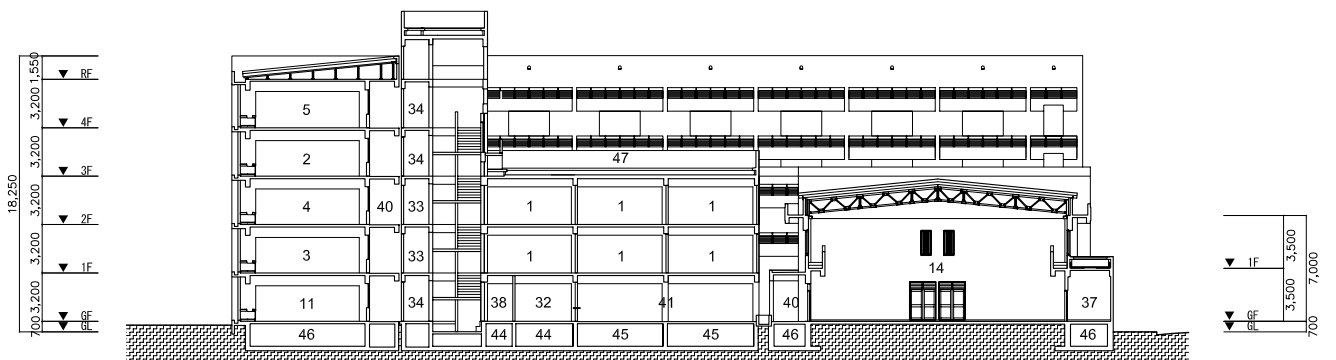
SECTION D



SECTION C

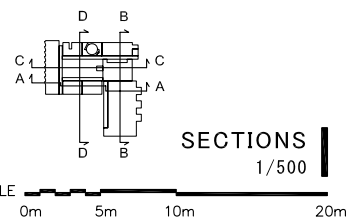


SECTION B



SECTION A

- | | | | |
|-------------------------------------|-----------------------|--------------------|--------------------|
| 1 Classroom | 14 School Hall | 28 Counseling Room | 41 Piloti |
| 2 Physics Laboratory | 15 Stage | 31 Pantry | 44 Water Tank |
| 3 Chemistry Laboratory | 16 Principal Room | 32 Canteen | 45 Rain Water Tank |
| 4 Biological Laboratory | 18 Supervisors Room | 33 Student Toilet | 46 Pit |
| 5 Fisheries Science Laboratory | 19 Teachers Room | 34 Staff Toilet | 47 Roof Terrace |
| 11 Home Science and Industrial Room | 20 Head of Department | 37 Store | 49 Courtyard |
| 12 Multi Purpose Room | 22 General Office | 38 Machine Room | 50 Schoolyard |
| | 27 First Aid Room | 40 Corridor | |



SECTIONS
1/500

2-2-4 Implementation Plan

2-2-4-1 Implementation Policies

After the Basic Design Study for the Project is approved and the Exchange of Notes for the Grant Aid Program for the Project is signed by the Government of Japan and the Government of Maldives, the Government of Maldives and a selected Japanese consulting firm shall sign the consultant contract for the detailed design and the construction supervision work for the Project implementation.

Based on the Basic Design Study, the Consultant shall prepare the detailed design of the Project facilities and also assist the Government of Maldives in the tendering and signing of the Project construction contract. Further, the consulting firm shall hold a series of discussions and meetings with the Maldivian side so that the work to be undertaken by the Japanese side and Maldivian side are started without delay and the Project construction progresses smoothly.

The necessary power for the Project construction shall be supplied by using the existing power lines. Installation of the power supply system and the connecting of telephone lines for the completed Project facilities by the Maldivian side must be finished prior to the completion of the Project construction so that the Project school can operate properly.

The timely procurement and arrival of materials from foreign countries are indispensable and shall be accomplished through simplifying and unifying building materials. The Project construction schedule must be carefully planned by considering the delivery timing of the materials to the site and by coordinating the dispatching schedule of specialists so that they do not waste time on waiting, down-time or re-work.

The preparation of the construction plan for the Project shall be based on the following principles and policies:

(1) Principles for the Project Implementation

The Project first must be approved by a Japanese government cabinet meeting and then the Exchange of Notes for the Project implementation is signed by both the governments of Japan and the Maldives. After the signing, the Project shall be implemented based on the following principles.

- (i) The Project shall be paid for by the taxes of the Japanese people and under the rules of the Japanese fiscal year system.
- (ii) The Government of Maldives shall sign a contract for the Project implementation with a Japanese consulting firm, entrusting the firm to prepare all the design details of the Project facilities based on the Basic Design Study, as well as to assist the government in selecting a Japanese prime contractor and to conduct the construction supervision work.
- (iii) The Government of Maldives shall conduct a pre-qualification evaluation and select a Japanese prime contractor through a competitive bidding process with the assistance of the consulting firm. Then, the Government of Maldives contracts with the selected contractor and entrusts the contractor with the Project construction.

(2) Basic Policies for Preparation of Construction Plan

- (i) Local consultants and contractors, who are familiar with the local construction system and material procurement, shall be used as much as possible. This best suits various local conditions, allows Japanese construction technologies to be transferred to the local consultants and contractors, and creates an environment for smooth and efficient construction in the Project.
- (ii) Strict safety, quality and schedule management shall be followed at the Project site. Technologies and know-how from the Japanese contractor shall be used as much as possible.
- (iii) Special attention must be paid to overall safety and theft prevention at the Project site.
- (iv) Close cooperation with local contractors is necessary for the Project construction to progress smoothly. Responsibilities of the Japanese prime contractor and the local sub-contractors must be clearly demarcated and appropriate staff assignments must be made in order to form a unified and efficiently organized workforce.

2-2-4-2 Implementation Conditions

It is indispensable that the tasks and responsibilities of the Maldivian side be fully accomplished for smooth Project implementation. Detailed schedules must be prepared through discussions between the Japanese consultant and those responsible on the Maldivian side so that land preparation work is completed without delay. In addition, schedules for purchase of supplies must be made in consideration of the time period involved in procuring materials from foreign countries to the Project site. The schedule must be prepared in such a way as to avoid any unnecessary re-work or down time so that the Project can be completed as early as possible. It is necessary to secure a land adjacent to the Project site or alternative land for a temporary stockyard and offices.

2-2-4-3 Scope of Works

Based upon Japanese Grant Aid Program principles, the following undertakings shall be borne by the recipient country.

(1) Securing Land, Land Reclamation, and Cleaning Work

The Project site that is prepared by the Maldivian side shall be reclaimed and thoroughly cleared prior to the commencement of the Project construction. Because Male' is on low land and has been flooded by high tides many times, the Project site must be reclaimed with landfill work. In accordance with the rules of the Japanese Grant Aid Program, the land reclamation and cleaning work must be borne by the Maldivian side.

(2) Exterior Work

- (i) Construction of fences and gates along the roads and neighboring property boundary lines shall be borne by the Maldivian side in accordance with the rules of the Japanese Grant Aid Program.
- (ii) Landscaping work, such as tree planting and flowerbed construction, must be undertaken by the Maldivian side.
- (iii) All paving inside the site shall be borne by the Maldivian side.

(3) Connection of Infrastructure Lines

Connection of power supply lines, water and sewer systems and telephone lines must be borne by the Maldivian side.

(i) Power Supply Lines

The Japanese side shall install conduits from the main distribution board in the electric room to the substation. The Maldivian side is responsible for cable work, connection work between the substation and the main distribution board, and power meter installation.

(ii) Telephone Lines

The Japanese side shall only install wire conduits. At its own expense the Maldivian side shall install wires in the conduits to connect the Project buildings and public lines. Also, installation of a telephone switchboard, and telephone units shall be borne by the Maldivian side.

(iii) Water Supply

The Japanese side shall connect pipes in the Project building to the water meter. The Maldivian side shall connect pipe from the public main to the water meter at its own expense.

(iv) Sewer Lines

The Japanese side shall connect sewer lines to sewage basins on the site. The Maldivian side, at its own expense, shall connect the sewer lines from the sewage basins on the site to the public sewer mains.

(4) Securing Areas for Material Storage and Site Office Building

As it is impossible to arrange areas for an office building and material and supplies storage in the Project site, the Maldivian side, at its own expense, shall secure an area of land next to the Project site or feasible alternatives for these purposes.

(5) Well Drilling

Drilling of wells on the Project site to secure groundwater for toilet flushing shall be borne by the Maldivian side.

(6) Procurement and Installation of Fire Extinguishers and Fire Blankets

The Maldivian side shall procure and install fire extinguishers and fire blankets in accord

with the fire regulation.

(7) Procurement of Furniture and Equipment Not Provided by the Project

Except for the furniture and equipment which the Project provides, the Maldivian side shall procure necessary furniture and equipment at its own expense.

2-2-4-4 Consultant Supervision

The Project, implemented under the auspices of the Japanese Grant Aid Program and conditions unique to the Maldives, constructs buildings including five-story school buildings, having a total floor area of approximately 5,500m². The construction period is relatively tight. Therefore, following two items are indispensable for smooth construction supervision: 1) the pertinent reporting of work progress and other Project matters to the implementing agency's concerned personnel; and 2) the giving of timely and adequate guidance and direction to the contractor. The supervision for the Project's implementation shall be carried out by the Consultant as follows:

(1) General Supervision

(i) Scope of Work

The main responsibilities of "general supervision" include: overseeing all the project schedules; making comprehensive technical judgments; giving guidance and assistance to the resident engineer; and reporting Project implementation progress to JICA headquarters.

(ii) Supervision System

The engineers who were involved in the preparation of the Basic Design shall supervise under the project manager who has been involved since the Basic Design Study stage.

(2) Supervision of the Resident Engineer

(i) Scope of Work

The major supervision work of the engineer stationed at the Project site includes: checking daily construction schedules; examining construction drawings; providing technical guidance; conducting interim and final inspections of work; preparing and

sending reports to the implementing agency as well as to the JICA office and the Japanese Embassy.

(ii) Supervision System

An engineer shall be selected from the members of the Japanese team who were involved in the preparation of the detailed design, and shall be stationed on Male' island. The engineer shall be responsible for construction supervision in cooperation with local consultants.

2-2-4-5 Quality Control Plan

Based upon the contract documents and the construction supervision plan, quality control shall be conducted for the following items: the construction plan, construction drawings, sample checks, various inspections, and site inspection. The table 2-8 indicates major quality control items at the stage of structural work.

Table 2- 8 Quality Control Items for Structural Work

Construction	Quality Check Items	Method	Frequency
Earth work	Confirmation of finished grade	Ocular inspection	At the completion of excavation
Reinforcing bar & form work	Reinforcing bar materials	Checking mill sheets & tensile strength test	Per lot, per size
	Bar arrangement	Bar arrangement inspection	Before casting concrete
	Form	Form work inspection	Before casting concrete
Concrete work	Material	Cement: test result Aggregate: sieve analysis Water: quality analysis	At the time of mixing design
	Trial mixing	Performance test	Per concrete type
	Casting	Slump, temperature, amount of air, chloride	Per spot
	Strength	Compression test for test pieces	Per spot
Steel work	Steel material	Quality check	At the completion of steel framing

In the Maldives, there is no concrete plant, so concrete shall be mixed onsite. In the case of onsite mixing, the quality of concrete varies. Therefore, special attention shall be paid to quality and method in mixing and casting concrete.

2-2-4-6 Procurement Plan

As described, locally produced and manufactured building materials virtually do not exist in the Maldives, so most of the building materials and equipment for the Project must be procured from foreign countries.

Basically, the contractor has to procure them directly from Singapore, etc. However, the State Trading Organization Plc (STO), a local trading company importing necessities from Singapore, has increased its supply capacity. Consequently, cement and aggregates for concrete and some finishing materials can be obtained easily. Moreover, due to STO's massive supply from producing countries, these items can be purchased from STO at lower prices than those directly imported by contractors.

Although the cost comparison is given a top priority in selecting building materials and equipment, the supplier of each item shall be carefully selected on the basis of: quality of the material, supply capacity, credibility in delivery time, and ease of repair and maintenance after the Project completion.

The list of countries that supply major materials and equipment appears in the following table:

Table 2-9 Sources of Procurement for Major Materials

○: Main Source of Procurement

Name of Materials	Place of Procurement			Remarks (Circulation in the Maldives)
	Maldives	Import	Country of Procurement	
<i>Building Material and Equipment</i>				
1. Portland cement	○			Locally available; no quality problem
2. Sulfate resistant cement admixture		○	Singapore	No local circulation. To be procured from Singapore
3. Concrete aggregate	○			Locally available; no quality problem
4. Deformed steel bar		○	Singapore	To be procured from Singapore, if needed in large quantity
5. Steel		○	Singapore	Few varieties; to be procured from Singapore
6. Form material	○			Locally available; no quality problem
7. Wall concrete block (for coating base)		○	Singapore	To be procured from Singapore, if needed in large quantity
8. Wood (for structure and interior work)	○			Locally available; no quality problem
9. Ceramic tile	○			Locally available; no quality problem
10. Aluminum doors and windows		○	Singapore	Little local circulation; to be procured from Singapore
11. Wooden doors		○	Singapore	Little local circulation; to be procured from Singapore
12. Metal fittings		○	Singapore	Little local circulation; to be procured from Singapore
13. Glass		○	Singapore	To be procured from Singapore, if needed in large quantity
14. Paint and coating material	○			Locally available; no quality problem
15. Waterproofing material		○	Singapore	Little local circulation; to be procured from Singapore
16. Metal roofing material		○	Singapore	To be procured from Singapore, if needed in large quantity
17. Insulation material		○	Singapore	Little local circulation; to be procured from Singapore
<i>Material and Equipment for Electrical Work</i>				
1. Switchboard		○	Singapore	Little local circulation; to be procured from Singapore
2. Cable & wire		○	Singapore	Little local circulation; to be procured from Singapore
3. Conduit pipe		○	Singapore	Little local circulation; to be procured from Singapore
4. Lighting fixture (general use)		○	Singapore	Little local circulation; to be procured from Singapore
5. Small current equipment		○	Singapore	Little local circulation; to be procured from Singapore
<i>Material for Water Supply and Drainage</i>				
1. Galvanized steel pipe		○	Singapore	Little local circulation; to be procured from Singapore
2. Valve & pipe fittings		○	Singapore	Little local circulation; to be procured from Singapore
3. Pumps		○	Singapore	Little local circulation; to be procured from Singapore
4. Sanitary ware	○			Locally available; no quality problem
<i>Material for Ventilation</i>				
1. Duct material		○	Singapore	Few varieties; to be procured from Singapore
<i>Furniture and Fittings</i>				
	○			Locally available; no quality problem
<i>Equipment</i>				
	○	○	Japan	Procure British products in local market; others to be procured from Japan

2-2-4-7 Implementation Schedule

The implementation schedule of the Project assumes that construction and procedures borne by both the Japanese side and the Maldivian side shall be conducted without any delay. After the Exchange of Notes, the implementation schedule of the Project has three stages: detailed design, tender/contract, and construction/equipment procurement.

(1) Detailed Design Stage

The Consultant shall undertake detailed design work based upon the Basic Design. The detailed design specifies detailed drawings, specifications and a bill of quantities. At the detailed design stage, the Consultant discusses with the Maldivian side. After the final approval of the tender document, the Project implementation stage proceeds to the next stage, the tender/contract stage. Taking the Project school opening timing into account, the detailed design stage shall be no longer than 3 months.

(2) Tender/Contract Stage

After the detailed design stage, the pre-qualification evaluation shall take place in Japan. Based upon the evaluation, the Ministry of Education, as the Maldivian project implementing agency, shall call for the tender with the supervision of concerned parties. A bidder who offers the lowest price shall be awarded the contract with the Ministry of Education on condition that the contents of the proposal are approved. The whole process is estimated to take about 2 months.

(3) Construction/Equipment Procurement Stage

Upon the verification of the construction contract by the Government of Japan, the construction shall be commenced. Assuming that the undertakings by the Maldivian side and equipment procurement are conducted smoothly, the whole construction period is estimated to take 13 months. The construction/equipment procurement schedule is shown in table 2-10.

Table 2-10 Project Implementation Schedule

	1	2	3	4	5	6	7	8	9	10	11	12	13
Detailed Design /Tender	Work in Male'			Work in Male'									
		Design work in Japan											
			Tendering work in Japan										
Construction/Procurement	Preparation work												
		Earth&foundation work											
		Structural Work											
		Mechanical/electrical, interior/exterior finishing work											
											External work		
												Inspection/Handover	

2-3 Obligations of the Recipient Country

The purpose of the Japanese Grant Aid Program is to assist development projects in conjunction with the “self-help” spirit of the recipient countries. Based on such a spirit, the Government of Japan demands that the recipient countries bear a certain level of the burden involved. This rule is applied equally to all recipient countries. Thus, if the Government of Japan decides to implement the Project, the Maldivian side shall be responsible for completion of the following tasks:

- (1) To provide the Japanese side with information and data related to the Project;
- (2) To obtain the necessary land to implement the Project and secure the rights for the Ministry of Education to construct school facilities;
- (3) To fill and clear the land prior to the Project construction;
- (4) To provide the necessary landscaping work, fence construction and other incidental exterior work;
- (5) To connect power supplies, telephones, water supplies, sewer lines and other incidental facilities to the completed Project facilities and to drill the well to secure groundwater;
- (6) To procure additional furniture and equipment necessary for the completed Project facilities except for the basic furniture and equipment included in the Project;
- (7) To secure sufficient staff necessary for the adequate operation, repair and maintenance of the Project facilities constructed within the Japanese Grant Aid Program;
- (8) To bear commissions, handling charges and other necessary fees related to the banking arrangement with a bank in Japan for receiving the Grant Aid for the Project;
- (9) To ensure prompt unloading and customs clearance of products purchased under the Grant Aid Program at ports of disembarkation in the country, and internal transportation therein;
- (10) To exempt all Japanese nationals from any customs duties, internal taxes and levies with respect to the supplies, products and services under the verified contracts of the Project;
- (11) To accord all Japanese nationals entry into the country and the staying therein, along with such facilities as may be necessary for the performance of their work and whose services may be required in connection with the Project, including the supply of products and services under the verified contracts;
- (12) To ensure that all facilities and products constructed and purchased under the Project will be effectively used and properly maintained by the Ministry of Education;
- (13) To provide free of charge, for the duration of the construction period and in a vicinity close to the Project site, adequate land space for the storage of supplies and materials

and for a site construction office to be used by the project contractor;

- (14) To grant all the required permits and approvals needed by the Japanese side for implementation of the Project;
- (15) To bear all the necessary expenses for the Project that are not covered by the Grant Aid Program (including land filling and clearance, connection of infrastructure lines, obtaining building permits, etc.);
- (16) To obtain, in cooperation with and under the guidance of the consultant, all the various necessary permits including those needed prior to construction, and those needed for the use of Project facilities after construction completion;
- (17) To respond promptly to the Consultant's request for decisions and judgments regarding implementation of the Project.

2-4 Operation and Maintenance Plans of the Project

2-4-1 Operation Plan

(1) Staffing

The Ministry of Education plans to adopt a double shift for the Project school in line with other government secondary schools. The staff plan is indicated below.

Table 2-11 Staff Plan of the Project School

	Morning Shift	Afternoon Shift	Total
Principal	1		1
Assistant principal	1	1	2
Supervisor	5	5	10
Head of department	6	6	12
Teacher	57	57	114
Sports supervisor	1	1	2
Health assistant	1	1	2
Counselor	1	1	2
Librarian	1	1	2
Lab assistant	1	1	2
Administrative clerk	23		23
Service staff	26		26
Extracurricular instructor	1	1	2
Total			200

The Ministry of Education is planning to transfer half of the Aminiya School staff to the Project school. The staff shortage will be covered by new recruitment.

As the table below (Table 4-2) shows, an additional 126 staff must be hired by the time of the school opening in 2009.

Table 2-12 Projected Staff Shortage in 2009

	Year 2009			Aminiya School Staff in 2006 (b)	Staff shortage in 2009 (a)-(b)
	The Project school	Aminiya School	Total (a)		
Principal	1	1	2	1	1
Assistant principal	2	2	4	1	3
Supervisor	10	10	20	15	5
Head of department	12	12	24	13	11
Teacher	114	114	228	167	61
Sports supervisor	2	2	4	0	4
Health assistant	2	2	4	2	2
Counselor	2	2	4	1	3
Librarian	2	2	4	5	-1
Lab assistant	2	2	4	4	0
Administrative clerk	23	23	46	26	20
Service staff	26	26	52	39	13
Extracurricular instructor	2	2	4	0	4
Total	200	200	400	274	126

Usually, each school submits staff requests for the next academic year in July to the Ministry of Education. The Ministry starts recruitment of teachers in September and October based on those requests. In addition to recruitment in the Maldives, teams are dispatched to foreign countries, such as Sri Lanka and India, to conduct interviews. As to administrative staff, the Ministry interviews potential hires in November and December. The actual staff allocation is in January when an academic year begins. To add, the total number of teachers throughout the Maldives increased from 1,134 in 2000 to 2,067 in 2005, meaning that the number of teachers increases by 187 in average annually. Therefore, no problem is anticipated in securing new teachers.

2-4-2 Maintenance Plan

The maintenance of the Project school shall be the responsibility of the school. Under the supervision of the principal, minor maintenance of walls, floors, windows, furniture such as desks and chairs shall be taken care of by administrative staff in charge of maintenance. A

contractor is assigned to take care of complicated maintenance. The expense can be disbursed from “Repairs and Maintenance” and “Supplies and Requisites” of the recurrent cost in the budget.

School cleaning shall be done by janitors. The service charge regarding the cleaning shall be disbursed from “Transportation, utilities, and other service costs.”

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

If the Project is implemented under the Japanese Grant Aid Program, the total estimated cost shall be JPY 691 million. Based upon the demarcation of responsibilities stated in the previous chapter, the following costs are estimated for the Japanese side and the Maldivian side. For reference sake, the estimated costs do not indicate the maximum amount of the cooperation stated in the Exchange of Notes.

(1) Total Cost to be Borne by the Japanese Side **JPY 659.6 million**

Table 2-13 Total Cost to be Borne by the Japanese Side

Item		Estimated Cost (million JPY)		
Facilities	Buildings	572.7	584.2	588.8
	Furniture and Fittings	11.5		
Equipment		4.6		
Detailed design/Construction supervision		70.8		

(2) Total Cost to Be Borne by the Maldivian Side **MVR 3.46 million (JPY 31.26mil)**

Table 2-14 Total Cost to be Borne by the Maldivian Side

Item	Estimated Cost (MVR)
Demolition & reconstruction of eastern and northern boundary walls	550,000.00
Opening temporary gate on western wall for construction purposes & reconstruction	20,000.00
Transplantation of trees	85,000.00
Furniture & equipment not included in the Project	650,000.00
Connection of infrastructure lines	120,000.00
Fire extinguisher & fire blanket	40,000.00
Visa & work permit fees	900,000.00
Transportation cost for some items from Aminiya School	40,000.00
Well Drilling	58,000.00
Land filling & cleaning work, etc.	450,000.00
Exterior work (gates, fences etc.)	403,000.00
Inauguration celemony	150,000.00
Total Cost	3,466,000.00

(3) Conditions

- (i) Time of Estimation: November 2006
- (ii) Currency Exchange Rate: 1US\$ = JPY 116.64 (US dollars-Japanese Yen)
1S\$= JPY73.98 (Singapore dollars-Japanese Yen)
1MVR=JPY9.02 (Maldivian Rufiyaa-Japanese Yen)
- (iii) Construction Period: Detailed design and construction period are stated in the previous chapter.
- (iv) Other Remarks: Cost estimation shall be conducted based on the Government of Japan's Grant Aid Program principles.

2-5-2 Operation and Maintenance Cost

The Ministry of Education estimates operation and maintenance cost for the Project school for the year of 2009 in table 5-2 below. In comparison with the costs of the existing government secondary schools on Male' island, the estimation is considered appropriate.

Table 2-15 Estimated Operation and Maintenance Cost of the Project School

(Unit: MVR)

Item	Description	Amount
Operation Cost		
Personnel emolument	Salaries and wages, allowances, etc.	12,132,451
Travel expenses	Local sea travel, travel expenses for expatriates, inland travel, etc.	383,546
Supplies and requisites	Stationary and office equipment, etc.	1,716,718
Transportation/ utilities and other service cost	Electricity, water and sanitation, telephone, visa/work permit for expatriates, cleaning service fee, etc.	3,167,823
Grants, contributions and subsidies	Awards, course fees and related expenses for local training, etc.	167,344
Maintenance Cost		
Repair and Maintenance	Building repair, machinery repair, equipment repair, etc.	1,873,300
Total		19,411,182

The combined operation and maintenance cost for the Project school and Aminiya School is estimated about MVR 38.88 million in 2009. As the operation and maintenance cost for Aminiya School was about MVR 23.56 million in 2006, the cost increase associated with implementing the Project school is calculated at approximately MVR 15.32 million. This equals nearly 9% of the total budget for government schools (primary, secondary, and tertiary schools) in Male' atoll and is considered a payable amount for the Ministry of Education.

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effects

The Project is expected to bring the following effects.

(1) Direct Effects

Issues and Problems	Project Interventions to Address the Issues/Problems	Project Effects and Degree of Improvement
1) The number of Aminiya School students is approx. 2,600, which exceeds the 1,500 enrolment limit from the viewpoint of school administration. Further, it is projected that the number will reach at 3,000 in 2010.	Build a new girls secondary school.	Student enrolment per government girls secondary school on Male' island will be reduced to 1,500.
2) Aminiya School conducts classes in deteriorated facilities and temporary classrooms.	Build 25 classrooms in the Project school.	The number of sound classrooms at government girls secondary schools on Male' island will increase from 30 to 55 and it secures a sound learning environment for girl students at government girls secondary schools on Male' island.
3) Existing government secondary schools on Male' island do not have any facilities to conduct vocational education and, thus, outsource the vocational classes.	Build a Home Science and Industrial Room for vocational education.	The Project school is able to conduct vocational education within the school facility.

(2) Indirect Effect

Benefits to the local community

Public facilities available for use by the local residents are scarce on Male' because of the small land size of the island. However, by opening the school hall, schoolyard, etc of the Project school to the public, the project brings indirect benefits to the local residents, as the Project provides them with additional spaces for social activities including sports.

3-2 Recommendations

3-2-1 Recommendations

In order that the expected effects realize and continue, the following issues must be addressed

Appendices

by the Maldivian side.

(1) Timely Preparation for the School Opening

The Maldivian side must finish exterior works, connect infrastructures, and procure furniture and equipment in a short period between the handover and the school opening. Hence, the Maldivian side must start working on those items as soon as the Project starts and be prepared for the project completion.

(2) Securing Additional Teachers and Staff

Prior to the Project school opening, the Maldivian side must recruit additional staff, as the opening of the Project school requires additional teachers and staff at government girls secondary schools on Male' island.

(3) Preparation for the Vocational Education

The Project school will conduct vocational education classes which have not been conducted at government secondary schools on Male' island. The Maldivian side must choose subjects to teach and procure necessary equipment and materials for the classes.

3-2-2 Coordination with Technical Assistances and Other Donors

The Ministry of Education has sufficient knowledge and experiences in secondary education, and school administration and management. Therefore, there is no necessity to provide the Ministry with any technical assistance. Also, as there is no on-going assistance for secondary schools on Male' island from other donors at this moment, there is no necessity to coordinate with other donors.

1. List of Team Members

Basic Design Study Team

Name	Title	Position
Mr. Hideki SAKATA	Team Leader	Deputy Resident Representative of JICA Sri Lanka Office
Mr. Narufumi TAKENAKA	Planning Management	Senior Project Administration Officer Education and Vocational Training Team Project Management Group II Grant Aid Management Department
Mr. Akira YOKOYAMA	Chief Consultant / Architectural Design	Mohri, Architect & Associates, Inc
Mr. Akira SUGIURA	Architecture and Facility Planner	Mohri, Architect & Associates, Inc
Mr. Yoshiaki ICHIBAGASE	Construction and Procurement Planner / Quantity Surveyor	Mohri, Architect & Associates, Inc
Ms. Maki TANAKA	Educational Planner / Equipment Planning / Quantity Surveyor	Mohri, Architect & Associates, Inc
Mr. Fugo YAMADA	Architecture and Facility Planner	Mohri, Architect & Associates, Inc

Draft Report Explanation Team

Name	Title	Position
Mr. Hideya KOBAYASHI	Team Leader	Chief, Education and Vocational Training Team Project Management Group II Grant Aid Management Department
Mr. Akira YOKOYAMA	Chief Consultant / Architectural Design	Mohri, Architect & Associates, Inc
Mr. Akira SUGIURA	Architecture and Facility Planner	Mohri, Architect & Associates, Inc
Ms. Maki TANAKA	Educational Planner / Equipment Planning / Quantity Surveyor	Mohri, Architect & Associates, Inc

2. Study Schedule

Basic Design Study

Date	JICA Officials		Consultants	
	Hideki Sakata Narufumi Takenaka		Akira Yokoyama Akira Sugiura Maki Tanaka	Yoshiaki Ichibagase Fugo Yamada
1 Oct.15	Sun	Departed Narita for Colombo via Bangkok	Departed Narita for Colombo via Singapore	
2 Oct.16	Mon	Paid a courtesy visit to JICA and the Embassy of Japan in Sri Lanka		
3 Oct.17	Tue	Departed Colombo and arrived in Male' Paid a courtesy visit to the MOFA, the MOE, JOCV Coordinator Office Inspected Animiya School, the Project Site, the Third Primary School, private schools and community schools		
4 Oct.18	Wed	Discussed the contents of the Minutes with the officials of the MOE		
5 Oct.19	Thu	Discussed the contents of the Minutes with the officials of the MOE Signed the Minutes of Discussion Reported to the JOCV Coordinator Office		
6 Oct.20	Fri	Departed Male' for Colombo and reported to the Embassy of Japan Departed Colombo	Internal Meetings Data Analysis	
7 Oct.21	Sat	Arrived in Narita	Discussed with the officials of the MOE Inspected Animiya School	
8 Oct.22	Sun		Inspected community schools	
9 Oct.23	Mon		Public Holiday (Survey preparation and data analysis)	
10 Oct.24	Tue		Inspected boys schools and community schools Discussed with the officials of MOE	
11 Oct.25	Wed		Inspected boys schools Discussed with the officials of MOE	
12 Oct.26	Thu		Inspected private schools, EDC Discussed with the officials of MOE	
13 Oct.27	Fri		Internal Meetings Data Analysis	
14 Oct.28	Sat		Discussed with the officials of the MOE	Departed Narita for Male' via Singapore
15 Oct.29	Sun		Inspected Animiya School	Surveyed on infrastructures and material procurement
16 Oct.30	Mon		Discussed with the officials of the MOE Inspected the Center of Continuing Education	Ditto
17 Oct.31	Tue		Discussed with the officials of the MOE Inspected private schools	Ditto
18 Nov.1	Wed		Discussed with the officials of the MOE Inspected boys schools and Animiya School	Ditto
19 Nov.2	Thu		Discussed with the officials of the MOE	Ditto
20 Nov.3	Fri		Internal Meetings Data Analysis	Internal Meetings Data Analysis
21 Nov.4	Sat		Discussed with the officials of the MOE	Surveyed on infrastructures and material procurement
22 Nov.5	Sun		Ditto	Ditto
23 Nov.6	Mon		Signed the Technical Notes Reported to the JOCV Coordinator Office	Ditto
24 Nov.7	Tue		Reported to JICA and the Embassy of Japan in Sri Lanka	Ditto
25 Nov.8	Wed		Departed Colombo for Singapore Surveyed in Singapore	Ditto
26 Nov.9	Thu		Departed Singapore for Narita	Ditto Departed Male' for Colombo
27 Nov.10	Fri			Surveyed on material procurement in Sri Lanka
28 Nov.11	Sat			Ditto
29 Nov.12	Sun			Departed Colombo for Singapore
30 Nov.13	Mon			Surveyed on material procurement in Singapore
31 Nov.14	Tue			Ditto
32 Nov.15	Wed			Departed Singapore for Narita

Explanation on Draft Basic Design Report

Date			JICA Officials	Consultants	
			Hideya Kobayashi	Akira Yokoyama	Akira Sugiura Maki Tanaka
1	Feb.25	Sun	Departed Narita for Colombo	Departed Narita for Male' via Singapore	
2	Feb.26	Mon	Reported to JICA and the Embassy of Japan in Sri Lanka	Explained the Basic Design Study draft report and discussed at the Ministry of Education	
3	Feb.27	Tue	Departed Colombo and arrived in	Paid a courtesy visit to Ministry of Foreign Affairs, Discussed the Basic Design Study draft report at the MOE Paid a courtesy visit to the MOE	
4	Feb.28	Wed	Discussed the contents of the Minutes with the officials of the MOE and the MOFA Reported to JOCV Coordinator Office Signed the Minutes of Discussion		
5	Mar.1	Thu	Departed Male' for Colombo	Complementary Survey	
6	Mar.2	Fri	Data Analysis	Departed Male' for Colombo	Complementary Survey
			Reported to JICA and the Embassy of Japan, in Sri Lanka		Data Analysis Departed Male' for Singapore
7	Mar.3	Sat		Departed Colombo for Narita via Singapore	Departed Singapore for Narita

3. List of Parties Concerned in the Recipient Country

Ministry of Foreign Affairs

Dr. Hussain Niyaz	Executive Director of Department of External Resources
Mr. Ali Naseer Mohamed	Assistant Director General of Department of External Resources
Ms. Aishath Azeema	Deputy Director of Department of External Resources
Ms. Zulaikha Ahmed Didi	Desk Officer of Department of External Resources

Ministry of Education

Ms. Zahiya Zareer	Minister
Mr. Hussain Mohamed	Deputy Minister
Mr. Mohamed Yousuf	Director of Physical Facilities Development Section
Mr. Mujthabaa Hameedh	Deputy Director of Physical Facilities Development Section
Mr. Masoodh Mohamed	Senior Construction Officer of Physical Facilities Development Section
Mr. Ahmed Marzooq	Accountant of Physical Facilities Development Section
Mr. Ahmed Shafeeu	Director of Policy Planning & Research Section
Ms. Jameela Ali Khalid	Superintendent of Education, School Administration Section
Mr. Abdulla Saleem	Secretary in Physical Facilities Development Section

Education Development Center

Dr. Sheema Saeed (Ms)	Director General
Mr. Ahmed Shakeeb	Assistant Director General
Mr. Ahmed Riyaz Jauharee	Senior Curriculum Developer
Ms. Niumath Shafeeu	Teacher Educator Coordinator
Ms. Naashia Mohamed	Head of Professional Development Unit

Center for Continuing Education

Mr. Mohamed Rasheed Yoosuf	Principal
Mr. Ahmed Mohamed	Director
Mr. Abdulla Ibrahim	Community Teacher Educator

Aminiya School

Ms. Wafa Waheed	Deputy Principal
Ms. Aishath Zoonaa	Assistant Principal

Mr. Ibrahim Saeed	Administrator
Ms. Padma Manu	HOD Physics
Mr. P. Espin	HOD of Fisheries Science
Mr. L. A. Sarath Chandra	HOD of Computer Studies
Ms. Aishath Waheeda	HOD of Biology
Ms. Fathimath Rashafa	HOD of Chemistry
Mr. Pradeep M. N	Teacher of Computer Studies
Mr. C. A. Wicksemasingh	Teacher of Art
Ms. Shiuna Ibrahim	Teacher of Accounting
Ms. Simla Tasheed	Teacher of Travel & Tourism
Mr. Ahmed Sultan	Teacher of Fisheries Science
Mr. Hussain Afzal	Teacher of Physics
Ms. Hawwa Ashiga	Teacher of Economic
Ms. Aishath Shivrin	Laboratory Assistant
Ms. Shafia A. Muhasin	Laboratory Assistant

Majeedhiyya School

Mr. John Mathew	Principal
Mr. Adam Shareef	Senior Assistant Principal
Mr. K. Ramasamy	Teacher (In-charge of Laboratories)
Ms. Fathmath Adam	Laboratory Technician

Dharumavantha School

Mr. Abdulla Didi	Deputy Principal
Ms. Zeena Gasim	Assistant Principal
Ms. Aishath Shihama	Supervisor
Ms. Suaad Abdulla	Laboratory Assistant
Ms. Aishath Gayys Hussain	Laboratory Assistant
Ms. Shakeela Ahmed	Laboratory Assistant
Ms. Nasra Mutheen	Laboratory Assistant
Ms. Fathimala Nizama	Laboratory Assistants
Ms. Firasha Haneef	Laboratory Assistant

Thaajudeen School

Ms. Anifa Ismail	Principal
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Ahmadia School (Machangolhi Ward)

Mr. Mohamed Rasheed Deputy Principal
Mr. B. Badri Narayanan Acting Principal

Amir Ahmed School (Henvairu Ward)

Mr. Hassan Shakiv Mohamed Deputy Principal
Mr. Thoha Saleem Assistant Principal
Mr. Ahmed Mumtjaz Development Officer
Ms. Zulaika Ali Pre-school Head Teacher
Mr. Abudulla Rusheed Sub. Administration Officer

Galolhu Ward (Galolhu Ward)

Ms. Suraiya Ibrahim Senior Assistant Principal
Mr. Mohamed Jubair Headmaster

Maafannu Ward (Maafannu Ward)

Mr. Fuad Gasim Senior Assistant Principal

English Preparatory Secondary School (EPSS)

Mr. Mohamed Musthafa Hussain Principal
Ms. Shaheema Nafiz Assistant Headmistress

Male' English School (MES)

Mr. Ali Musthafa Principal

Ministry of Construction and Public Infrastructure

Mr. Mauroof Jameel Minister
Mr. Ismail Rasheed Architect

Male' Municipality

Mr. Ali Nisham Assistant Engineer

Maldives Water and Sanitation Authority

Mr. Farooq Mohamed Hassan Deputy Director General
Mr. Isaac Ahmed Naseec Assistant Secretary

Maldives Energy Authority

Mr. Abdulla Wahid Deputy Director General

Male' Water & Sewage Company Ltd.

Mr. M. Rasheed Bari Technical Manager

Mr. V.L. Narayan Design Engineer

State Electric Company Limited (STELCO)

Mr. Zaid Mohamed Director

Ms. Mirfath Ismail Shafeeq Deputy Manager

Mr. Ibrahim Nashid Assistant Engineer

Mr. Mohamed Niyaz Assistant Engineer

Mr. Abdul Malik Thoufeeh Assistant Engineer

Dhiraagu (Telecommunication Company)

Ms. Fathumath Ali Sales Manager

Mr. Mohamed Rasheed Network Engineer

Mr. Ismail Saleem System Engineer

National Security Service

Mr. Mohamed Ikleel Staff Sergeant

Mr. Ismail Nasih Lance Corporal

State Trading Organization PLC (STO)

Mr. Muaz Ahmed Assistant Director Gr 2

Embassy of Japan in Sri Lanka

Mr. Hideyuki Ohnishi Counselor

Dr. Yuji Miyahara 1st Secretary

Mr. Yasuhiro Watanabe 2nd Secretary

JICA Sri Lanka Office

Mr. Takumi Ueshima Resident Representative

Mr. Ko Goto Assistant Resident Representative

(In charge of Industrial Sector and Maldivian Affairs)

JOCV Maldives Office, JICA

Mr. Hiroshi Saito	Resident Representative
Ms. Yuko Ota	JOCV Coordinator
Ms. Satoko Iwashige	JOCV Coordinator
Ms. Naomi Maeda	JOCV Coordinator

4. Minutes of Discussions

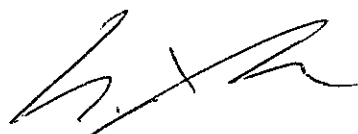
**MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR CONSTRUCTION
OF THE SECOND GIRLS SECONDARY SCHOOL IN MALE'
IN THE REPUBLIC OF MALDIVES**

In response to a request from the Government of the Republic of Maldives, the Government of Japan decided to conduct a Basic Design Study on the Project for Construction of the Second Girls Secondary School in Male' (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").


JICA sent to the Republic of Maldives (hereinafter referred to as "Maldives") the Basic Design Study Team (hereinafter referred to as "the Team"), headed by Mr. Hideki Sakata, Deputy Resident Representative, JICA Sri Lanka Office, and which is scheduled to stay in the country from October 17th to November 9th, 2006.

The Team held discussions with the officials concerned of the Government of Maldives and conducted a field survey at the study area. In the course of discussions and field survey, both parties confirmed the main items described in the attached sheets. The Team will proceed with further works and prepare the Basic Design Study Report.

Male', October 19th, 2006



Hideki Sakata
Leader
Basic Design Study Team
Japan International Cooperation Agency



Hussain Niyaz
Executive Director
Department of External Resources
Ministry of Foreign Affairs
Republic of Maldives



Mohamed Yousuf
Director
Physical Facilities Development Section
Ministry of Education
Republic of Maldives

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the quality of lower secondary education for girls in Male' through offering a healthy educational environment by construction of the second girls secondary school in Male', and thus to contribute to achieve compulsory education at lower secondary education for girls in Male'.

2. Project site

The site of the Project located in Male' is shown in Annex-1. The Maldivian side promised to submit a copy of certificate of land registration for the construction site to the Team before they left from Male'.

In addition, Maldivian side promised to secure a temporary yard for construction of the Project school.

3. Executing and Implementing Organization

The executing agency of the Project is the Department of External Resources of the Ministry of Foreign Affairs.

The implementing agency of the Project is the Ministry of Education (MOE). The organizational chart of MOE is attached as Annex-2. After implementation, MOE will be responsible for the use and maintenance of the school granted under the Japan's Grant Aid.

4. Items requested by the Government of Maldives

After discussions with the Team, the items described in Annex-3 were finally requested by Maldivian side. The consultants will confirm further details of the items, and then JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

4-1. Construction of the Facilities

Requested items are listed in Annex-3-1

4-2. Procurement of the Furniture and Equipment

Requested items are listed in Annex-3-2

5. Japan's Grant Aid Scheme

The Maldivian side understands Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Maldives as explained by the Team and described in Annex-4 and Annex-5.

6. Schedule of the Study

6-1. The consultants will continue with further studies in Maldives until November 9th, 2006.

6-2. JICA will then prepare the draft report in English and dispatch a mission in order to explain its contents around the end of February, 2007.

6-3. Upon acceptance of the report in principle by the Government of Maldives, JICA will complete

the final report and send it to the Government of Maldives in April 2007.

7. Other relevant issues

7-1. The necessity of the Project School

- (1) The Team confirmed that the Project, which would aim to increase the capacity of girls secondary school in Male', was consistent with the policy of MOE on realization of compulsory lower secondary education by 2010.
- (2) The Team visited the existing girls secondary school, Aminiya school, and observed that it was accommodating much more students than the original capacity, and the Project school was an urgently necessary to provide a healthy educational environment for the over flown students from the regular classrooms.
- (3) The Team confirmed that the community schools and private schools in Male' maintained supplementary function to the government lower secondary schools, so that they were not in a competitive relation with the government lower secondary schools.
- (4) The Team confirmed that a countermeasure against the acute shortage of girls secondary school in Male' would be the most urgent issue and most highly prioritized under the present situations where increasing numbers of people were migrating into Male' from remote islands, while the government realized the necessity to solve the problem on poorer quality of lower secondary education in remote islands and had been taking possible measures on the basis of the 7th National Development Plan.

7-2. Proper number of classroom

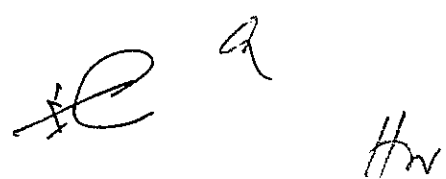
The number of classroom provided by the Project would be decided after the projected number of the girl's students to enter the Project school was confirmed. The Maldivian side promised to inform the projected number in each grade to the Team before they left from Male'. The necessary number of facilities, furniture and equipment will be decided accordingly.

7-3. The institutional standard of the Project school

The both sides confirmed that Aminiya school was recognized as an institutional standard which would be applied to the Project school. The standard includes such basic components of school management as curriculum, activities, staff allocation and budget. The Maldivian side promised to submit the management plan of the Project school to the Team before they left from Male'.

7-4. In-Service Teacher Training

The Maldivian side explained that in-service teacher training was necessary to improve the quality of lower secondary education. However, the both side confirmed that the facilities for in-service teacher training were not essential for the Project school, and then the Maldivian side decided not to include the facilities in the request.

Handwritten signatures and initials are present at the bottom right of the page. There are three distinct marks: a large, stylized signature, a smaller signature, and a set of initials.

7-5. Vocational Education

The Maldivian side requested the facilities for vocational education which would be added as the forth stream in lower secondary education in 2007, and whose pilot project was going on at Aminiya school as well as other two lower secondary school in Male' and several regional lower secondary schools. The Team understood that vocational education could be recognized as a basic part of lower secondary education and accepted to include necessary facilities for the vocational education in the request.

7-6. Criteria for furniture and equipment selection

Both sides agreed on the criteria for furniture and equipment selection as described in Annex-6. Nevertheless, the contents covered by the Project will be finalized after further study in Japan.


7-7. The Project Name

Both sides agreed to change the name of the Project from "Project for the Construction of Girls Secondary School in Male'" to "the Project for Construction of the Second Girls Secondary School in Male'".

7-8. Other Donor's Activities

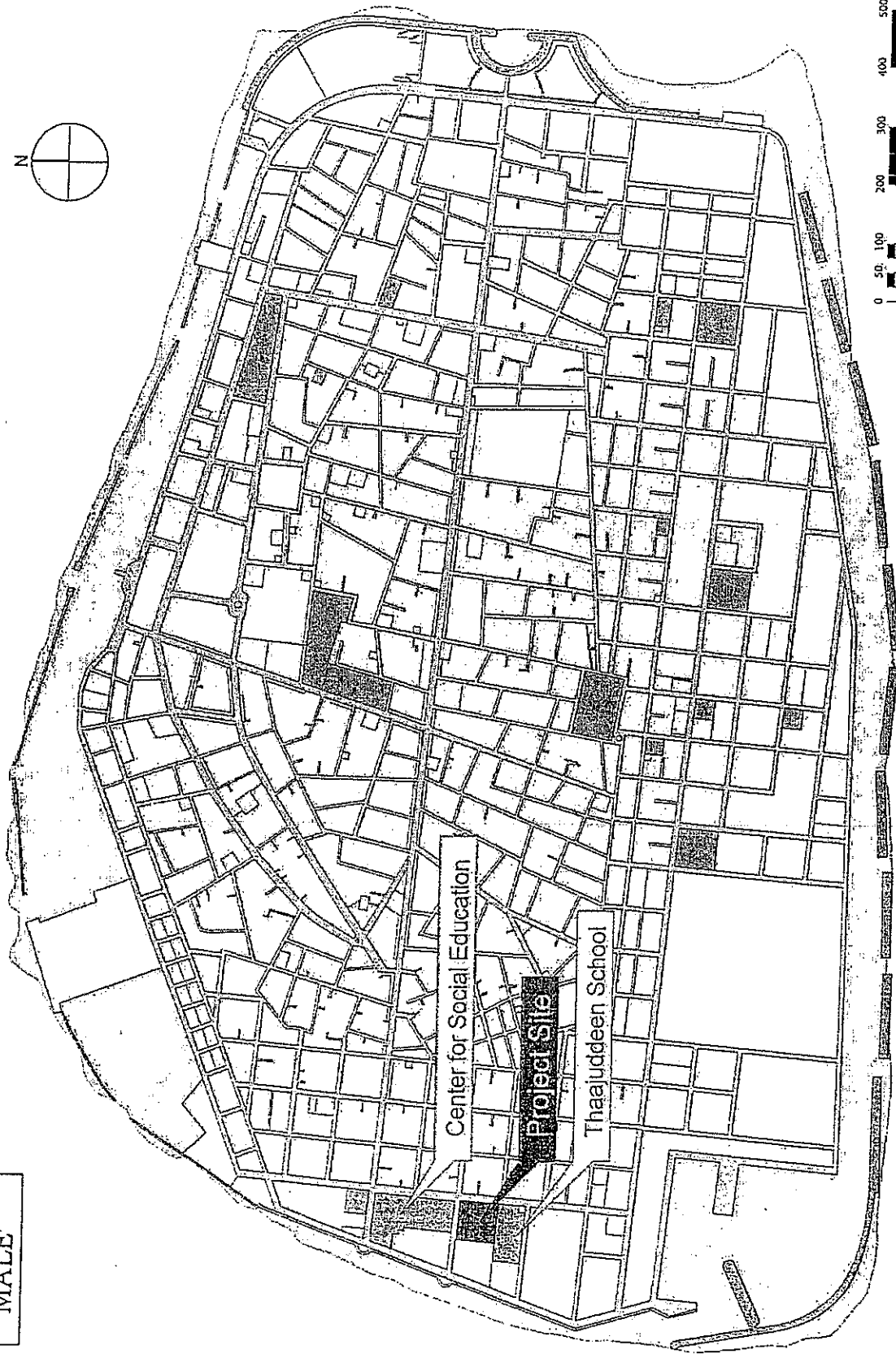
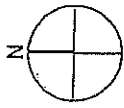
The Maldivian side confirmed that there would not be any duplication with other donor agencies while they were supporting in the sector of lower secondary education.

- Annex-1 Location map of the Project site
- Annex-2 Organizational chart of MOE
- Annex-3-1 List of the requested facilities
- Annex-3-2 List of the requested furniture and equipment
- Annex-4 The Japan's Grant Aid Scheme
- Annex-5 Major undertakings to be taken by each government
- Annex-6 Criteria for furniture and equipment selection



Annex 1 Location map of the Project site

MALE'



1-1

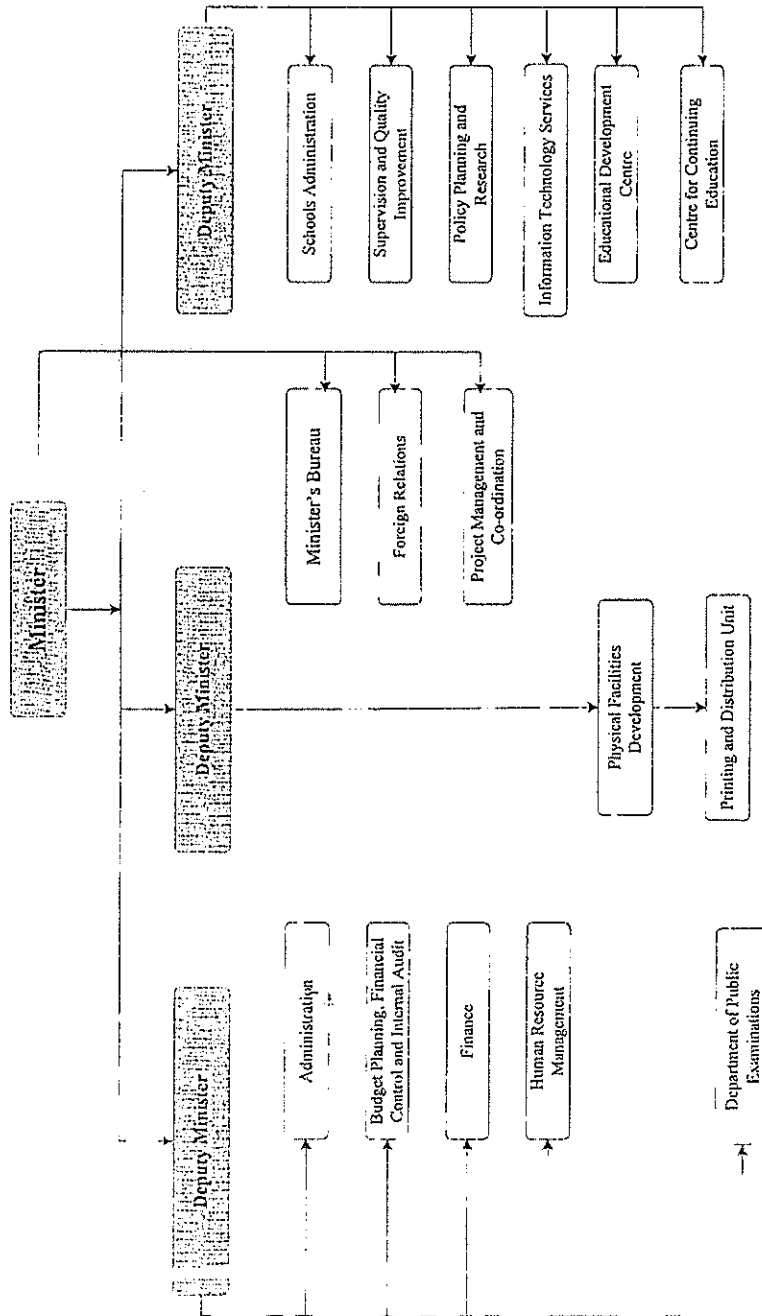
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Annex 2 Organizational chart of MOE

Structure of the Ministry of Education



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Annex 3-1 List of the requested facilities

	Name of Room	Quantity
1	Classroom	25*
2	Library	1
3	Computer Classroom	1
4	Sports Room	1
5	Art Room	1
6	Science Classroom (Physics, Chemistry, Biology, Fishery Science)	4
7	Audio-visual Room	1
8	Multi-purpose Room	2
9	Activities Room	1
10	Home Science and Industrial Room	1
11	Supervisors Room	1
12	Teachers Room	1
13	Administration Office	1
14	Principal' s Room with toilet	1
15	Assistant Principal' s Room	2
16	Pantry	1
17	Print Room	1
18	First Aid Room	1
19	Counseling Room	1
20	Meeting Room	1
21	Prayer Room	1
22	Teaching Aids Room	1
23	Canteen	1
24	School Hall	1
25	Storage	-
26	Universal Toilet	-
27	Teachers Toilet	-
28	Students Toilet	-
29	Staff Toilet	-

* Subject to the projected number of students

3-1-1

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Annex 3-2 List of the requested furniture and equipment

Group	Room (Number of rooms)	Item
①Furniture	Classroom (25) *	Student' s Desk, Chair
		Teacher' s Desk, Chair
		Blackboard, Bulletin Board
	Library (1)	Librarian Table, Chair, Cabinet
		Books' Rack
		Student' s Reading Table, Chair
	Computer Classroom (1)	Whiteboard
		Table, Chair, Filing Cabinet for Instructor
		Table, Chair for Student
	Sports Room (1)	Blackboard, Bulletin Board
		Teacher' s Desk, Chair, Filing Cabinet
	Art Room (1)	Blackboard
		Student' s Desk, Chair
		Rack
	Science Classroom (4) (Physics, Chemistry, Biology, Fishery Science)	Blackboard, Bulletin Board
		Teacher' s Desk, Chair, Filing Cabinet
		Workbench, Stool
	Audio-visual Room (1)	Whiteboard, Bulletin Board
		Teacher' s Desk, Chair, Filing Cabinet
		Student' s Desk, Chair
	Multi-purpose Room (2)	Blackboard, Bulletin Board
		Teacher' s Desk, Chair, Filing Cabinet
		Student' s Desk, Chair
	Activities Room (1)	Whiteboard, Bulletin Board
		Student' s Desk, Chair
	Supervisors Room (1)	Supervisor' s Table, Chair
	Teachers Room (1)	Teacher' s Workbench, Chair, Locker
	Administration Office, Pantry, Print Room, Principal' s Room (1)	Table, Chair, Cabinet
Receptionist' s Table, Chair		
Principal' s Table, Chair, Cabinet		
Pantry Table, Chair		
Documents Store Cupboard		

3-2-1

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	Canteen	Table, Chair
	Assistant Principal's Room (2)	Assistant Principal's Table, Chair, Cabinet
	First Aid Room (1)	Doctor's Table, Chair
		Patient's Chair
		Patient's Adjustable Bed
		Bedside Table, Chair
	School Hall (1)	Chair
		Chair's Trolley
	Meeting Room (1)	Meeting Table, Chair
	Teaching Aids Room (1)	
	Prayer Room (1)	
	Counseling Room (1)	Counselor's Desk, Chair
		Student's Chair
	Home Science and Industrial Room (1)	Blackboard, Bulletin Board
		Teacher's Desk, Chair
		Student's Workbench, Stool
② Equipment for Special Classrooms	Science Classroom (4) (Physics, Chemistry, Biology, Fishery Science)	Laboratory Equipment
	Audio-visual Room (1)	Audio-visual Equipment

*Subject to the projected number of students

3-2-2

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Annex 4 The Japan' s Grant Aid Scheme

1 Japan's Grant Aid Scheme

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

(1) Grant Aid Procedures

Japan's Grant Aid scheme is executed through the following procedures.

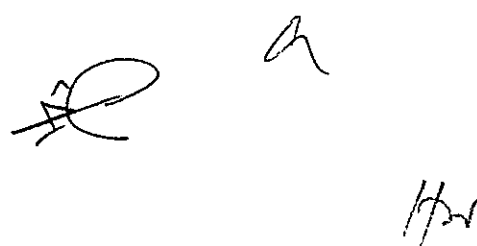
Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for the Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

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Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

(2) Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereafter referred to as "the Study"), conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

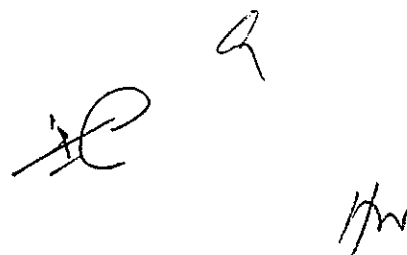
- Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of a Basic Design of the Project
- Estimation of cost of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry (ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

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The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

(3) Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely, consulting constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Undertakings required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- ① To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,
- ② To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- ③ To secure buildings prior to the procurement in case the installation of the equipment,
- ④ To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- ⑤ To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- ⑥ To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified



Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay(A/P) issued by the Government of the recipient country or its designated authority.

9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

4-5

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Annex 5 Major undertakings to be taken by each government

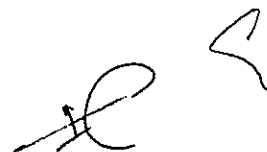
No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To construct the parking lot	●	
5	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct the building	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm sewer and others to the site)		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
b. The MDF and the extension after the frame/panel	●		
6) Furniture and Equipment			
a. General furniture		●	
b. Project furniture and equipment	●		
8	To bear the following commissions to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax and custom duty exemption and custom clearance facilitation of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)
10	To accord Japanese nationals, whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
12	To maintain and use properly and effectively the facilities contracted and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A : Banking Arrangement, A/P : Authorization to pay)

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- (1) To be essential to classes and school management.
- (2) To be frequently used.
- (3) To be easily maintained in term of consumable supplies, etc.
- (4) Not to be substituted by other furniture/equipment.
- (5) Not to be moved from the existing school.
- (6) No plan to be provided by other resources.
- (7) To be educational furniture.
- (8) Not to be equipment for extra curricular activities.
- (9) Books for library and computers to be excluded.
- (10) Consumable supplies to be excluded.

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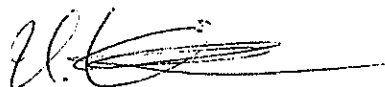
**MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR CONSTRUCTION
OF THE SECOND GIRLS SECONDARY SCHOOL IN MALE'
IN THE REPUBLIC OF MALDIVES
(EXPLANATION ON DRAFT REPORT)**

In October 2006, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Construction of the Second Girls Secondary School in Male' (hereinafter referred to as "the Project") to the Republic of Maldives (hereinafter referred to as "Maldives"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

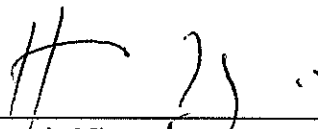
In order to explain and to consult with the Government of Maldives on the components of the draft report, JICA sent to Maldives the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Hideya Kobayashi, Chief, Education and Vocational Training Team, Project Management Group II, Grant Aid Management Department, JICA Head Office, from February 25th to March 2nd, 2007.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Male', February 28th, 2007



Hideya Kobayashi
Leader
Draft Report Explanation Team
Japan International Cooperation Agency



Hussain Niyaz
Executive Director
Department of External Resources
Ministry of Foreign Affairs
Republic of Maldives



Mohamed Yousuf
Director
Physical Facilities Development Section
Ministry of Education
Republic of Maldives

ATTACHMENT

1. Components of the Draft Report

The Government of Maldives agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid scheme

The Maldivian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Maldives as explained by the Team and described in Annex- 4 and Annex- 5 of the Minutes of Discussions signed by both parties on October 19th, 2006.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Maldives by the end of April.

4. Other relevant issues

4.1 The Maldivian side strongly requested to the Team that the completed facilities of the Project school should be handed over by the end of December 2008 since the Project school is planned to open in the middle of January 2009 when the new school year begins.


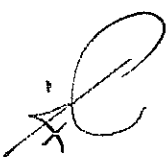
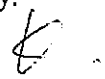
4.2 Both sides agreed that the Maldivian side should demolish the existing perimeter fences along the northern and eastern boundaries before the commencement of the construction, and reconstruct the perimeter fences after the completion of the Project.

4.3 Both sides agreed that the Maldivian side should demolish a part of the existing perimeter fence in 4m width along the western boundary before the commencement of the construction so that the Contractor could make an access from the temporary construction yard, and restore it after the completion of the Project.

4.4 Both sides agreed that the Maldivian side should transplant the existing trees in the project site that obstruct the construction works.

4.5 Both sides agreed that the Maldivian side should procure additional furniture and equipment necessary for the completed Project facilities except for the basic furniture and equipment included in the Project.

4.5 Both sides agreed that the Maldivian side should procure necessary books for the library.



5. References

NO.	Name of Reference	Media	Original/Copy	Issued By	Year
1	Statistical Yearbook of Maldives 2006	Book	Original	Ministry of Planning and National Development	2006
2	Education Master Plan 2007 to 2011/2016 (Draft One: Limited Circulation)	Book	Copy	Ministry of Education	2006
3	(Translation of the main points) Education Strategic Plan 2004-2006	Book	Copy	Ministry of Education	
4	Education Act (Draft)	Book	Copy	Ministry of Education	
5	Primary National Syllabus	CD-R	CD-R	Ministry of Education/Educational Development Center	
6	Lower Secondary O' Level Syllabus	CD-R	CD-R	Ministry of Education/Educational Development Center	
7	Higher Secondary A' Level Syllabus	CD-R	CD-R	Ministry of Education/Educational Development Center	
8	Textbook O' Level Physics	Book	Original	Oxford University Press/Educational Development Center	1999
9	Textbook O' Level Chemistry	Book	Original	Oxford University Press/Educational Development Center	2000
10	Textbook O' Level Biology	Book	Original	Oxford University Press/Educational Development Center	2000
11	Textbook O' Level Fisheries Science 1,2	Book	Original	Educational Development Center	1998, 1999
12	Curriculum and Syllabus of Piloting Vocational Subjects (Electrical Wiring, Computer Hardware, Dress making & Designing)	Book & Electric Data	Copy	Ministry of Education/Centre for Continuing Education	
13	Curriculum and Syllabus of Piloting Vocational Subjects (Engine Repair & Maintenance, Farming, Front Office, Housekeeping, Masonry, Pole and line tuna Fishing, Welding)	Electric Data	Electric Data	Ministry of Education/Centre for Continuing Education	
14	Student Handbook 2006 (Faculty of Education)	Book	Original	Maldives College of Higher Education	2006