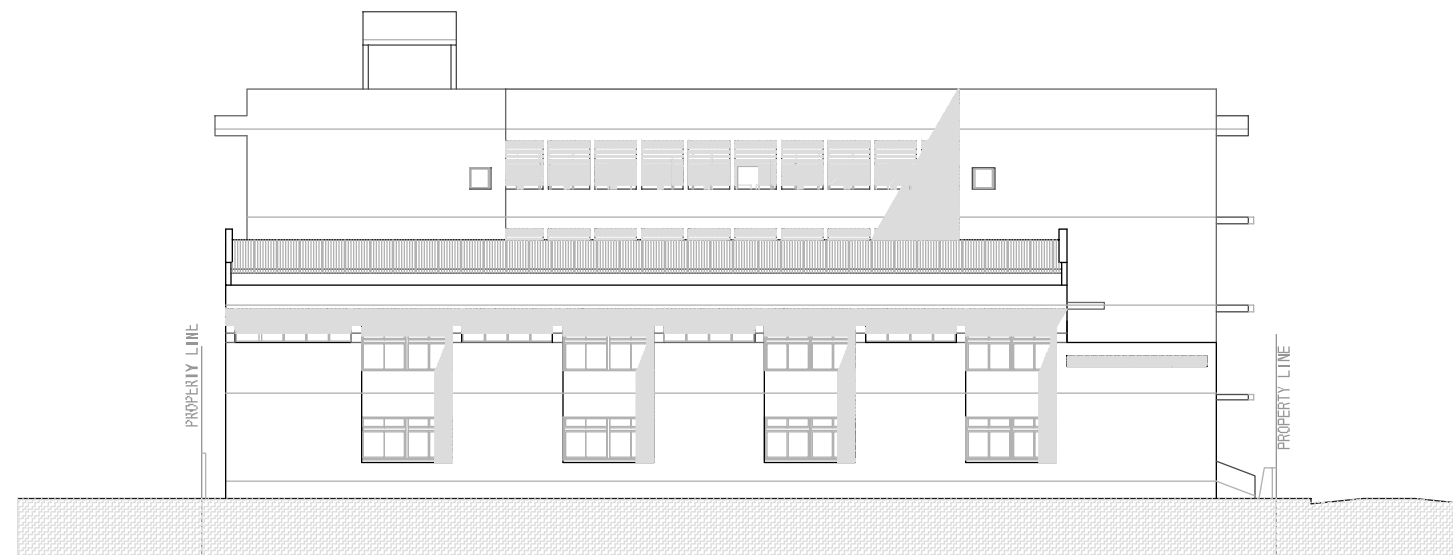
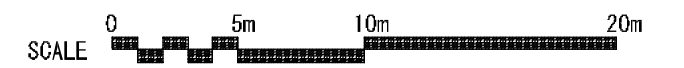
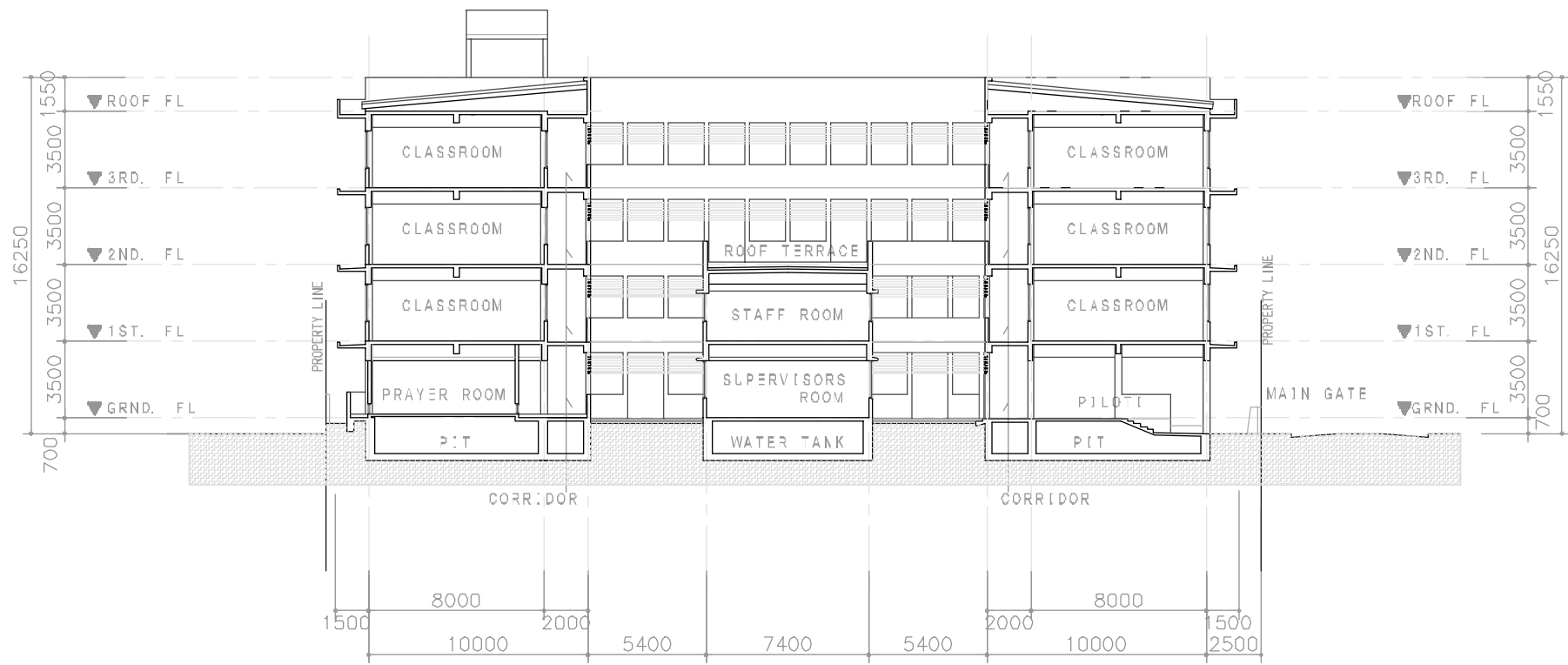
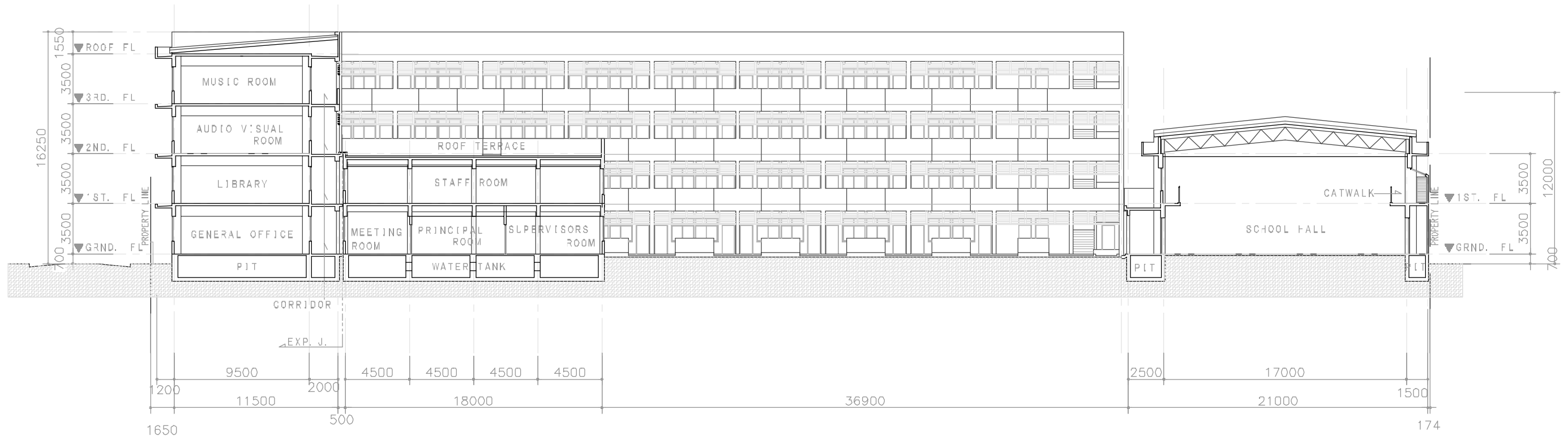


NORTH ELEVATION S=1 : 300

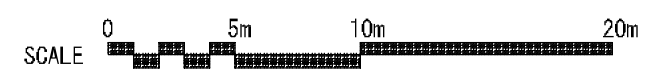


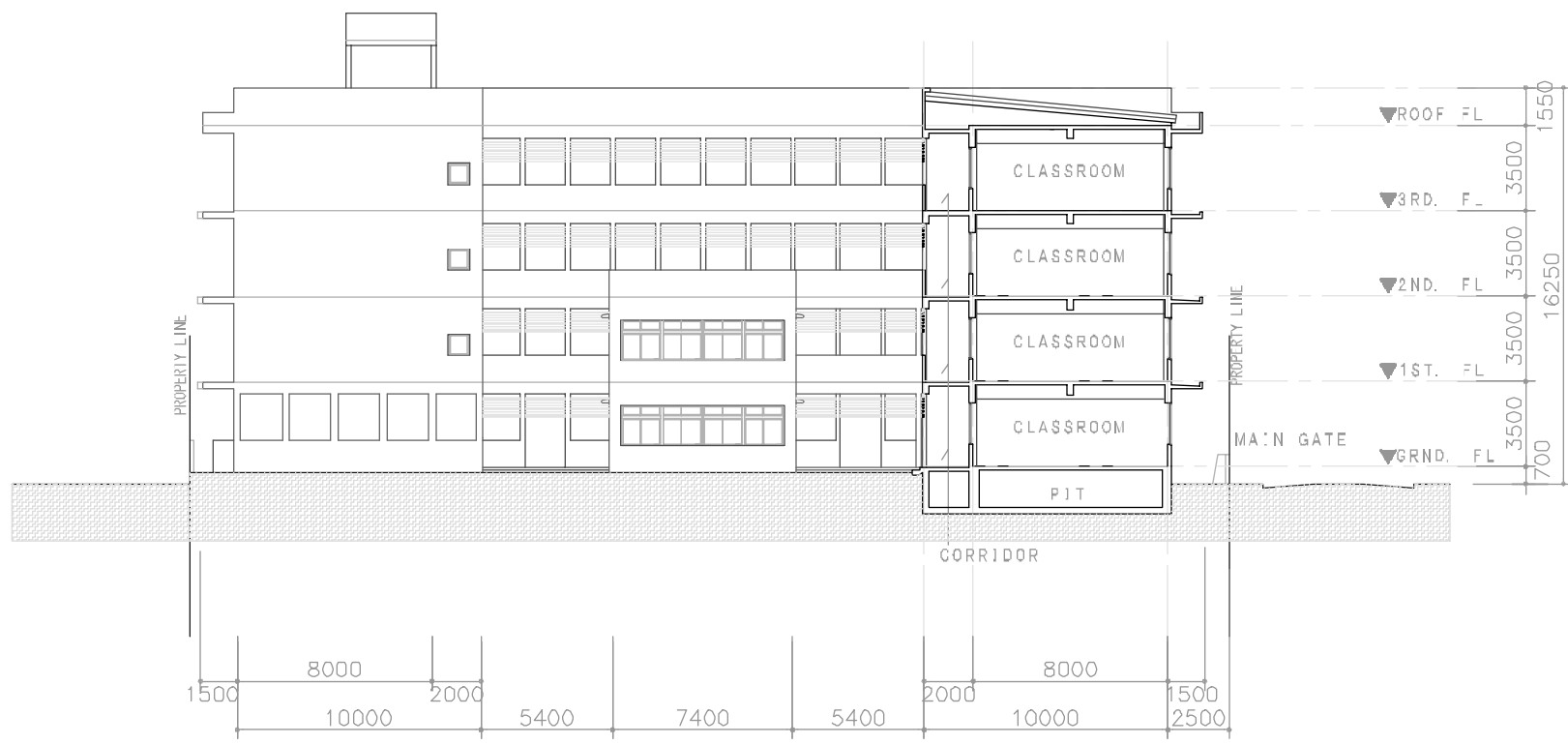
WEST ELEVATION S=1 : 300





SECTION (1) S=1 : 300





SECTION (2) S=1 : 300



## **2-2-4 Construction and Procurement Plan**

### **2-2-4-1 Policies for Construction and Procurement**

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 will sign the consultant contract for the detailed design and the construction supervision work for Project implementation.

Using the Basic Design Study as a guide, the Consultant will prepare the detailed design of the Project facilities and will also assist the Government of Maldives in the tendering and signing of the Project construction contract. Further, the consulting firm will hold a series of discussions and meetings with the personnel responsible on the Maldives side so that the work undertaken by the Maldives side and Project construction progresses smoothly and is implemented without delay under the supervision of the Consultant.

The electrical power necessary for the Project construction shall be supplied by diesel generator. Installation of the power supply system and the connecting of telephone lines for the completed Project facilities by the Maldives side must be finished prior to the completion of Project construction so that they may function properly.

The timely procurement and arrival of materials from foreign countries is absolutely necessary, and shall be accomplished through the simplifying and unifying of building materials. Project construction schedules must be accurately planned to coincide with the arrival time of materials at the Project site. That includes adequate dispatching time of specialists to eliminate any waiting, down-time or re-work. A well-balanced plan of material supplies and work force input is essential for smooth implementation.

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

#### **(1) Principles for Project Implementation**

The Project first must be approved by a Japanese government cabinet meeting; and then after the Exchange of Notes for Project implementation is

signed by both the governments of Japan and the Maldives, implementing of the Project shall be based on the following principles:

- 1) The Project shall be paid for by the taxes of the Japanese people, and under the rules of the Japanese fiscal year system;
- 2) The government of Maldives shall sign a contract for 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 the selection of a Japanese prime contractor and to conduct the construction supervision work.
- 3) The government of Maldives shall conduct the pre-qualification evaluation and the selection of a Japanese prime contractor through a competitive bidding system under the assistance of the above-mentioned Japanese consulting firm. Then, sign a construction contract with the selected Japanese contractor and entrust the contractor with the project construction.

(2) Basic Policies for the Preparation of Construction Plan

- 1) Local consultants and contractors, who are familiar with the local construction system and procurement of materials, shall be used as much as possible. This best suits the various local conditions, allows for the transfer of construction technologies from the Japanese prime contractor and in general, creates an environment for smooth and efficient Project construction.
- 2) Strict safety, quality and schedule management shall be followed at the Project site, thereby transferring as much technology and related know-how from the Japanese contractor as possible, to the people of the Maldives.
- 3) Special attention must be paid to overall safety and to the prevention of larceny at the Project site.

- 4) Close cooperation with local contractors is necessary for Project construction to progress smoothly. The boundaries of responsibility for the Japanese prime contractor and the local sub-contractors must be clearly defined, as well as the careful distribution of staff assignments, in order to form a unified and efficiently organized work force.

#### **2-2-4-2 Matters of Importance regarding Construction and Procurement**

It is absolutely necessary that the tasks and responsibilities of the Maldives side be fully accomplished for smooth Project implementation. Detailed schedules must be prepared through discussions between the Japanese consultants and those responsible on the Maldives side so that land preparation work is completed without delay. In addition, schedules for purchases of supplies must be made by considering the time periods involved from the procurement of materials in foreign countries to their arrival and delivery times at the Project sites, and be prepared and adjusted 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 the land adjacent to the Project site or another alternative land for temporary stockyard and offices.

#### **2-2-4-3 Division of Construction Work and Procurement/Installation**

Based on Japan's Grant Aid Program regulations, the following undertakings shall be borne by the recipient country.

##### **(1) Restorative and Removal Work of Existing Facilities**

Due to extensive structural damage, the facilities are dangerous to use as is, so corrective work must be done to make them safe for continuous use until the Project is completed. The dangerous conditions that exist are so bad that even with restorative work, it will be impossible to continue using the building facilities for very long. Thus, they will have to be demolished and removed as soon as the Project facilities are delivered. The above-mentioned remedial and removal work must be borne by the Maldives side.

## (2) Land Reclamation and Clearing Work

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

## (3) Exterior Work

- 1) The construction of fences and gates along the roads and neighboring property boundary lines shall be borne by the Maldives side in accordance with the regulations of Japan's Grant Aid Program.
- 2) Landscaping work such as tree planting and flowerbed construction should be undertaken by the Maldives side at its own expense.
- 3) All paving inside the site shall be conducted by the Maldives side.

## (4) Connection of Infrastructure Lines

The connection of power supply lines, water and sewer systems and telephone lines must be borne by the Maldives side.

### 1) Power Supply Lines

The Japanese side will build a power-line pole on the Project site and install the necessary power mains from the pole to the project facilities. The Maldives side shall install the power meter(s) on the pole and connect the power supply lines from the public power main.

### 2) Telephone Lines

The Japanese side will only install the wire conduits. The Maldives side, at its own expense, shall install the wires in the conduits to connect to the necessary buildings, a telephone switchboard, the telephone units and the connections for public telephone lines.

### 3) Water Supply

The Japanese side will install the pipes and a cutoff valve in the Project facilities. The Maldives side, at its own expense, shall install a water meter and the connecting pipe from the cutoff valve to the public water supply main.

### 4) Sewer Lines

The Japanese side will install two sewage basins at the site, one each along the east and west side roads. The Maldives side, at its own expense, shall connect the sewer lines from the sewage basins to the public sewer mains .

### (5) Securing of Areas for Storage of Materials and Site Office Buildings

As it is not possible to arrange for an office building and the storage of materials and supplies inside the Project site, the Maldives side, at its own expense, shall secure an area of land next to the Project site or feasible alternatives for these purposes.

### (6) Well Drilling

The drilling of wells on the Project site to secure ground water for toilet flushing shall be borne by the Maldives side.

### (7) Procurement of Fire Alarm Equipment, Wiring and Installation Work

The Japanese side will only install the empty conduits for the fire alarm system. The procurement of fire alarm equipment and the installation of alarm cables and equipment units shall be borne by the Maldives side. And in accordance with the government's administrative guidelines, the Maldives side, at its own expense, shall install fire extinguishers and fire blankets.

### (8) Procurement of Furniture and Equipment Not Covered by the Project

This Project is basically a reconstruction of the existing school buildings and most of the present furniture and equipment can still be utilized. Except for basic equipment such as blackboards, etc. included in the Project, the



procurement of additional furniture and equipment shall be borne by the Maldives side.

#### **2-2-4-4 Construction Supervision and Material Procurement Plans**

The project, implemented under the auspices of Japan's Grant Aid Program and conditions unique to the Maldives, construct 4-story school buildings with structures of reinforced concrete, having a total floor area of 5,404.43 m<sup>2</sup>. The time period for construction is relatively tight. So, the following 2 items are absolutely necessary for smooth construction supervision: 1) the pertinent reporting of work progress and other related 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**

###### **1) Scope of Work**

The main duties and responsibilities of "general supervision" include the overseeing of all project schedules, the providing of comprehensive judgements of a technical nature, the investigating of general matters related to the Project other than engineering aspects, the giving of guidance and assistance to the resident engineer and the reporting of Project implementation progress to JICA headquarters.

###### **2) Supervision System**

The engineers who were involved in the preparation of the detailed design will conduct the general supervision under the project manager who has been involved in the Project since the Basic Design Study stage.

##### **(2) Supervision of the Resident Engineer**

###### **1) Scope of Work**

The major supervision work of the engineer stationed at the Project site includes daily construction schedule checking, examination of construction drawings, the providing of technical guidance,

interim and final inspection of work, preparation and sending of reports to the implementing agency as well as to the JICA office and to the Japanese embassy.

## 2) Supervision System

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

### **2-2-4-5 Material and Equipment Procurement Plan**

As mentioned above, locally produced and manufactured building materials are virtually non-existent 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 arrange and procure them directly from Singapore etc. However, the supply capability of the State Trading Organization Ltd. (STO) etc. has increased recently, which is a local trading company importing living goods from Singapore by ship, and cement and aggregates for concrete and some finishing materials are easily obtainable. Due to STO's mass 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 a top priority to select building materials and equipment, the country for the procurement of each item should be carefully selected on the basis of simplicity and ease of procurement, repair, replacement and maintenance after Project completion.

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

Table 2-10 List of Major Materials and Equipment and the Procurement Places

	Procurement Place			Remarks Distribution Condition in Male'
	Male'	Import	roducing Court	
<b>Building Material and Equipment</b>				
1. Portland Cement	○	◇	Indonesia	A large quantity of high quality material is available in local market.
2. Sulfate Resistant Cement Admixture		○	Singapore	Not available in local market. To be procured in Singapore or India.
3. Concrete Agrigate	○	◇	India	A large quantity of high quality material is available in local market.
4. Deformed Steel Bar	◇	○	Singapore	Not available in large quantity in local market. Procure in Singapore.
5. Steel Frame		○	Singapore	Not many brands are available. To be procured in Singapore.
6. Form Material		○	singapore	Not many brands are available. Procure in Singapore or Indonesia.
7. Wall Concrete Block (for coating base)	○			A large quantity of high quality material is available in local market.
8. Wood (for structure and interior work)			Singapore	Not available in large quantity in local market. Procure in Singapore.
9. Earthenware Tile	◇	○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
10. Aluminum Door and Window		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
11. Wooden Door		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
12. Metal Fittings	◇	○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
13. Glass (general use flat glass)	◇	○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
14. Coating Material	◇	○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
15. Waterproofing Material	◇	○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
16. Metal Roofing Material		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
17. Insulation Material		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore.
<b>Material and Equipment for Electrical Work</b>				
1. Switchboard		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore
2. Wires and Cables		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore
3. Conduit Pipes		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore
4. Lighting Fixtures (general use)		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore
5. Communication Equipment		○	Singapore	Difficult to locally procure in large quantity. Procure from Singapore
<b>Material for Water Supply and Drainage</b>				
1. Zinc Plated Steel Pipes		○	Singapore	Only small amount in local market. Procure in Singapore.
2. Valves and Fittings		○	Singapore	Only small amount in local market. Procure in Singapore.
3. Pumps		○	Singapore	Only small amount in local market. Procure in Singapore.
4. Sanitary Wares		○	Singapore	Only small amount in local market. Procure in Singapore.
<b>Material for Air Conditioning and Ventilation</b>				
1. Duct Material		○	Singapore	Only small amount in local market. Procure in Singapore.

○ : Prime

◇ : Alternative

**2-2-4-6 Project Implementation Schedule**

The Project shall be implemented within one fiscal year and in accordance with the following schedule:

Table 2-11 Project Implementation Schedule

	1	2	3	4	5	6	7	8	9	10	11	12
Detailed Design	Work in Male	□										
	Design Work In Japan	▬										
	Tender Work in Japan				▬							
	Work in Male'					□	□					
Construction	Preparation Work	▬										
	Earth and Foundation Work		▬									
	Superstructure Work			▬								
	Mechanical/Electrical, and Interior and Exterior Finishing Work				▬							
	Exterior Work									▬		
	Inspection and Handover											□

## **2-3 Outline of Undertakings to be Borne by the Maldives Side**

The purpose of Japan's Grant Aid Program is to assist development projects in conjunction with the "self-help" spirit of the recipient country. Based on this 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 Maldives side shall be responsible to complete the following tasks:

- 1) To provide the Japanese side with information and data related to the Project;
- 2) To obtain the land necessary to implement the Project and secure the rights for MOE to construct school facilities;
- 3) To conduct repair and reinforcement works necessary for the existing school buildings and remove them after handover of the Project facilities;
- 4) To reclaim and clear the land prior to Project construction;
- 5) To provide the necessary landscaping work, fence construction and other incidental exterior work;
- 6) To connect power supplies, telephones, water supplies, sewer lines and other incidental facilities to the completed Project facilities and drill the well to secure ground water;
- 7) To procure fire alarm equipment and install alarm cables and equipment units necessary for the completed Project facilities;
- 8) To procure additional furniture and equipment necessary for the completed Project facilities except for basic equipment included in the Project;
- 9) To secure sufficient staff necessary for the adequate operation, repair and maintenance of the Project facilities constructed through Japan's

Grant Aid Program;

- 10) 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;
- 11) 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;
- 12) 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;
- 13) To accord all Japanese nationals entry into the country and the staying therein, 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;
- 14) To ensure that all facilities and products constructed and purchased under the Project will be effectively used and properly maintained by MOE;
- 15) 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 a Project contractor;
- 16) To grant all the required permits and approvals needed by the Japanese side for Project implementation;
- 17) To bear all the necessary expenses for the Project that are not covered by the Grant Aid (including land reclamation and clearance, connection of infrastructure lines, obtaining of building permits, etc);
- 18) To obtain, in cooperation with and under the guidance of the consultants, all the various necessary permits including those needed

prior to construction, and those needed for the use of Project facilities after construction completion;

19) To respond promptly to the consultant's request for decisions and judgements regarding Project implementation.

## 2-4 Operation and Maintenance Plan for Project Facilities

### 2-4-1 Operation and Maintenance Plan

#### (1) Operation Plan

There are presently 25 usable classrooms at the Project school with 48 classes being taught. 96 staff members operate the school. The newly constructed school buildings will have 35 classrooms. Thus, the number of classes and the necessary number of teachers will need to be increased. If two-shift classes are conducted subject to 30 students per class, 2,100 students can be accommodated by these classrooms. The necessary number of teachers for 2,100 students are as shown in the following table. 28 more teachers and 8 more other staff members are considered necessary.

In the Maldives, the calculation of the number of necessary teachers for the next fiscal year is based on the number of students in the school. If additional teachers are necessary, each school makes a request to MOE to increase the number. In general, the number of teachers assigned by MOE match the request of each school. Presently, there are no teacher shortages in Male'. Thus, although the increase in the number of teachers will be required at the Project school, it is considered that an increase will not pose any problems.

Table 2-12 Comparison of Necessary Number of Staff Members at the Project School

	2002	After Project Implementation	Increase	Remarks
① Administrative Staff	74	74	0	Fixed
② Academic Staff	96	132	36	
Teacher Gr. 1-5	47	66	19	See the Table below
Teacher Gr. 6,7	23	32	9	See the Table below
Asst. Teacher	7	10	3	One/10 teachers
Sp. Supervisor	2	2	0	One/shift
Counselor	2	2	0	One/shift
Librarian	2	2	0	One/shift
H. Assistant	2	2	0	One/shift
Supervisor	8	13	5	Three/500 students
Asst. Principal	2	2	0	One/shift
Principal	1	1	0	One/school



Table 2-13 Necessary Number of Teachers at the Project School after Project Implementation

Teachers for Grade 1~5

Grade	Student	Class	Subjects and No.of Periods/Week										
			Qrn	Islm	Dhiv	Eng	Math	ES	PA	PE	Mu		
			2	3	5	8	6	6	2	2	1		
Grade 1	300	10	20	30	-	-	-	-	-	-	-	10	
Grade 2	300	10	20	30	-	-	-	-	-	-	-	10	
Grade 3	300	10	20	30	50	-	-	-	-	-	-	10	
Grade 4	300	10	20	30	50	-	-	-	-	-	-	10	
Grade 5	300	10	20	30	50	-	-	-	-	-	-	10	
Total	1500	50	100	150	150							50	TOTAL
Teachers Required		50	4	5	5							2	66

Teachers for Grade 6~7

Grade	Student	Class	Subjects and No.of Periods/Week									
			Islm	Dhiv	Eng	Math	S.St	G.Sc	PA	PE	Mu	
			5	6	8	7	5	5	2	2	1	
Grade 6	300	10	50	60	80	70	50	50	20	20	10	
Grade 7	300	10	50	60	80	70	50	50	20	20	10	
Total	600	20	100	120	160	140	100	100	40	40	20	TOTAL
Teachers Required		-	4	4	6	5	4	4	2	2	1	32

(2) Maintenance Plan

School facilities are maintained by each school under management of MOE. The person responsible for the maintenance system of Project school facilities is the principal. The assistant administrator is in charge of the day-to-day maintenance of the school. Under the assistant administrator, there is a person in charge of facility maintenance. Under him are the janitors who clean the facilities. The maintenance man conducts small-scale repair work. For large-scale repair work, an outside contractor is hired. The school presently has 36 janitors (2 men from Bangladesh and 34 women from the Maldives). They maintain the school facilities in three daily shifts (from 6:30 to 13:30, 14:50 to 18:30 and from 17:30 until all remaining cleaning work of the day is finished). The division of work duties for each janitor is established by a sufficient maintenance system.

Although the Project will add more classrooms, it is basically a reconstruction project for the existing structurally damaged school buildings.

Thus, it is not necessary to change or establish a new maintenance system, employ new staff nor secure any large additional maintenance funds. It is possible to adequately maintain the new Project facilities with the present maintenance system. However, one thing must be pointed out: Due to the lack of knowledge regarding correct maintenance procedure, janitors cleaned the facilities at the Fourth Primary School in Male' (Kalaafaanu School through a prior Japan's Grant Aid Program) with salt water; as a result, the concrete deteriorated and the paint peeled. Thus, it is necessary to reaffirm adequate facility maintenance methods for Project implementation.

#### 2-4-2 Operation and Maintenance Cost

As mentioned above, the Project is for the reconstruction of the existing school. Thus, it will only require a small additional amount of funds for maintenance, and the enlarged scale of facilities will increase operation costs. Those annual costs for the Project school are estimated as follows:

Table 2-14 Operation and Maintenance Cost

Item	Description	Cost (MRf)	Basis of Estimation ※
<b>Operation Costs</b>			
Personnel Expenses	Staff Wages	8,400,000	4,000MRf × 2,100 students
Travel Expenses	Domestic and Overseas Travel	35,700	17MRf × 2,100 students
Consumable Items /Utility Costs	Office Supplies, Cost of Electricity/Water	903,000	430MRf × 2,100 students
Communication	Telephone, Mail etc.	777,000	370MRf × 2,100 students
Publicity/Subsidies	School Guide, Pamphlet etc.	231,000	110MRf × 2,100 students
<b>Maintenance Costs</b>			
Facility Maintenance	Cleaning, Repair Materials/Equipments	714,000	340MRf × 2,100 students
Total		11,060,700	

※The estimated costs are calculated based on the cost per student of each item on the budget for the Project school in 2001.

## (1) Operation Cost

### 1) Personnel Expenditures

36 more staff members will be required after Project implementation. The recurrent costs including the staff wages have increased steadily in the MOE expenditures during the period from 1996 to 2000 and there have been no problems of the staff assignment in the past. Thus, it is considered that the staff assignment will not pose any problems after Project implementation.

### 2) Others

In addition to the personnel expenditure fund, the transportation fund, the fund for supply items, the fund for electricity and water, the communications fund, the publicity fund and subsidies are allocated in the annual budgetary funds for public schools in Male'. The amount of these funds will be increased at the Project school because the number of students will increase after Project implementation. However, the percentage of the increased amount will be extremely small compared to the total annual school expenditures. Furthermore, the increased amount will be only for the increased number of students after Project completion. Thus, it is considered possible to prepare the increased amount of operation costs in the funds for the above-mentioned recurrent cost.

## (2) Maintenance Cost

Present maintenance costs for the Project school are approximately 6.4% of the total annual budget, with no problems concerning these funds. When large-scale repair work is necessary and it is required to hire an outside contractor, additional budgetary funds may be requested from MOE. Thus, no major problems exist in regard to the maintenance of facilities. This system can also be applied to the Project's new school facilities.

Table2-15 Annual Maintenance Cost and Total Expenditures  
of the Project School (unit in MRf.)

	2000	2001 (Estimate)	2002 (Estimate)
Total Expenditures	6,716,604	7,382,265	8,901,749
Maintenance Cost	430,207	472,600	574,650
Percentage	6.4%	6.4%	6.4%

## **Chapter 3 Project Evaluation and Recommendations**

## Chapter 3 Project Evaluation and Recommendations

### 3-1 Project Effects

#### (1) Direct Effect

##### ① Securing of Safe Educational Environment

The existing buildings at the Project school have dangerous structural flaws caused by faulty construction materials. The major structural members are cracked and in danger of more cracking, and the concrete material is peeling and falling off. In evaluating the results of the investigation of the structural resistance of the existing buildings, it shows that they can be used for several more years as long as the flaws are repaired and the deteriorated portions are reinforced. But even so, they may not be of use for a very long period. Therefore, if the existing buildings are rebuilt by the Project, a safe educational environment will be secured for 2,100 students in the school district.

##### ② Improvement of Access to Public Primary Schools in Male'

Due to the capacity shortage of school facilities, public primary schools in Male' limit the number of second and higher grade students they admit from other schools. Thus, when such a student moves to Male' from another island, he or she has to enter a community school or a private school. Although public primary schools are free of charge, community schools and private schools collect tuition. Also, the community and private schools basically emphasize the kindergarten and secondary education levels, so the primary education level is somewhat underdeveloped. Thus, it is generally regarded that the quality of education at the public primary schools are better than that of the community and private schools.

While there are presently 25 classrooms at the Project school, there will be 35 classrooms after construction by the Project. If two-shift classes are conducted, 600 more students can be accommodated by these classrooms and the ratio of the number of students in the public primary schools in

Male' to the total number of students in primary education there will be increased from the present 72.8% to 77.3% by alleviating the present admission system regulations. As a result, accessibility to public primary schools will improve for second graders and higher.

### ③ Provision of Adequate Science Classes

In following the policy of the Government of Maldives to extend the education period, the public primary schools in Male' have already begun the change from the conventional 5-year period to a 7-year period. The Project school will adopt the 7-year period education system from fiscal year 2002. However, as the school presently does not have a science room as required in the new 7-year period education system for sixth and seventh graders, it would be next to impossible to conduct science experiment classes based on the new curriculum. But once the new science room is built by the Project, the teaching of science education to children at the Project school will be possible.

Table 3-1 Existing School Conditions and Project Direct Effect

Present Situations and Problems	Measures to be Taken by the Project	Effects and Degree of Improvement by the Project
Due to structural flaws caused by inappropriate construction, existing school facilities are dangerous. Even if the flaws are repaired and reinforced, they can be used only a few more years.	Existing buildings shall be rebuilt.	Safe and permanent Educational environment will be created.
Existing school buildings are not set up for the 7-year primary education system and adequate education for upper graders cannot be provided.	Special classrooms that do not exist at the existing school will be constructed.	Science experiment classes and audio-visual education can be adequately provided in accordance with the new curriculum.
Due to capacity shortages at existing facilities, public primary schools limit the number of second and higher grade students who can enter from other schools. As a result, there are inequalities in tuition and educational quality.	The number of classrooms will be increased from the present number of 25 to 35.	As additional 10 classes will be built, 600 more students can be accepted as long as two-shift classes are conducted.

(2) Indirect Effect

① Beneficial Effects to the Community

As Male' Island has a limited area of usable land, there aren't many public facilities for the area residents. Thus, the school hall and schoolyard of public primary schools in Male' are opened to the general public when not used for classes. In this way, the Project facilities will

generate indirect positive benefits to the community as they will be used for sports events and other various social activities by area residents.

### **3-2 Recommendations**

#### **① Implementation of Repair and Reinforcing Work of Existing School Buildings**

It will be difficult to obtain other school facilities for students to use when the existing school buildings are being rebuilt by the Project. So, until the new Project facilities are completed, the existing schools will have to be used temporarily. But to do that, the flawed and heavily damaged portions have to be repaired or reinforced. Thus, prior to the commencing of Project construction, the Maldives side must provide existing school facilities with adequate repairs and reinforcement without delay in order to secure the safety of students during the Project construction period.

#### **② Provision of Appropriate Furniture and Equipment for New Project Facilities**

Under the Project, the Japanese side will construct the school facilities. The Maldives Side must provide the necessary furniture and equipment for the facilities. As the purpose of the Project is to rebuild existing school facilities, the existing furniture and equipment should also be reused in the new facilities. However, as an additional number of classrooms and a new science room are to be constructed by the Project, additional furniture and equipment will also become necessary. Thus, it is expected that additional furniture and equipment will be provided without delay by the Maldives side.

#### **③ Installation of Disaster Prevention Facilities**

In accordance with the Maldivian laws and rules, it is mandatory that disaster prevention systems, such as fire alarms and fire fighting equipment, be installed in the Project facilities. And, it is necessary to complete their installation and obtain the necessary permits prior to use. Under the Project,



the Maldives side shall undertake the installation of most of these disaster prevention systems. It is essential for the Maldives side to secure the necessary funds so as to undertake that work at the same time as the Japanese side conducts its own work. And with close cooperation and coordination on both sides, the Project facilities can be used immediately after completion.

#### ④ Appropriate School Zoning and Apportioning of Students

The Purpose of the Project is to enlarge the capacity of the public primary schools in Male' by reconstructing the Project school buildings and alleviate the difficulty for the second and higher grade students to enter public primary schools from other islands. In order to get the most benefit from the Project and make the most efficient use of the facilities, it is important to equally apportion the number of students going to each school. The number of students at each public primary school is equal to the number of school-age children within each school zone. Thus, the Ministry of Education should accurately keep track of the number of school-age children in each school zone for appropriate apportionment of students. In addition, it is desirable that the present school-transfer system be deregulated immediately after Project completion so that second and upper graders from other islands can easily go to the public primary schools in Male'.

## **Appendices**

## 1 Member List of the Study Team

### Basic Design Study Team (1<sup>st</sup> Survey)

Name	Title	Position
Mr. Masahiro TAWA	Leader	Deputy Director, Project Monitoring and Coordination Division, Grant Aid Management Department, JICA
Ms. Noriko TANAKA	Grant Aid Cooperation	Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
Ms. Noriko MATSUDA	Planning Management	1 <sup>st</sup> Project Management Division, Grant Aid Management Department, JICA
Mr. Akira YOKOYAMA	Chief Consultant / Architectural Design	Mohri, Architect & Associates, Inc.
Mr. Akira SUGIURA	Facility Planner	Mohri, Architect & Associates, Inc.
Mr. Masaru HINO	Mechanical & Electrical Engineer / Maintenance Planner	Mohri, Architect & Associates, Inc.
Mr. Haruo KANEKO	Construction & Procurement Planner / Quantity Surveyor	Mohri, Architect & Associates, Inc.
Mr. Tetsuya KOBAYASHI	Educational Planner / Maintenance Planner	Mohri, Architect & Associates, Inc.
Ms. Akane TOTANI	Gender / Social Environment	Mohri, Architect & Associates, Inc.
Mr. Osamu MIYOSHI	Structural Engineer	Mohri, Architect & Associates, Inc.

### Basic Design Study Team (2<sup>nd</sup> Survey)

Name	Title	Position
Mr. Akira SUGIURA	Facility Planner	Mohri, Architect & Associates, Inc.

Draft Final Report Explanation Team

Name	Title	Position
Mr. Seiji KAIHO	Leader	Resident Representative, Sri Lanka Office, JICA
Ms. Noriko MATSUDA	Planning Management	1 <sup>st</sup> Project Management Division, Grant Aid Management Department, JICA
Mr. Akira YOKOYAMA	Chief Consultant / Architectural Design	Mohri, Architect & Associates, Inc.
Mr. Akira SUGIURA	Facility Planner	Mohri, Architect & Associates, Inc.

## 2 Study Schedule

### 2-1 Basic Design Study (1st Survey)

Date			Study Contents	
			JICA Officials: Tawa and Matsuda Ministry of Foreign Affairs: Taraka	Consultants: Yokoyama, Sugiura, Hino, Kaneko, Kobayashi, Tohtani and Miyoshi
1	1 Nov.	Thu	Departed Narita for Singapore	
2	2 Nov.	Fri	Arrived in Colombo: Paid a courtesy visit to JICA Office and Japanese Embassy in Sri Lanka.	
3	3 Nov.	Sat	Departed Colombo and arrived in Male' (The team leader departed Narita and arrived Male' via Singapore) .	
4	4 Nov.	Sun	Paid a courtesy visit to JOCV Male' Office, the Ministry of Foreign Affairs and the Construction Bureau of the Ministry of Education. Inspected Third, Fifth and Sixth Primary Schools. Inspected an English Preparatory and Secondary School and Second Primary School.	
5	5 Nov.	Mon	Discussed the contents of the Minutes with the officials of the Ministry of Education. Paid a courtesy visit to the Minister at the Ministry of Education.	
6	6 Nov.	Tue	Inspected a primary school in Maalhos Island and held a meeting with the personnel of JOCV. Inspected a primary school in Mahibadhoo Island and held a meeting with the personnel of JOCV.	
7	7 Nov.	Wed	Discussed the contents of the Minutes with the officials of the Ministry of Foreign Affairs and the Ministry of Education.	
8	8 Nov.	Thu	Signed the Minutes of Discussions. Paid a courtesy visit to UNICEF Office. Reported the Study to JOCV Male Office.	
			Departed Male' and arrived in Colombo.	The Team continued field surveys.
9	9 Nov.	Fri	Reported the Study to JICA Office and Japanese Embassy in Sri Lanka.	Held discussions among the Study Team members.
10	10 Nov.	Sat	Departed Colombo and returned to Naria via Singapore.	Held a discussion with the officials of the Facility Department of the Ministry of Education.
11	11 Nov.	Sun	—	Holiday (Clarified obtained materials)
12	12 Nov.	Mon	—	Held discussions with officials of the Facility Department of the Ministry of Education. Inspected Fourth and Fifth Primary Schools
	through		—	Same as above
22	22 Nov.	Thu	—	Same as above. Departed Male'.
23	23 Nov.	Fri	—	Arrived in Singapore. Continued the Study.
24	24 Nov.	Sat	—	Continued the Study. Departed Singapore.
25	25 Nov.	Sun	—	Returned to Narita.

## 2-2 Basic Design Study (2nd Survey)

Date			Study Contents	
			Consultants:	Sugiura
1	17 Dec.	Mon	Departed Narita and arrived in Male' via Singapore	
2	18 Dec.	Tue	Held a discussion with the boring contractor.	
3	19 Dec.	Wed	Paid a courtesy visit to the Ministry of Education. Inspected BH-1.	
4	20 Dec.	Thu	Held a discussion with the officials of the Ministry of Education and inspected BH-1.	
5	21 Dec.	Fri	Inspected BH-2.	
6	22 Dec.	Sat	Inspected BH-3.	
7	23 Dec.	Sun	Held a discussion with the officials of the Ministry of Education. Inspected BH-4.	
8	24 Dec.	Mon	Held a discussion with officials of the Ministry of Education. Paid a courtesy visit to the Ministry of Foreign Affairs then departed Male'.	
9	25 Dec.	Tue	Returned to Narita via Singapore.	

## 2-3 Explanation on Draft Final Report

Date			Study Contents		
			JICA Officials		Consultants:
			Kaiho	Matsuda	
1	14 Feb.	Thu	Departed Narita for Singapore		Arrived Male'.
2	15 Feb.	Fri	Arrived in Colombo. Paid a courtesy visit to JICA Office and Japanese Embassy		Paid a courtesy visit to the Ministry of Education. Held a discussion.
3	16 Feb.	Sat	Departed Colombo and arrived in Male'.		Held a discussion with the Facility Department Personnel of the Ministry of Education.
			Held a meeting among the Study Team Members.		
4	17 Feb.	Sun	Departed Colombo and arrived Male'.		Paid a courtesy visit to JOCV Office and the Ministry of Foreign Affairs. Held a discussion with the officials of the Ministry of Education.
5	18 Feb.	Mon	Discussed about the contents of the Minutes with the officials of the Ministry of Education and paid a courtesy visit to the Minister of the Ministry of Education. Conducted supplemental field studies.		
6	19 Feb.	Tue	Inspected V. Atoll Primary School on Fulidhoo Island. Inspected the Education and Training Center for Children on Maahushi Island.		
7	20 Feb.	Wed	Discussed about the contents of the Minutes with the officials of the Ministry of Foreign Affairs and the Ministry of Education then signed the Minutes of Discussions. Reported the Minutes of Discussions to JICA Office.		
8	21 Feb.	Thu	Departed Male' and arrived in Colombo.		Conducted field surveys on Vilingili Island then departed Male'.
9	22 Feb.	Fri	Returned to Narita via Singapore.		

### 3 List of Parties Concerned in the Recipient Country

#### Ministry of Foreign Affairs

Mr. Ahmed Latheef	Director-General of External Resources
Mr. Abdul Hameed Zakariyya	Director, International Affairs
Ms. Aminath Mohamed Didi	Director, Department of External Resources
Mr. Aishath Shuweikar	Assistant Director, Department of External Resources
Ms. Mshath Aleema	Department of External Resources
Mr. Ahmed Rasheed	Desk Officer, Department of External Resources

#### Ministry of Education

Mr. Mohamed Latheef	Minister of Education
Mr. Ibrahim Ismail	Director General, AM Section
Mr. Hussain Mohamed	Director General, School Construction Section
Mr. Mahamood Shougee	Chief Educational Supervisor
Mr. Ahmed Hameed	Head Master, Education and Training Center for Children
Mr. Ibrahim Shihaam	Deputy Director, School Construction Section
Mr. Mohamed Waheed	Deputy Director, FB Section
Mr. Mohamed Waheed	Assistant Director, E Section
Mr. Mujthaba Hameed	Project Coordinator
Mr. Mohamed Yoosuf	Civil Engineer, School Construction Section
Mr. Ahmed Shaheed	Statistician, E Section
Mr. Abdulla Ismail	Deputy Principal, Thaajuddeen School
Ms. Fazna Ahmed	Senior Assistant Principal, Thaajuddeen School
Ms. Jameela Ali	Principal, Ghiyasuddin School
Mr. Abdulla Zameer	Principal, Imaduddin School
Mohamed Fahmy Hassan	Principal, Kalaafaanu School
Mr. Abdulla Ismail	Deputy Principal, Jamalludin School
Mr. Moosa Faiz	Head Master, V. Atoll School

#### Ministry of Planning

Mr. Abdul Yoosuf	Planning Officer
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#### Ministry of Construction and Public Works

Mr. Abdul Bari Yoosuf	Deputy Director, Engineering
Mr. Abdul Hannan Yoosuf	Deputy Director, Architecture
Mr. Ahmed Ashraf	Deputy Director
Ms. Fathimath Rasheed	Architect
Mr. Ahmed Shahid	Quantity Surveyor

#### Education Development Center

Mr. Abdul Mushin Mohamed	Director General
Ms. Maram Azra Ahmed	Curriculum Coordinator

#### Maldives Collage for Higher Education

Ms. Mausooma Jaleel	Dean, Faculty of Education
Mr. Mohamed Naeem	Senior Lecturer

#### Male' Municipality

Mr. Ahmed Adhuham	Engineer
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**Maldives Housing and Urban Development Board**

Ms. Aminath Athifa Deputy Director

**Maldives Water and Sanitation Authority**

Mr. Shaheedha Adam Ibrahim Director

**Male' Water & Sewerage Company Ltd.**

Mr. Hussain Hameez Assistant Manager Connections

**Dhiraagu**

Mr. Hamed Saleem Manager Sales

Mr. Hassan Niyaz Manager Sales

**Maldives Electrical Bureau**

Mr. Mohamed Majdhee

**STELCO**

Mr. Mohamed Shakeeb Asst. Electric Engineer GR.1

**National Security Service (Fire Department)**

Mr. Ali Saleem

Mr. Mohamed Ikleel

**UNICEF**

Mr. Tom Bergmann-Harris Assistant Representative

Ms. Aishath M. Didi Project Officer

**CARE Society**

Ms. Fathmath Afiya Founder Member

**Fashan**

Mr. Mohamed Asin Program Coordinator

Ms. Aminath Shabna Program Assistant Coordinator

**Embassy of Japan in Sri Lanka**

Mr. Kazumi Endo 1st Secretary

Ms. Tomoko Noda Third Secretary, Economic Cooperation

**JICA Sri Lanka Office**

Mr. Seiji Kaiho Resident Representative

Mr. Yasujiro Suzuki Deputy Resident Representative

Mr. Hiroyuki Tanaka Asst. Resident Representative

**JOCV MALDIVES OFFICE , JICA**

Seiji KOMATSU Resident Representative

Yuko MIZUNO Coordinator of JOCV

Suguru HIRANO JOCV

Jyunko HARUKI JOCV

Youko OGOSHI JOCV

Dai NAKAZATO JOCV