CHAPTER-4 SOLAR POWER SYSTEM AND INSTALLATION

I. General Conditions

1. Scope of Work

The Scope of the Work for the Contractor shall include followings, but not limited to:

(1) Site survey, engineering design, manufacturing, factory test, procurement, marine and inland transportation to the Project site, installation at the Project site, acceptance test and commissioning for the Project implementation in due conformity with the Tender Documents.

(2) The Goods for Solar Power System, that is defined as "Photovoltaic (PV) System" shall include followings at least:

1) Solar Module

2) Mounting Structure

3) Power Conditioner

4) Grid back-up Board

5) Junction Box

6) Storage Battery

7) All necessary cables for the above

(3) The Contractor shall include the interconnection of PV system to 400V underground distribution lines maintained by Island Development Committee (IDC) in accordance with the regulation by Maldives Electricity Bureau (MEB).

(4) The Contractor shall furnish appropriate measures to prevent any operational malfunction or physical damage on the existing diesel engine generators and/or underground distribution system.

2. Operating Conditions

The PV system shall be designed to serve emergency load for Multi-purpose building and Island office in case of natural disaster. In addition, the system shall upgrade the reliability and quality of power supply by interconnecting PV system with existing distribution lines.

(1) Ordinary Operating Conditions

1) During the period batteries can be charged;

Generated power at PV system will be supplied for batteries and load inside facilities. In case there is excess capacity of PV system, reverse power flow to interconnected distribution lines shall be allowed.

2) During the period batteries are overcharged;

Generated power at PV system will be supplied for load inside facilities. In case there is excess capacity of PV system, reverse power flow to interconnected distribution lines shall be allowed.

(2) Emergency Operating Conditions

1) During the period PV system can generate power (daytime);

Generated power at PV system together with discharged power from storage batteries will be supplied for emergency load inside facilities.

2) During the period PV system cannot generate power (nighttime);

Discharged power from storage batteries will be supplied for emergency load inside facilities.

In addition to the above item (1) and (2), when the battery voltage has reached the deep discharge voltage, discharged power from storage batteries will not be supplied for emergency load inside facilities.

3. Technical Standard

The Goods to be procured shall be manufactured according to one (or more) of the following standard:

(1) NEC National Electrical Code

(2) IEC International Electrotechnical Commission

(3) UL Underwriters' Laboratories

(4) JIS Japan Industrial Standard

(5) JPL Jet Propulsion Laboratory

(6) CE Communaute' Europe'ene

4. Meteorological Conditions

The country belongs to the tropical monsoon zone and is subject to two prevailing strong wind characteristic of the Indian Ocean, i.e., North-East wind from November to April and South-West wind from May to October with a lot of rain and thunderstorm. The roof mounted PV interconnected system shall be designed to operate under following climate conditions.

(1) The monthly average temperature shows little fluctuation with the season, ranging between 28 to 29°C. The maximum operating temperature shall be 35°C.

(2) Monthly mean relative humidity shows little fluctuation with the season, ranging approximately between 70 – 80%.

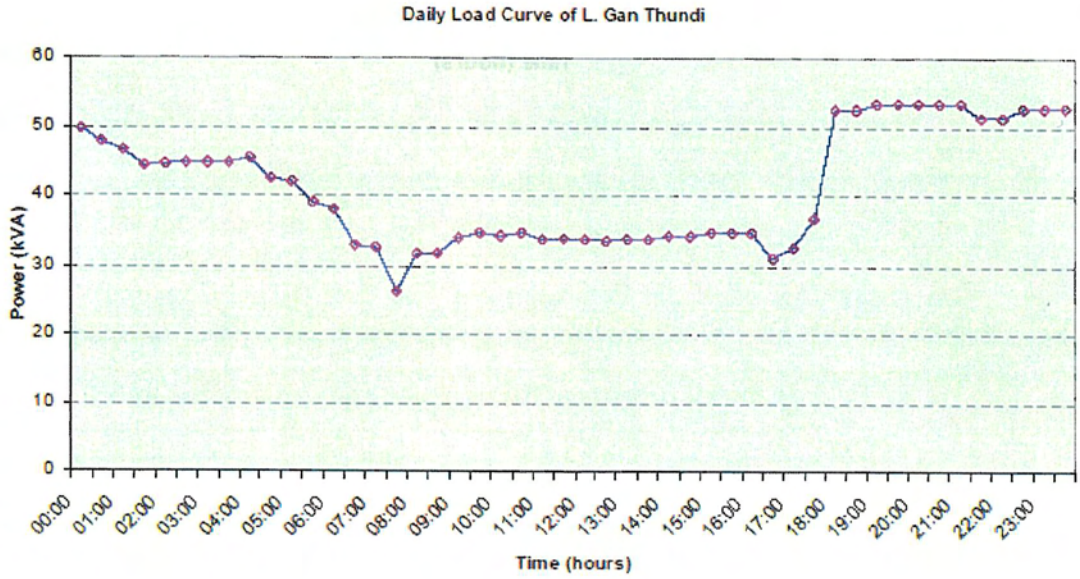
(3) Laamu Atoll has relatively high amount of rainfall with an annual total rainfall of around 2000mm. Generally rainfall is most abundant during October and November and least during February and March. The other months are between 100 – 200mm.

(4) Wind direction is variable in between the monsoon seasons. Maximum wind velocity can be as high as 45 m/sec(design wind velocity) during the SW monsoon season.

II. Existing Site Conditions

1. Multi-purpose building

The island (Gan-Thundi) has total four generators: 2 x 60 kVA, 85 kVA and 140 kVA and the power system is not synchronized. The nighttime electricity load to the island is provided by the biggest generator (140 KVA – DEUTZ) and day time load is met by two smaller generators. As the system is not synchronized, the two daytime generators feed power to the grid separately using different feeders. The estimated load pattern of the island from the data collected is shown in the figure below. Based on the estimated load pattern there is no need to run two generators during day time because just a smaller generator would be enough to cover the daytime load.

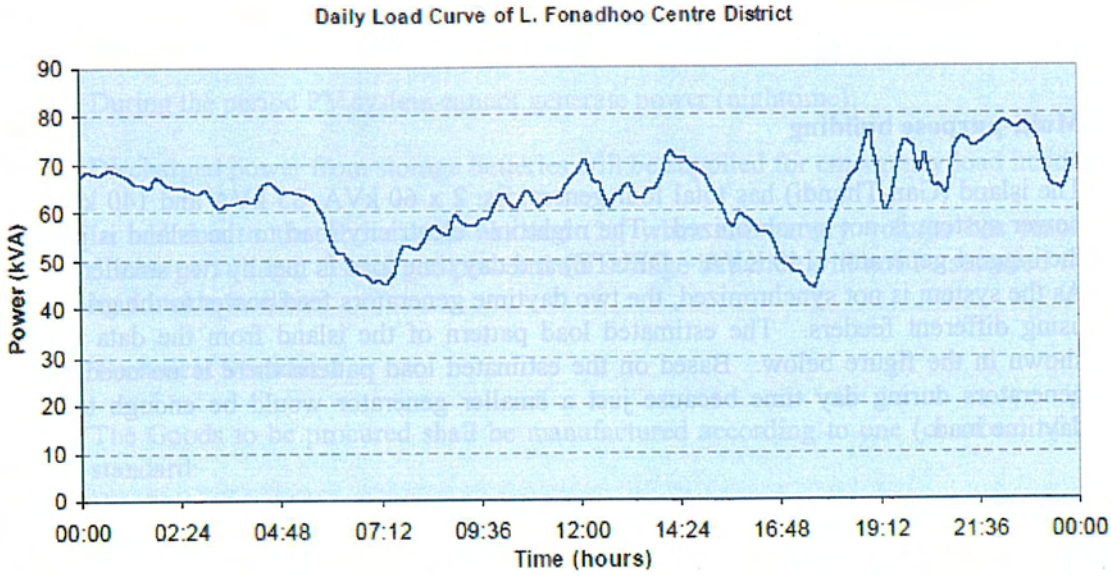


Presently, power supply to the site is not available but 3 phase distribution lines to the site will be installed by the island committee to use with solar PV system and other power supply for the building.

2. Island Office

The Fonadhoo Island has three powerhouses located at the three district of the island. Center District power house is planned to supply power for the upcoming island office. The Centre District powerhouse has 3 generators: 108 kW, 40 kW and 96 kW. The system is non-synchronized so only one generator is used at a time. A typical daily load curve of the island measured is shown below.

Presently, power supply to the site is not available but 3 phase distribution lines to the site will be installed by the island committee to use with solar PV system and other power supply for the building.


Daily Load Curve of L. Fonadhoo Centre District
Power (kVA)
90
80
70
60
50
40
30
20
10
0
00:00
02:24
04:48
07:12
09:36
12:00
14:24
16:48
19:12
21:36
00:00
Time (hours)

III. Technical Specifications for the System Components

All system components shall be procured in accordance with **Schedule V Technical Specifications sheet** in **Part-II Forms of Tender, Volume-I.**

IV. Requirement for the Installation and Commissioning Work of the Goods

1. General

The Contractor shall carry out the following works under the Project.

(1) Supply, transportation and delivery of the Goods to each Project site.

(2) Check of the Goods after delivering them to the Project site.

(3) Delivery of the packing list of the Goods to End-user and get their signatures on the packing list.

(4) Installation and commissioning of the PV system interconnected with existing distribution network.

(5) Acceptance Test of the PV system

(6) Obtaining all the necessary approvals for the PV system by the Employer.

(7) Handover of the PV system to End-user after approval by the Employer.

Work responsibilities of the Contractor and End-User (Island Committee) are shown on the following Table TS-5-1.

Table TS-5-1: Work demarcation between the Contractor and End-User

Work Item	Contractor	End-user (Island Committee)
Procurement of PV system	◘	
Transportation of all equipment to the Project site	◘	
Proper storage and maintenance of equipment at the Project site during installation work period	◘	
Extension of 3 phase 4 wires, 400V LV Distribution Cables to the Project site		◘
Connection of LV Cables to Distribution Board in the facility	◘	

2. Inspections and Tests

The Contractor shall take account of following inspections and tests of the Goods at their own expense.

(1) Factory test

The factory test and inspection of the Goods to be procured under the Project shall be carried out by the Contractor at manufacturer's factories and/or proper places to ensure that the Goods complies with the provisions of the Contract.

Test and inspection items shall consist of the following:

- Quantity inspection

- Visual inspection
- Dimensions of the equipment and materials
- Any technical inspections to check the conformity with Technical Specification

The Contractor shall provide all necessary test equipment, materials, special tools, consumable items, etc., for the factory test and inspection.

The Contractor shall submit all the reports of the factory test and inspection to the Employer for approval with evidential photographs of the Goods at the factory test and inspection.

(2) Pre-shipment inspection

The Contractor shall carry out pre-shipment inspection by internationally recognized inspector at the port of embarkation. Contents of the inspection shall include quantity, weight, packing, marking conditions, and any other data concerning the shipment of the Goods. The Contractor shall submit the inspection report with other necessary shipping documents to request a payment for all equipment and materials.

3. Installation of PV system

Layout and sections showing proper orientation and tilt of the PV panels shall be submitted and approved by the Employer prior to installation with support documentation to maximize output from the system.

The Contractor shall provide simulating calculations confirming the solar radiation on each surface plane, yearly generated energy from the PV system. The Contractor shall install kWh Meters in order to monitor and check the value of generated energy from the PV system. Minimum requirement for the annual performance of PV system shall be 135 kWh/m^2.

All support structures components shall be mounted on the roof without any drilling on the roof surface. The structures shall be designed to allow the fixing of modules on the support structures with module tilt angle adjustable. No manual/auto tracking/tilting adjustment device is necessary.

The Contractor shall provide calculations confirming the design wind force on the support structure with maximum wind velocity (45 m/sec) can be assured.

4. Drawings

The Contractor shall submit **two (2) sets** of the at least following drawings (but not limited) to the Employer for approval.

Table TS-5-2: Submission schedule of all drawings

No.	Name of Drawings	Date of Submission
1	Single line diagram of PV system	Not later than thirty (30) days after awarding the contract
2	Equipment layout on the roof	
3	Simulated calculation for generated energy	
4	Equipment layout inside Electrical Room	
5	Detailed Equipment specifications and Dimensional drawings, catalogues for ➢ Solar Module ➢ Junction box ➢ Power Conditioner ➢ Transformers ➢ Grid back-up board	
6	➢ Battery ➢ Others, if necessary	
7	Factory Test/Inspection Report	Within seven (7) days after the Test/Inspection
8	As built drawings	At the completion of the installation work
9	Installation completion report	

"No.9 Installation completion report" shall have the following description and data.

- Statement that the Goods have been supplied and site installation work and commissioning has been completed, with the evidence of approval of the Acceptance Test Report.
- Description of the Contractor's activities up to the completion of the Project, including actual time schedule.
- Statement that all the documents, drawings and manuals have been supplied with all records of documentation and correspondence as evidence.
- Statement that clearing of the Project Site has been completed with photographic evidence.
- Completion photographs showing the actual progress of the work.

5. Technical Transfer

The Contractor shall conduct necessary technical transfer to Island Committee in the Project site for the purpose of securing proper operation & maintenance of the PV system.

Also it is requested for the Contractor to simulate and submit a report to recognize necessary annual investment by the Island Committee required for periodical replacement of equipment (eg. storage battery).

6. Acceptance Test

The Acceptance Test shall be carried out by the Contractor at the completion of the installation work of the Goods, in the presence of the all concerned parties and the Employer.

The Acceptance Test shall consist of the following:

- Visual inspection
- Function and Performance test

The visual inspection shall comprise a dimensional and system check, quantity check of the Goods supplied under the Contract and the check of workmanship according to the approved drawings.

The function and performance test shall comprise the functional check and confirmation of performance through the actual operation of the facilities in accordance with the provisions of

the Contract. The Contractor shall provide, at his own expense, all staff, equipment and materials, tools including consumable items for the Acceptance Test.

7. Warranty

The Contractor shall warrant that all Goods have no defect arising from design, manufacturing, transportation or installation work. The warranty on complete installation shall remain valid for one (1) year from the date of commissioning.

The Contractor shall arrange one (1) year warranty inspection carried out under the witness of the End-user and/or the Employer, immediately after one year warranty period is expired. The inspection will be carried out to check the operating condition of the Equipment and workmanship of the installation work. When the inspection is completed, the Contractor shall prepare one-year warranty inspection report. If any defects are found in the inspection, the following items should be described on the report for the approval by the End-user:

- Contents of countermeasure such as remedy, repair and/or replacement
- Time schedule up to the completion of the countermeasure

THE PROJECT FOR CONSTRUCTION OF MULTI PURPOSE BUILDING AND ISLAND OFFICE
WITH SOLAR POWER SYSTEM IN LAAMU ATOLL IN MALDIVES

Volume -II Part-B Attachment

BUILDING DESIGN DRAWINGS FOR THE ISLAND OFFICE

IN FONADHOO, LAAMU ATOLL

Architectural Drawing

Dwg. No.	Title
A-01	Project Location and Layout Plan
A-02	Finish Schedule, Floor area & Abbreviation
A-03	Ground Floor Plan
A-04	1st Floor Plan
A-05	Roof Plan
A-06	Front & Rear Elevations
A-07	Side Elevations
A-08	Sectional Detail
A-09	Miscellaneous Detail
A-10	Doors & Windows Schedules
A-11	Stair & Handrails Details
A-12	Ceiling Plan-1st Floor

Structural Drawing

Dwg. No.	Title
S-00	Bar Arrangement / Standard Specification
S-01	Foundation Plan / 1st Floor PLan
S-02	1st Floor Beam Plan/ Roof Top Beam PLan
S-03	Framing Elevation Line Y1/Y2/Y3
S-04	Framing Elevation Line-X1/X2/X3/X4
S-05	Bar Arrangement of the Foundation/Column/Beam
S-06	Bar Arrangement of the Slab/Stair/Slope ets
S-07	Roof Truss Arrangement Plan and Section
S-08	Roof Purlin Arrangement Plan
S-09	Roof Truss Joint Detail

Solar Mudules Drawing

Dwg. No.	Title
PV-01	Solar Modules Arrangement Plan
PV-02	Solar Modules Equipment PLan
PV-03	Single Diagram

Electric and Plumbing Drawing

Dwg. No.	Title
E-01	Electricity Layout Plan ; Ground Floor
E-02	Electricity Layout Plan
P-01	Plumbing Layout Plan ; Ground Floor
P-02	Plumbing Layout Plan ; 1st Floor
P-03	Plumbing Details

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

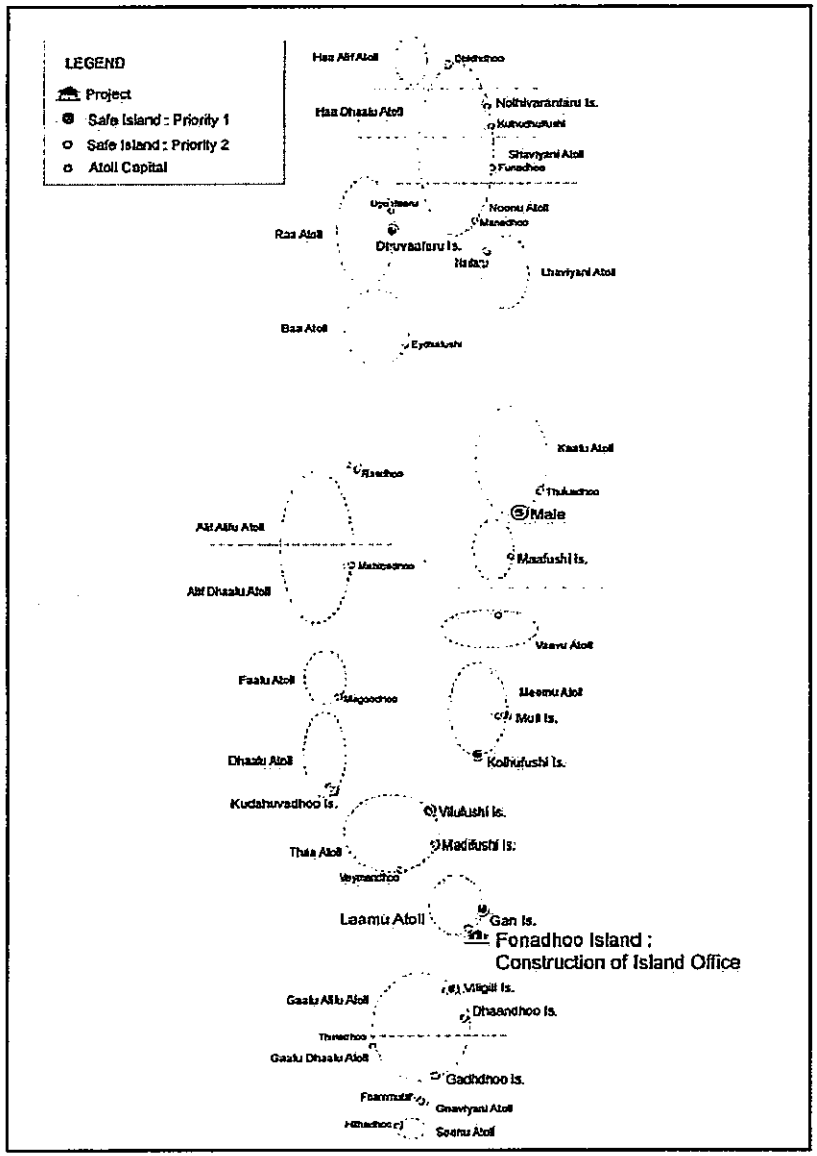
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

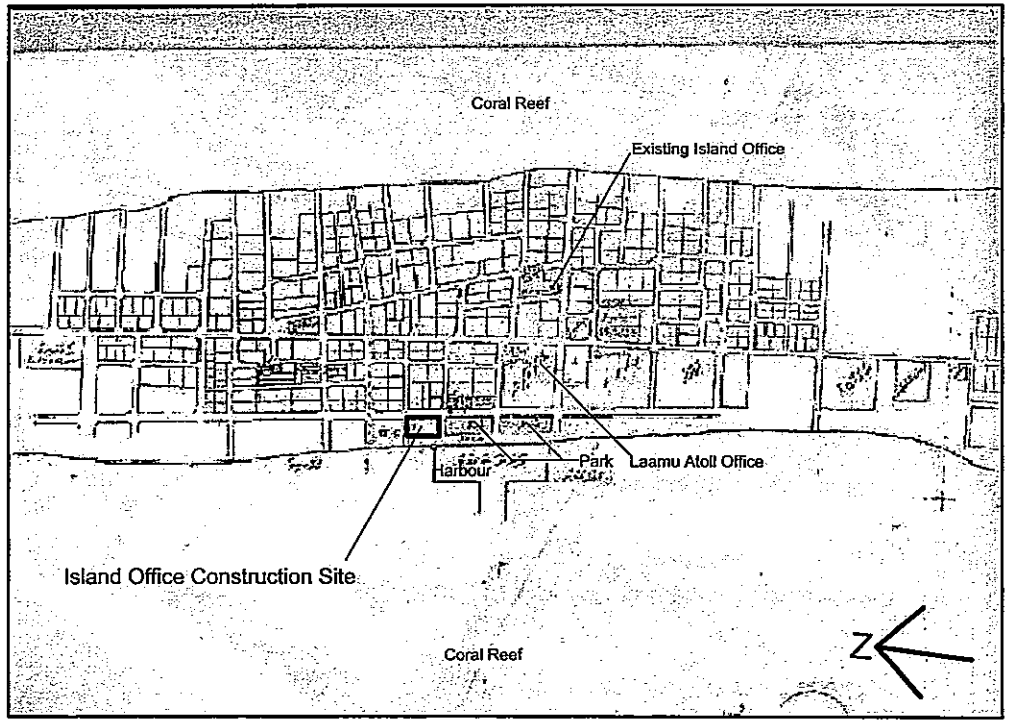
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Drawing List

SCALE	SHEET NO.	REV. NO.
Not to Scale		

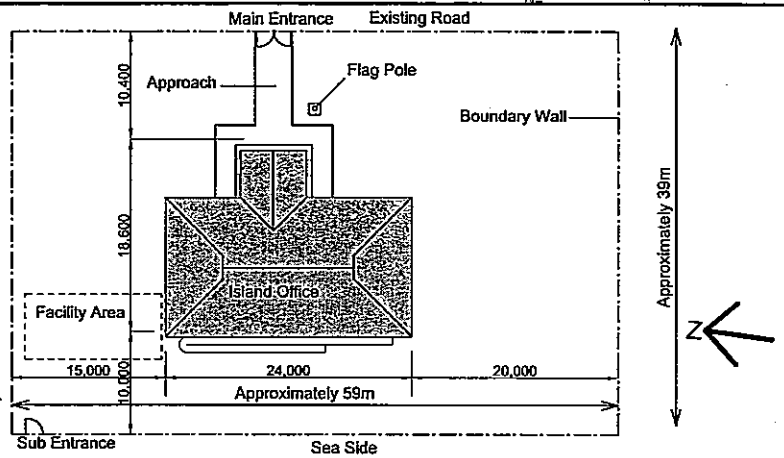
Project Location Map - 1 : National



Project Location Map - 2 : Fonadhoo Island



Site Layout



Note; Final location of the Building shall be decided at site.

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NOTES:
* Site clearance, grading and access road construction shall be done by the Contractor.

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DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Project Location and Layout Plan

SCALE	SHEET NO.	REV. NO.
Not to Scale	A-01	

External Works

Boundary Wall : Along the whole perimeter line (Length of wall is shown on the site layout)
Concrete block with cement sand plaster, sprayed texture paint finish, wall height 1,500
Provide 1 main gate and 1 sub-gate, constructed by stainless steel pipe with padlocks
Facility nameplate on the wall, stainless steel 300 x 500, described by English and Dhivehi, painted by silkscreen (Refer to A-09 miscellaneous details of Multi-Purpose building)

Landscaping : Approach; hard surface pavement (inter-locking block) width 3,000

Tree plantation, 6 young coconut trees and 4 young broadleaf trees (planting location and kind of species to be instructed on site)

Flag Pole : Stainless steel pipe, concrete foundation 1,000 x 1,000 x 700 depth, pole height 6,000, 1 set

Nameplate : Stainless steel nameplate 200 x 400, described by Dhivehi and English, painted by silkscreen [FONADHOO ISLAND OFFICE] beside the main entrance door
(Refer to A-09 miscellaneous details of Multi-Purpose Building)

External Finish

Roofing : Colourbond profile roofing metal sheet (per sample approval)
Soler Cell foundation see Sht. No. A-05.

Eaves Ceiling: Waterproof ceiling board, partially ventilation hole, V.P.

Fascia : Timber fascia 30 x 250 (upper and lower) O.P.

Rain gutter : P.V.C. rain gutter, with chamber and downspourt 100 dia

Canopy ceiling : Waterproof ceiling board with V.P.

Wall : Textured Spray paint on cement sand plaster (per sample approval)

Skirting : Same as wall finish but dark colour paint height 300

Barm : Coloured interlocking block 80thk.

Terrace/Stair : Porcelain tile floor 300 x 300, non-slip surface

Slope : Mortar troweled finish with non-slip groove 5mm depth @30, Underside; Exposed natural concrete.

Internal Finish

Floor	Room	Location	Finishing
Ground Floor	Utility Room	Floor	Mortar troweled finish , Slab on grade; 100thk., Foundation for Water Tanks.
		Skirting	Nil
		Wall	Cement sand plaster 25 thk.
		Ceiling	Exposed natural concrete
	Toilet, Handicapped Toilet	Floor	Porcelain tile 200 x 200
		Skirting	Nil
		Wall	Ceramic tile 200 x 200
		Ceiling	Waterproof ceiling board 6 thk. Ceiling height 2,800 V.P
	Community Multi-space	Floor	Coloured interlocking block 150 x 250 x 80thk. (design pattern to be required)
		Skirting	-
		Wall	-
		Ceiling	Exposed natural concrete
1st Floor	Island Chief Assist. Island Chiefs Administration Conference Room Committee Room	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 3,400 (Conference Room; 2,800)
	Photocopy / Radio Set Filing Room Tea Room Waiting	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 3,400
	Store Room	Floor	Mortar troweled finish
		Skirting	Mortar troweled finish, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Nil
	Guest Room-1, -2	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 3,400
	Toilet Bath Room	Floor	Porcelain tile 200 x 200
		Skirting	Nil
		Wall	Ceramic tile 200 x 200
		Ceiling	Waterproof ceiling board 6thk., Ceiling height 2,800 V.P
Common	Nameplate	Room name : Stainless steel nameplate 200 x 400, Dhivehi and English, painted by silkscreen, at beside of each entrance door Toilet sign : Plastic nameplate 100 x 200, pictogram sign for Gent. and Lady	

Miscellaneous

Floor Area

	(sqm)
Ground Floor	
Utility Room	30.1
Toilet	7.0
Community Multi-space	185.5
(Sub total	222.6)
Circulation (stairs and slope)	31.4
Total	254.0
1st Floor	
Island chief's room	18.5
Assistant Island chief's room	16.5
Conference room	24.5
Committee room	24.5
Administration	18.5
Filing room	8.3
Store room	8.3
Photocopy / Radio set room	8.1
Tea room	7.0
Toilet	5.3
Guest room-1	18.5
Guest room-2	18.5
Hallway	22.9
Waiting room	12.3
Corridor	11.0
(Sub total	222.6)
Terrace	103.8
Circulation (Stairs and slope)	31.4
Total	357.8
Total	611.8

Abbreviations

@: at
AW: Aluminum Window AD: Aluminum Door
C.H: Ceiling Height DN: Down
DS: Downspout
EP: Emulsion Paint (or AEP: Acrylic Emulsion Paint)
FL: Floor Finished Line GL: Ground Line
IDC: Island Development Committee
O.P: Oil Paint PVC: Polyvinyl Chloride
RBL: Roof Beam Level SD: Steel Door
SS: Stainless Steel sqm: Square Meter
SR: Steel Rolling Door thk: Thickness
V.P: Vinyl Paint w/: with
WD: Wooden Door
WDC: Women's Development Committee

Notes)
1. For general notes, see Technical Specifications in the Tender Documents.
2. Dimention shown on the whole Drawings are in millimeter of the metric system.

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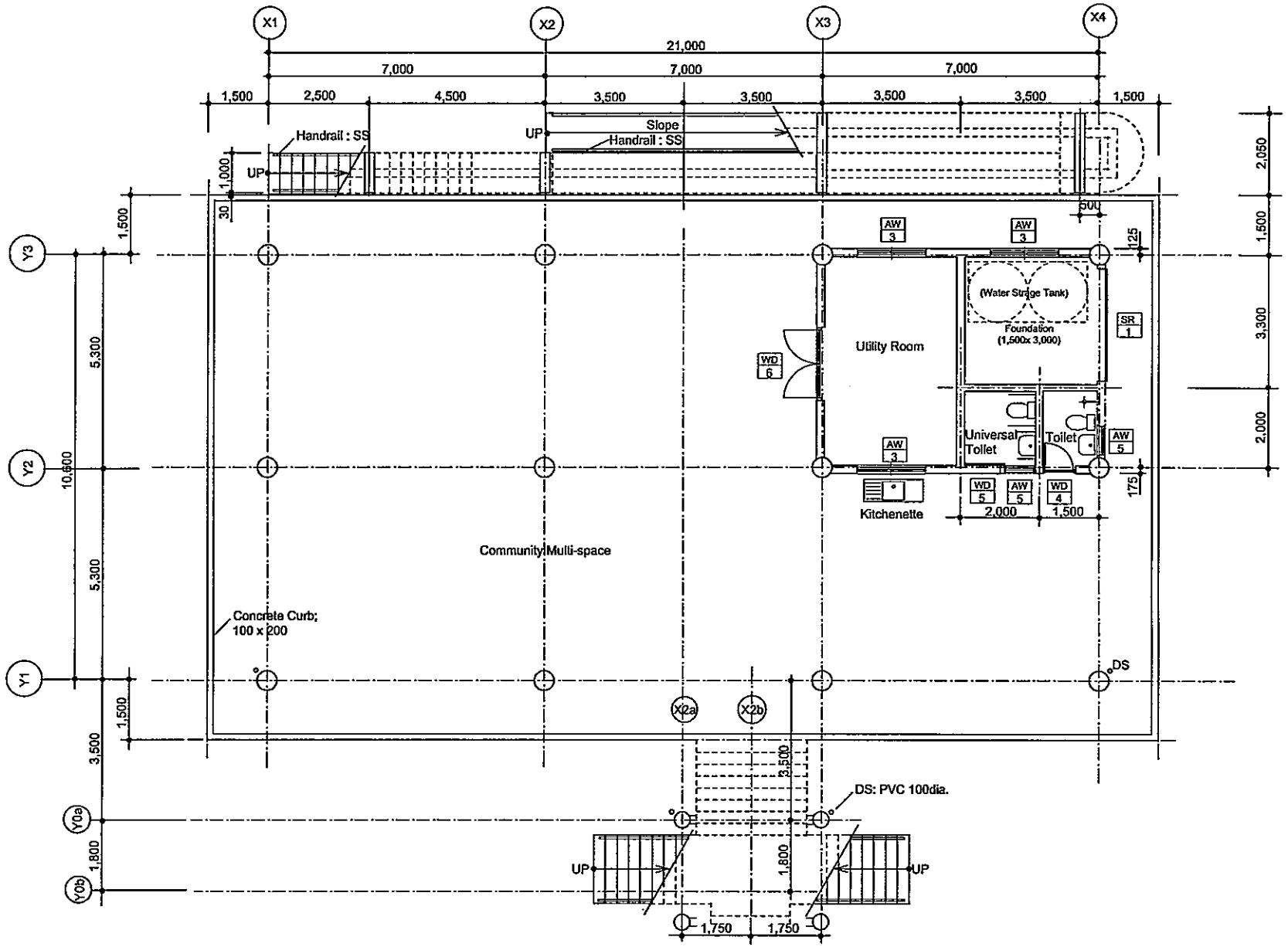
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Finish Schedule, Floor Area & Abbreviations

SCALE	SHEET NO.	REV. NO.
Not to Scale	A-02	



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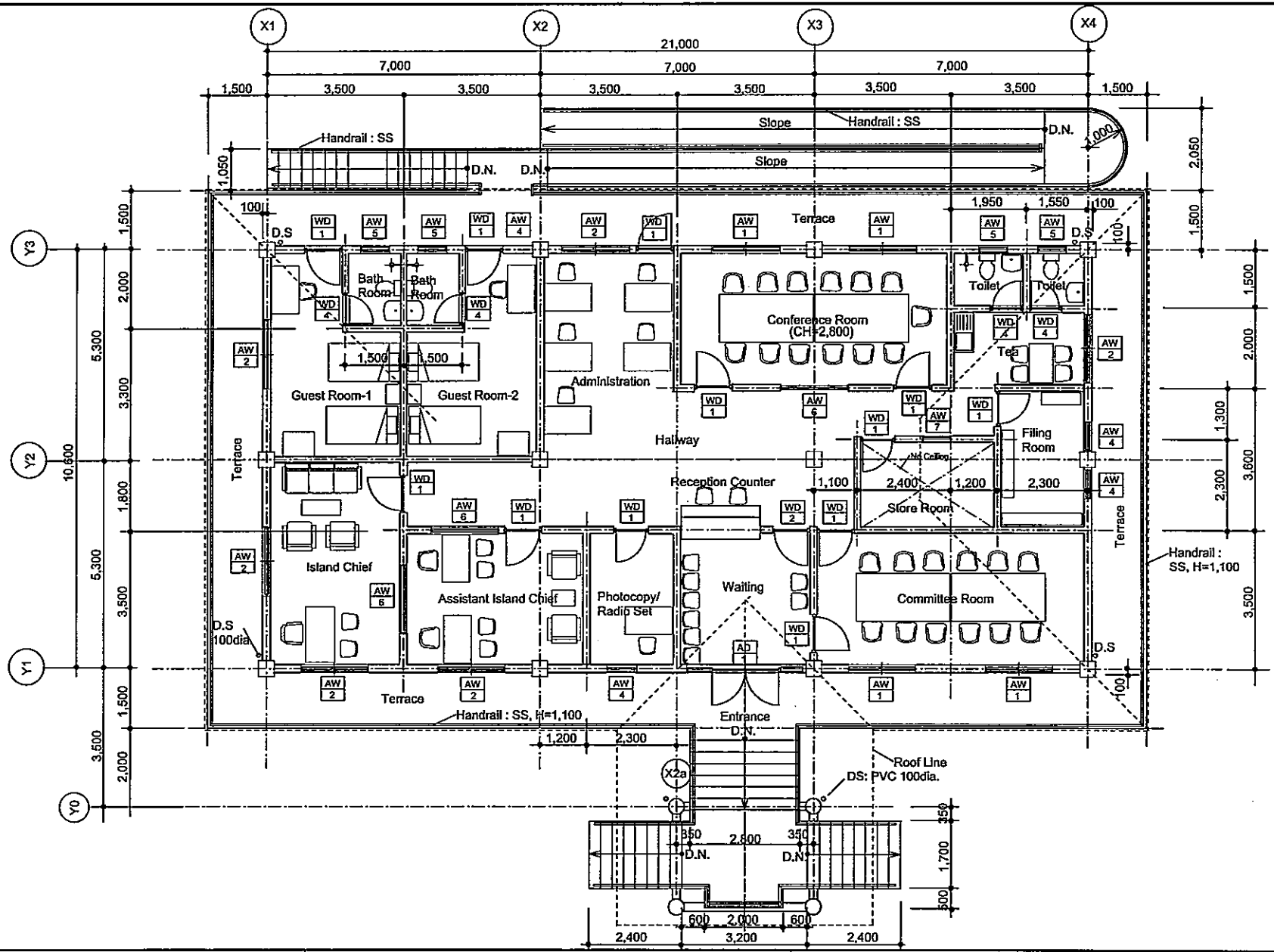
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Ground Floor Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	A-03	



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NOTES:

* The furniture shown on the Dwg shall be tentative only, for which final number and type shall be determined by the Engineer on site.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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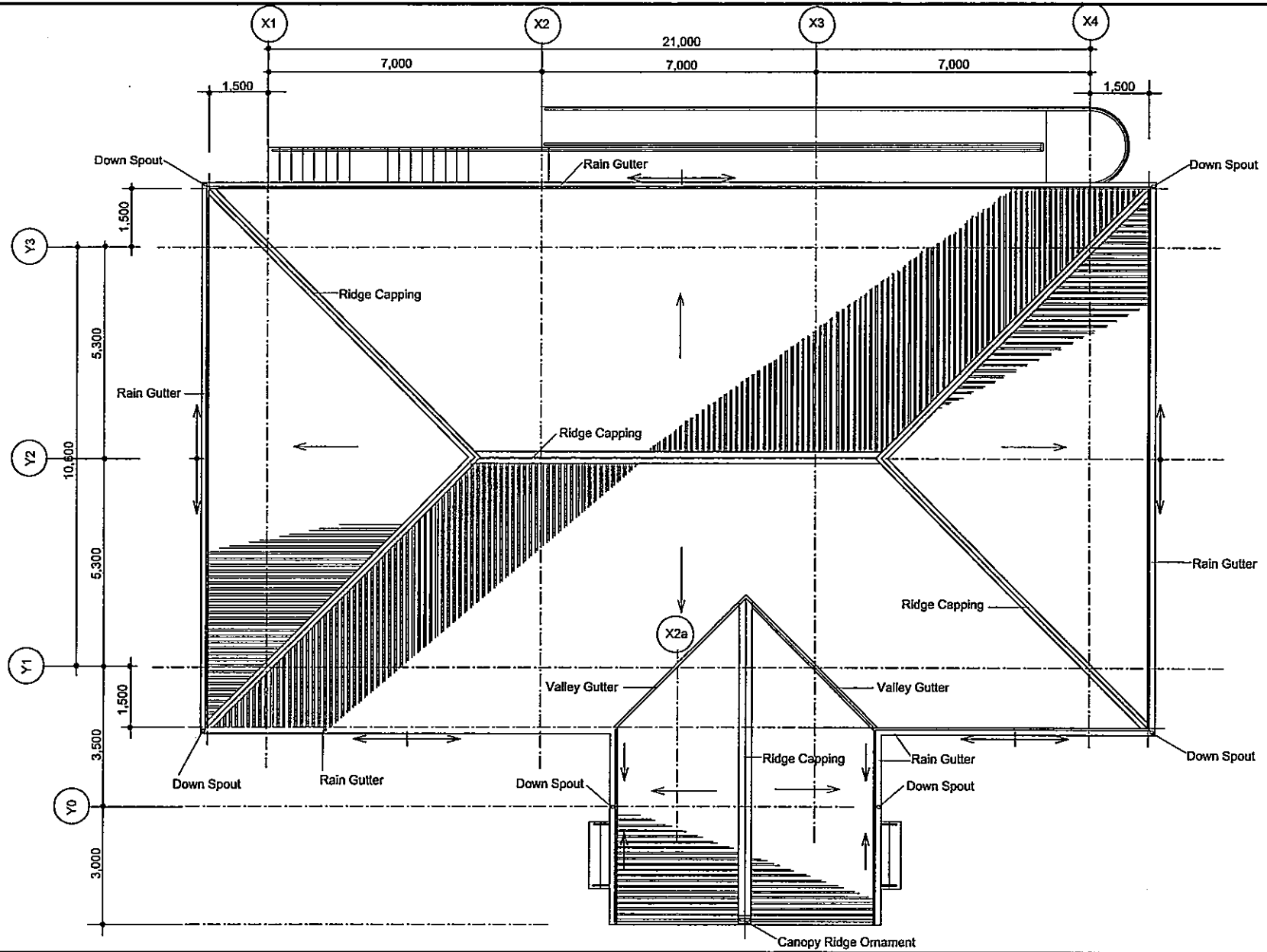
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
1st Floor Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	A-04	



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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Foundations for Solar Cells shall be provided on the roof as required by the Solar system Docu. All portions penetrate through roofing shall be sealed to completely watertight.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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SIGNATURE			
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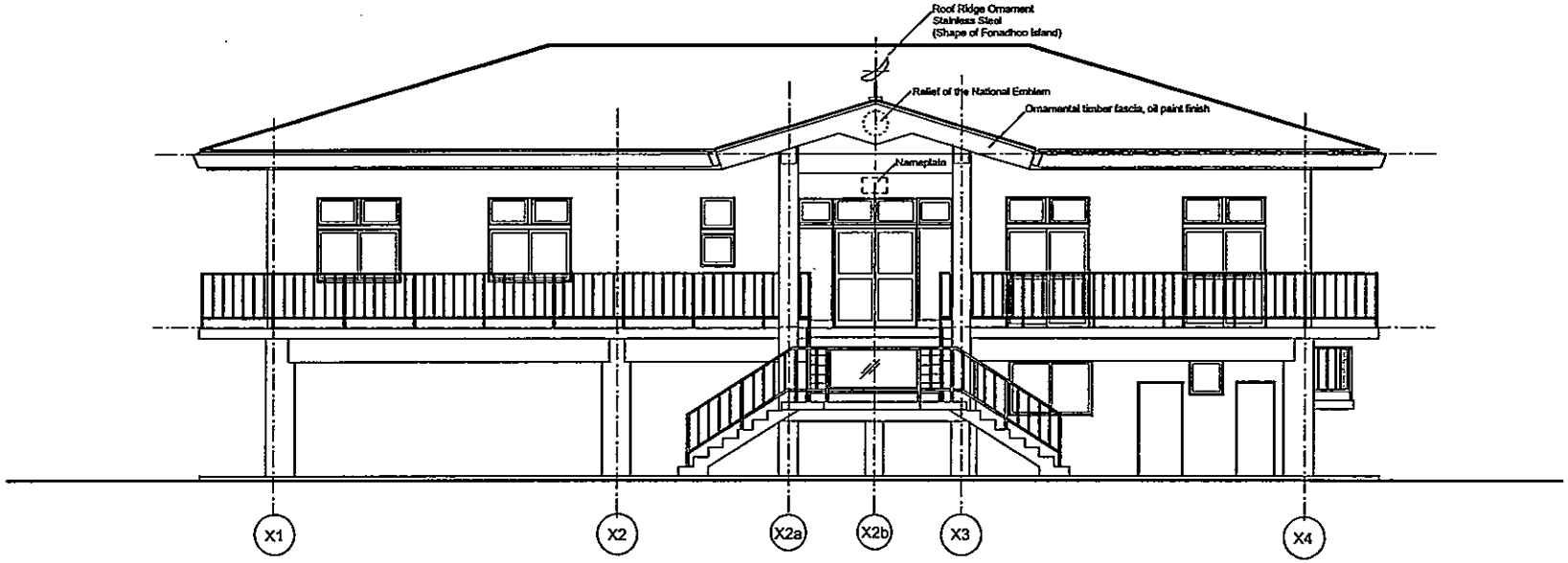
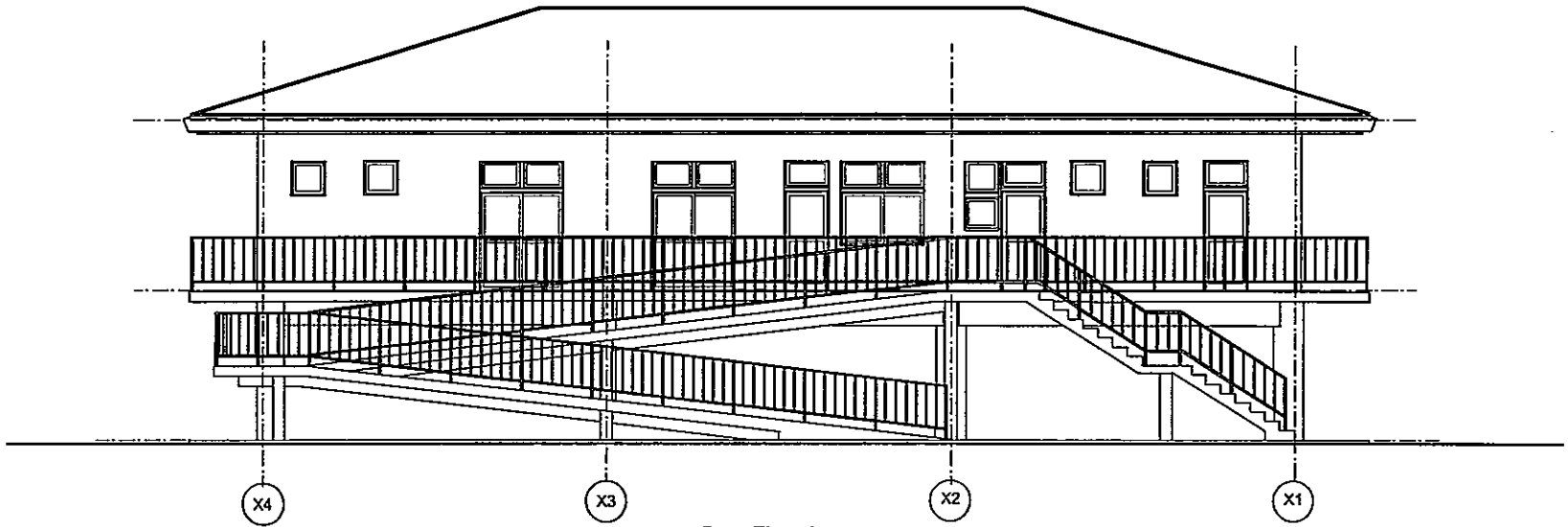
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Roof Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	A-05	



Front Elevation



Rear Elevation

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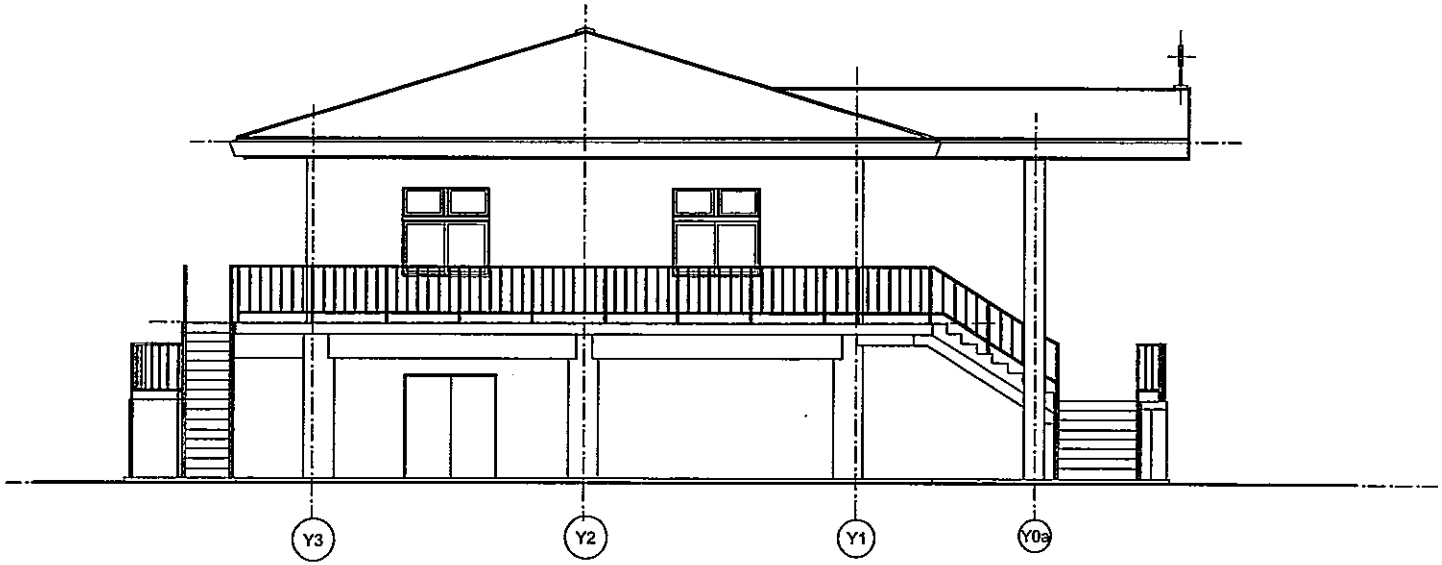
NIPPON KOEI CO.,LTD.

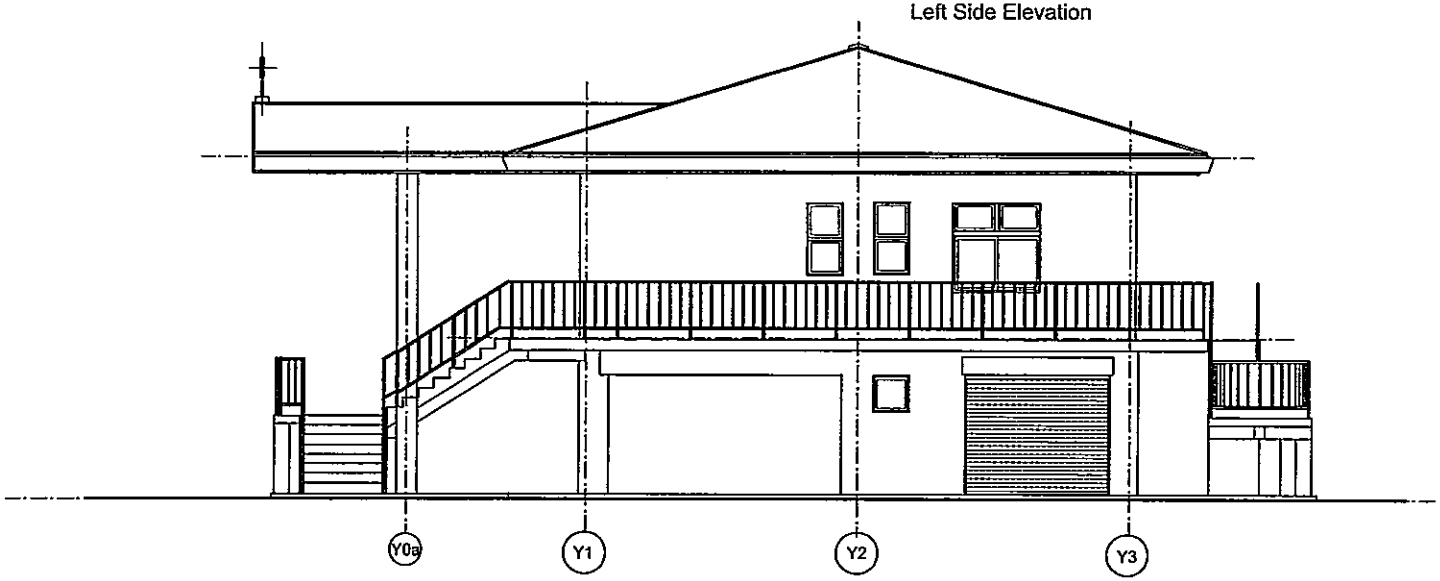
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Front & Rear Elevations

SCALE	SHEET NO.	REV. NO.
1 : 100	A-06	



Left Side Elevation



Right Side Elevation

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

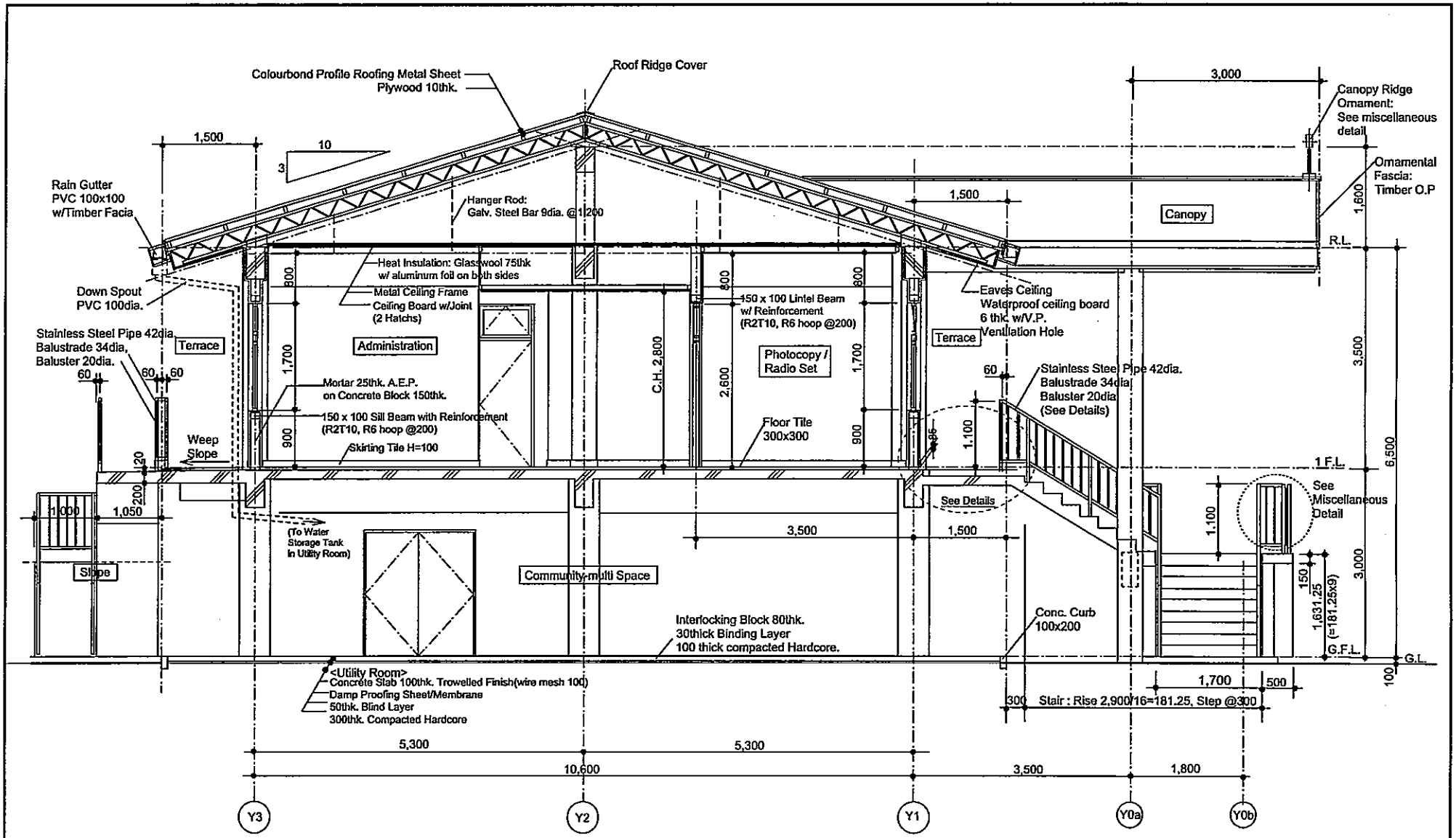
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

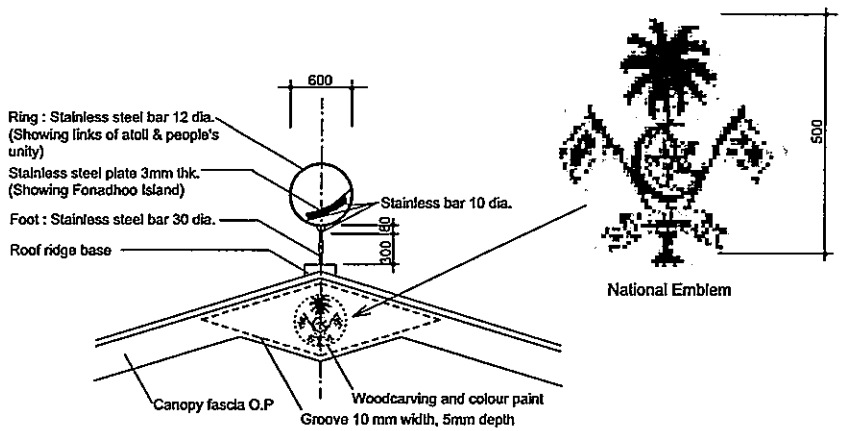
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Side Elevations

SCALE	SHEET NO.	REV. NO.
1 : 100	A-07	

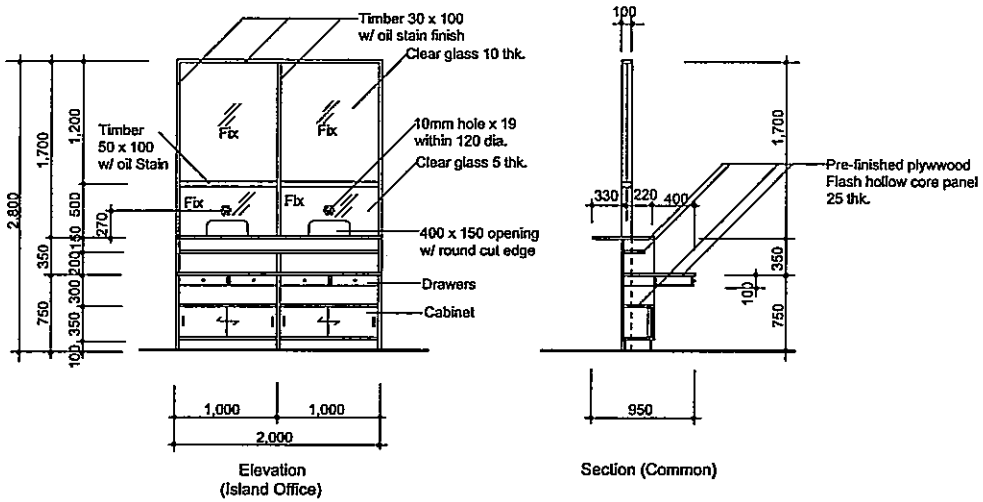


JICA JAPAN INTERNATIONAL COOPERATION AGENCY	NOTES:	THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES	
REPUBLIC OF MALDIVES MINISTRY OF FOREIGN AFFAIRS MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT		YACHIYO ENGINEERING CO.,LTD. NIPPON KOEI CO.,LTD.	DRAWING TITLE: Island Office (Fonadhoo, Laamu Atoll) Sectional Details

	PREPARED BY	CHECKED BY	APPROVED BY	SCALE	SHEET NO.	REV. NO.
NAME	K. Seki	A. Morioka	M. Komiya			
SIGNATURE				1 : 60	A-08	
DATE	July 08, 2005	July 08, 2005	July 08, 2005			



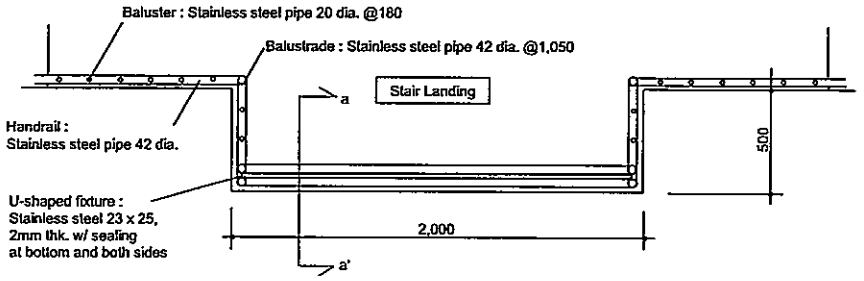
Detail of Ornamental Fascia at Entrance Canopy Scale 1 : 50



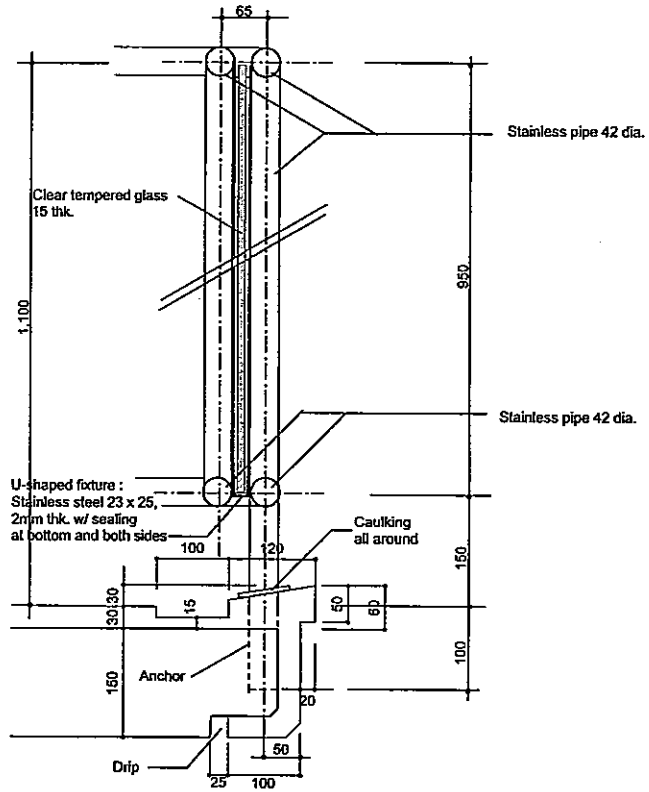
Elevation (Island Office)

Section (Common)

Reception Counter Detail Scale 1 : 50



Detailed Plan of Stair Landing Scale 1 : 50



Section a - a' (Not to scale)

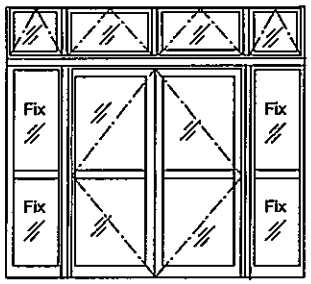
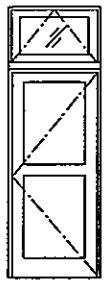
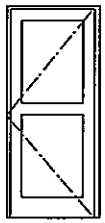
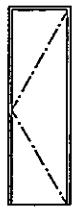
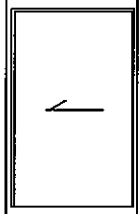
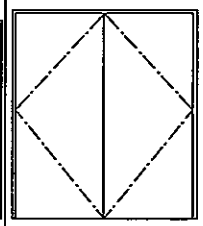
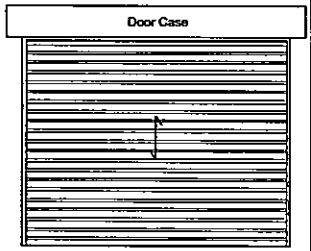
JICA JAPAN INTERNATIONAL COOPERATION AGENCY	NOTES:	THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES
REPUBLIC OF MALDIVES MINISTRY OF FOREIGN AFFAIRS MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT		YACHIYO ENGINEERING CO.,LTD. NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

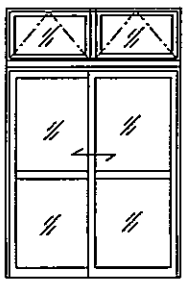
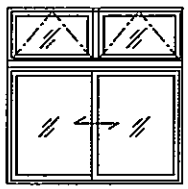
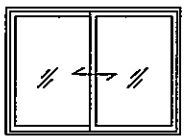
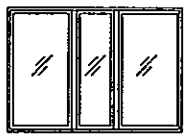
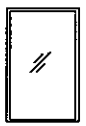
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Miscellaneous Details

SCALE	SHEET NO.	REV. NO.
1 : 50 & NTS	A-09	

Door

	AD-1		WD-1	WD-2	WD-3	WD-4	WD-5	WD-6		SR-1
Type	Double swing casement aluminum door with transom and side window		Single sing wooden casement door with Transom	Single sing wooden casement door Oil stain finish	Single sing wooden casement door Oil stain finish	Single sing wooden flash door, Hollow core Oil paint finish	Slide wooden flash door, Hollow core Oil paint finish	Double swing wooden flash door, Hollow core, Oil paint finish		Steel rolling door
Size	W-2,900 x H-2,600 (Door: 1,700 x 2,000) (Transom: 2,900 x 500) (Side window: 600 x 2,000 both side)		W-900 x H-2,600 (Door: 900 x 2,000) (Transom: 900 x 500)	W-900 x H-2,030	W-900 x H-2,030	W-600 x H-1,900	W-1,200 x H-1,900	W-1,800 x H-2,000		W-2,600 x H-2,000
Fittings	- 6 sets of hinge (6 locations) - 2 sets of door handle - 1 set of cylinder lock - 4 sets of lever lock (transom) - 1 set of dead bolt - 2 sets of door closer - Smoke-coloured glass 5mm thk. (door), 3mm thk. (window)		- 3 sets of hinges - 1 set of door handle - 1 set of tumbler lock - 1 set of lever lock - 1 set of door closer - Smoke-coloured glass 3mm thk.	- 3 sets of hinges - 1 set of door handle - 1 set of tumbler lock - 1 set of door closer	- 3 sets of hinges - 1 set of door handle - 1 set of tumbler key - 1 set of door closer	- 2 sets of hinges - 1 set of door handle - 1 set of toilet lock	- 1 set of hanger rail and accessories - 1 set of door handle - 1 set of slide-door lock	- 6 sets of hinge (6 locations) - 2 sets of door handle - 1 set of cylinder lock - 1 set of dead bolt - 2 sets of door closer		- Door case - Shutter lock - Hook stick for draw out shutter - Guide rail - Bottom bar
					Not Applicable					

Window

	AW-1	AW-2	AW-3	AW-4	AW-5	AW-6	AW-7	AW-8	
Type	Sliding aluminum window with transom	Sliding aluminum window with transom	Sliding aluminum window	Double aluminum awning window	Single aluminum awning window	Fixed aluminum window	Fixed aluminum window	Fixed aluminum window	
Size	W-1,700 x H-2,600 (Window: 1,700 x 2,000) (Transom: 1,700 x 500)	W-1,700 x H-1,700 (Window: 1,700 x 1,200) (Transom: 1,700 x 500)	W-1,700 x H-1,200	W-600 x H-1,700	W-500 x H-500	W-1,700 x H-1,200	W-700 x H-1,200	W-600 x H-1,400	
Fittings	- 1 set of crescent lock - 2 sets of lever lock (transom) - Smoke-coloured glass 5mm thk. (window), 3mm thk. (transom)	- 1 set of crescent lock - 2 sets of lever lock (transom) - Smoke-coloured glass 5mm thk. (window), 3mm thk. (transom)	- 1 set of crescent lock - Smoke-coloured glass 5mm thk. (window), 3mm thk. (transom)	- 2 sets of sliding stay - 2 sets of lever lock - Smoke-coloured glass 3mm thk.	- 1 set of sliding stay - 1 set of lever lock - Smoke-coloured glass 3mm thk.	- Smoke coloured glass 5mm thk.	- Smoke coloured glass 5mm thk.	- Smoke coloured glass 5mm thk.	
								Not Applicable 	

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:
* All dimensions shall be checked on site prior to fabrication
* For the direction of door swing, refer to floor plans.
* Provide lintel and sill to all openings.

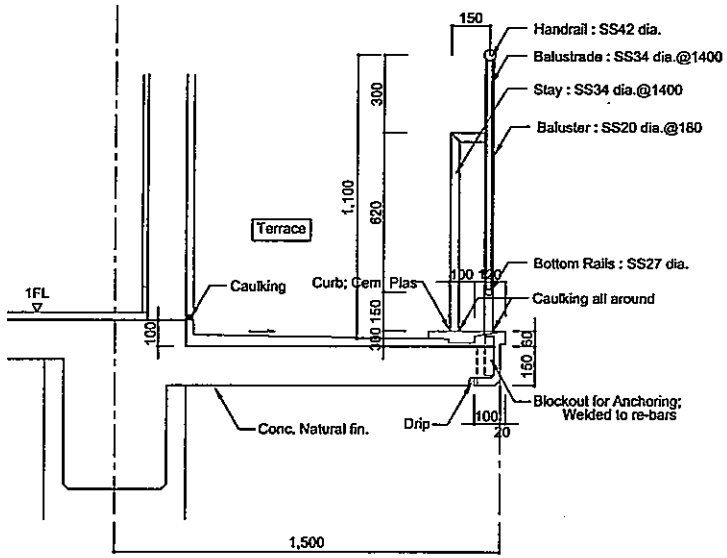
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

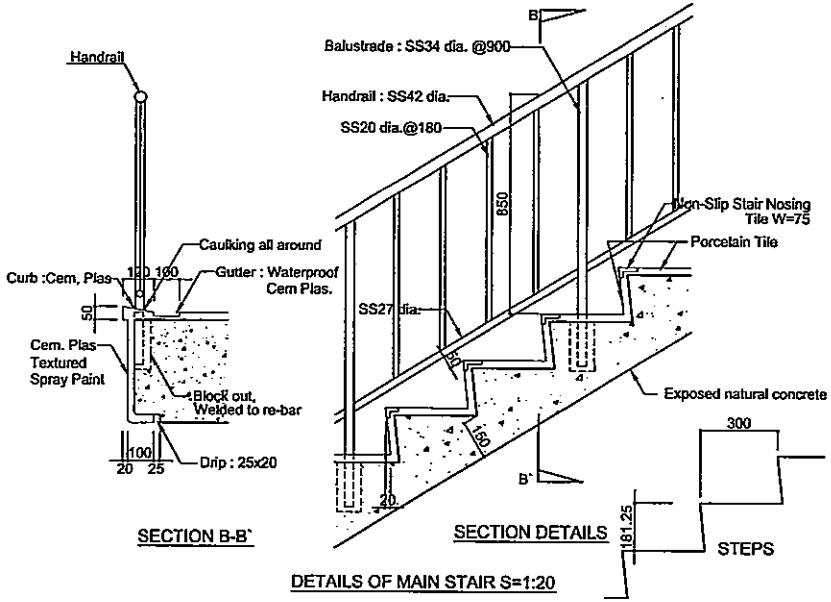
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Doors and Windows Schedules

SCALE	SHEET NO.	REV. NO.
Not to Scale	A-10	



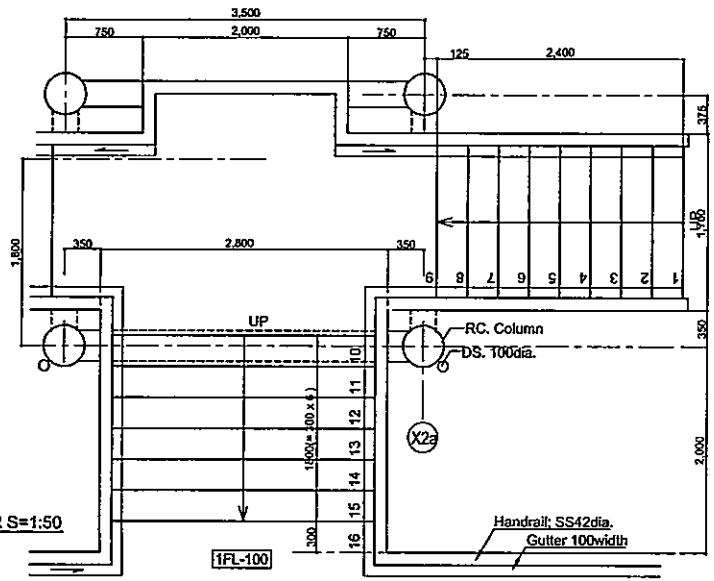
SECTION DETAILS THRU TERRACE S=1:20



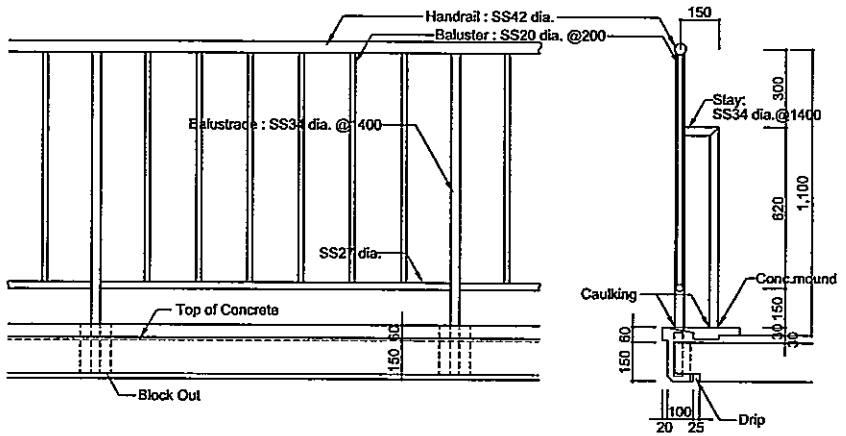
SECTION B-B`

SECTION DETAILS

DETAILS OF MAIN STAIR S=1:20



DETAILED PLAN OF MAIN STAIR S=1:50



FRONT VIEW

SECTION

DETAILS OF HANDRAILS AT TERRACE S=1:20

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

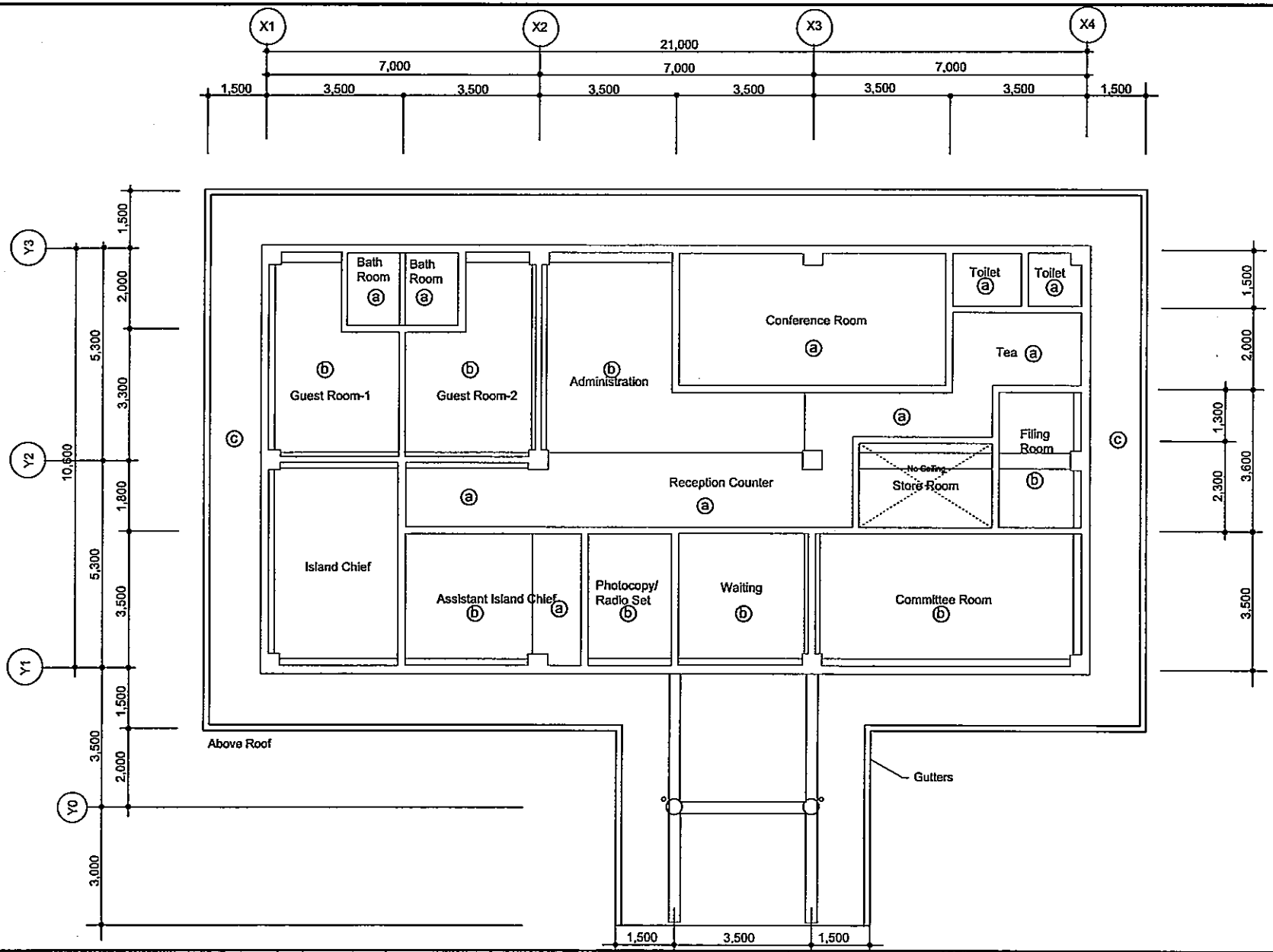
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi Purpose Building
(Thundi, Gan, Laamu Atoll)
Stair & Handrails Details

SCALE	SHEET NO.	REV. NO.
1 : 20, 1 : 50	A-11	



JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

ⓐ Ceiling height shall be 2,800
ⓑ all other areas shall be 3,400 in ceiling height.
ⓒ Eaves ceiling

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

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NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Ceiling Plan - 1st Floor Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	A-12	

1. Materials

Reinforcing bar shall conform to Table-1

Table-1

Round bar	JIS 3101/3112 SR235 or equal
Deformed bar	JIS G3112 SD295A or equal

Concrete Strength Fc28=21N/mm2

2. Material Tests

No material test are needed for standard JIS and/or equivalent product as a rule, however, a certificate of standard should be submitted to the Engineer for approval. If no certificate, following tests shall be required,

Test	Yield point, tensile strength and elongation
Testing method	Tenseil tests by JIS3112/JIS3117 or equal
Number of tests	Once for weight of every 20ton for every diameter.
Remarks	Number of test pieces in once test shall be at least three

3. Processing and Assembly

3-1 Reinforcing bars with dangerous bends, cracks, splits or other defects, may not be used under any circumstances

3-2 The diameter for deformed reinforcing bar shall be conform to Table-2

3-3 Reinforcing splices shall be lap joint, and the lap length shall be conform to Table-3 However, lap joint is not permitted for the reinforcing bar over 29mm Dia. The place of the lap joint shall be in compression zone

3-4 Reinforsing bars shall be cut by shearcuttersorsaws. Gas cutting is permitted where unavoidable, if approved by the Engineer

3-5 Spot welding and arc strike is not permitted for reinforcing bars,

3-6 Install hooks at each end of reinforcing bars.

(1) The main reinforcing bars located at the four corners of a column at lap joint, and at the top of column at the highest story

(2) Hoop, stirrup and yoke bar

4. Minimum thickness of cover concrete for reinforcing bars

Type of structural elements			Minimum thickness of cover concrete
Elements not in contact with soil	Slab and walls	With finishing	20mm
		No finishing	30mm
	Column Beam	With finishing	40mm
		No finishing	40mm
Elements contact with soil	Column, beam, floor, slab, wall		50mm
	Foundation, retaining wall		70mm

5. Minimum clearance between the reinforcing bars

Clearance shall be more than 25mm and 1.25 times the maximum size of coarse aggregate and 1.5 times of largest outsaid diameter of reinforcing bar

Table-2 Minimum diameter for bending of reinforcing bars

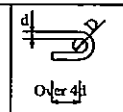
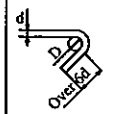
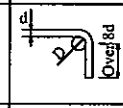
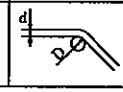
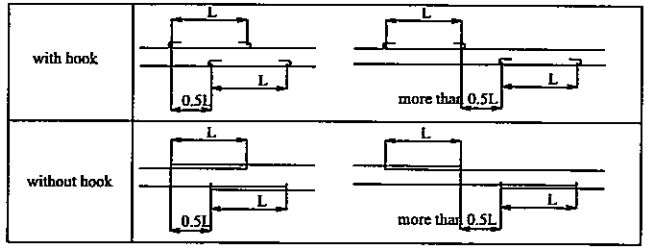
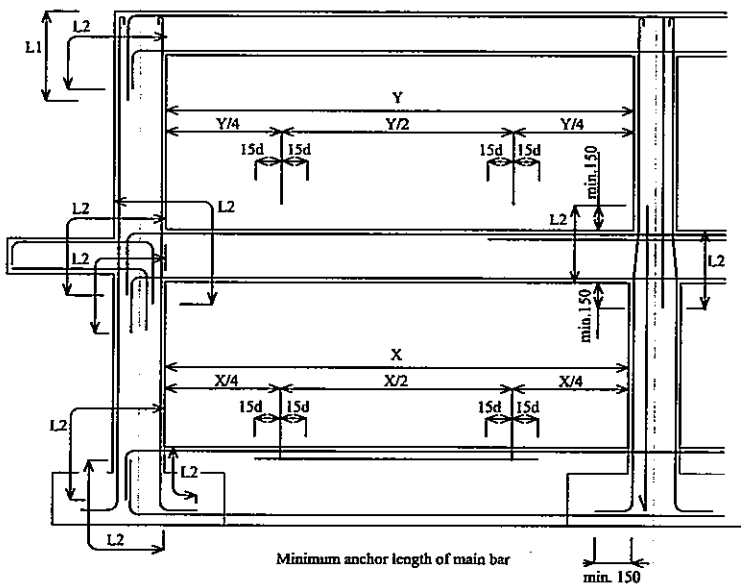
Bending Shape			Under 16mm Dia.	19 to 38mmDia.	Previous location
180°		D	More than 3d	More than 4d	Main bars for column and beam etc.
135°		D	More than 3d	More than 4d	Stirrup,hoop,spiral bar
90°		D	More than 3d	More than 4d	Stirrup,hoop,spiral bar
Less than 90°		D	More than 4d	More than 6d	

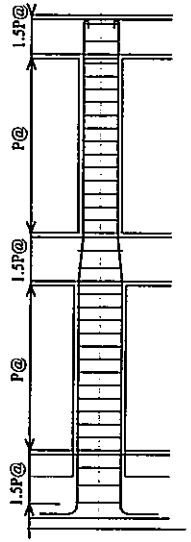
Table-3 Minimum lap length and Anchor length

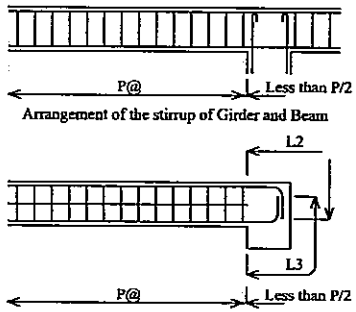
Concrete Design strength	without hook				with hook			
	L1	L2	L3		L1	L2	L3	
			Small Beam	Slab			Small Beam	Slab
Over Fc28=21N/mm2 but under Fc28=27N/mm2	40d	35d	25d	10d and over 150mm	30d	25d	15d	——

Table-4 Location of neighboring joints









NOTES:

* Installation of supporting base for solar cell panel on the roof is required. Location and number is instructed by solar system documents.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

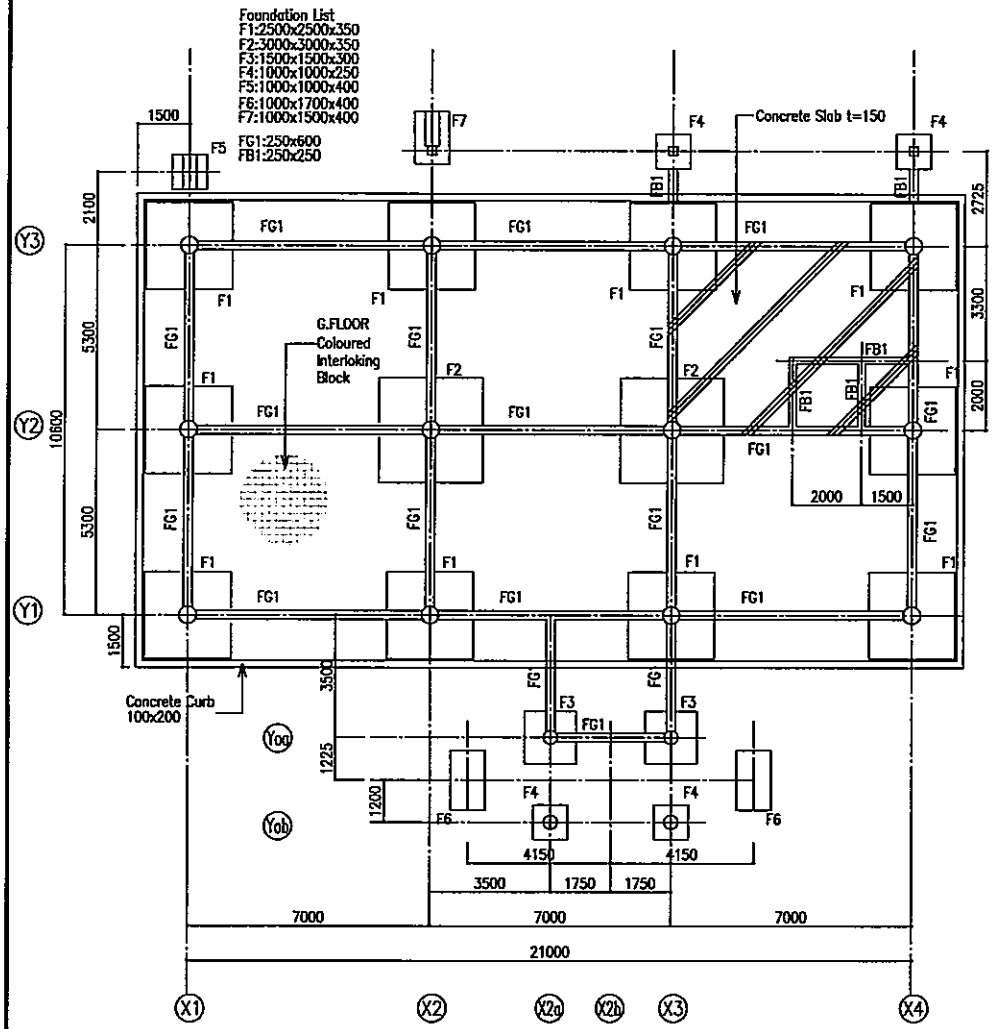
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

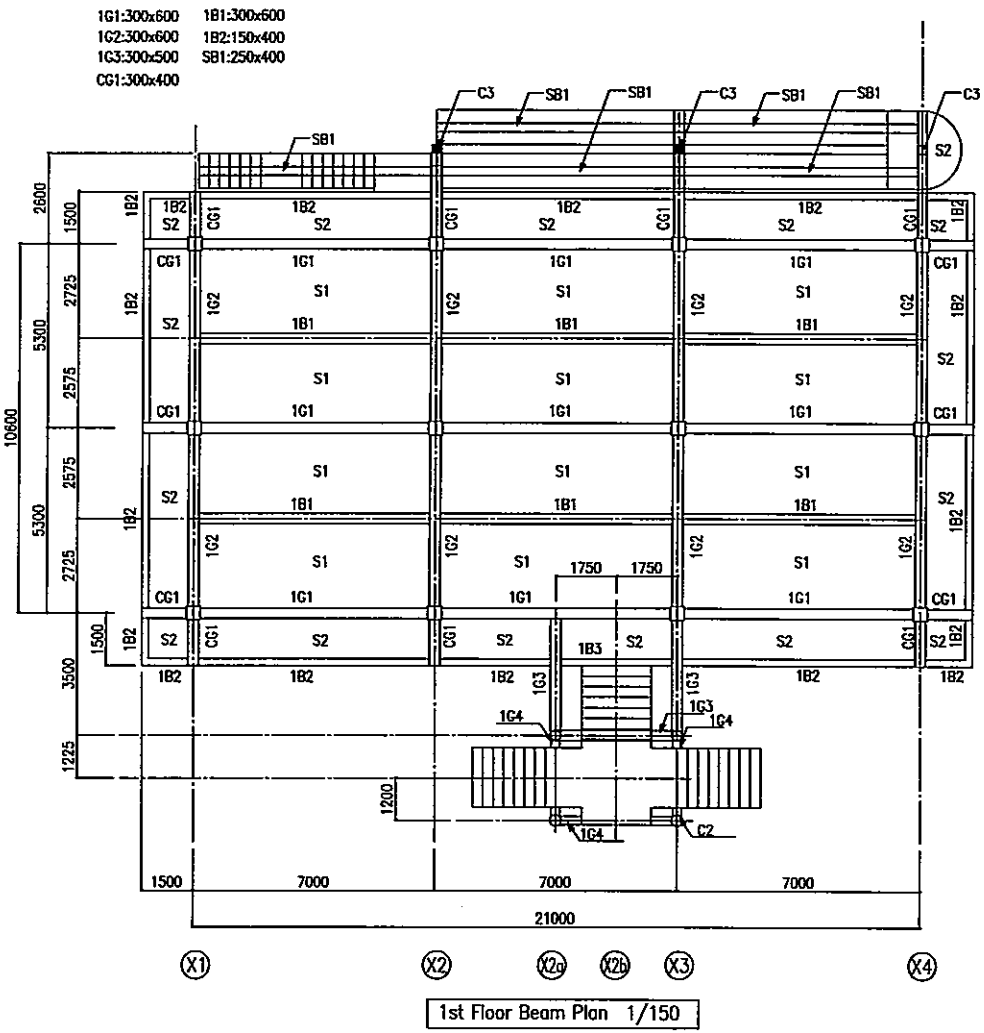
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Island Office (Fonadhoo, Laamu Atoll) Bar Arrangement Standard Specification

SCALE	SHEET NO.	REV. NO.
1 : 60	S-00	



Foundation Plan 1/150



1st Floor Beam Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Installation of supporting base for solar cell panel on the roof is required. Location and number is instructed by solar system documents.

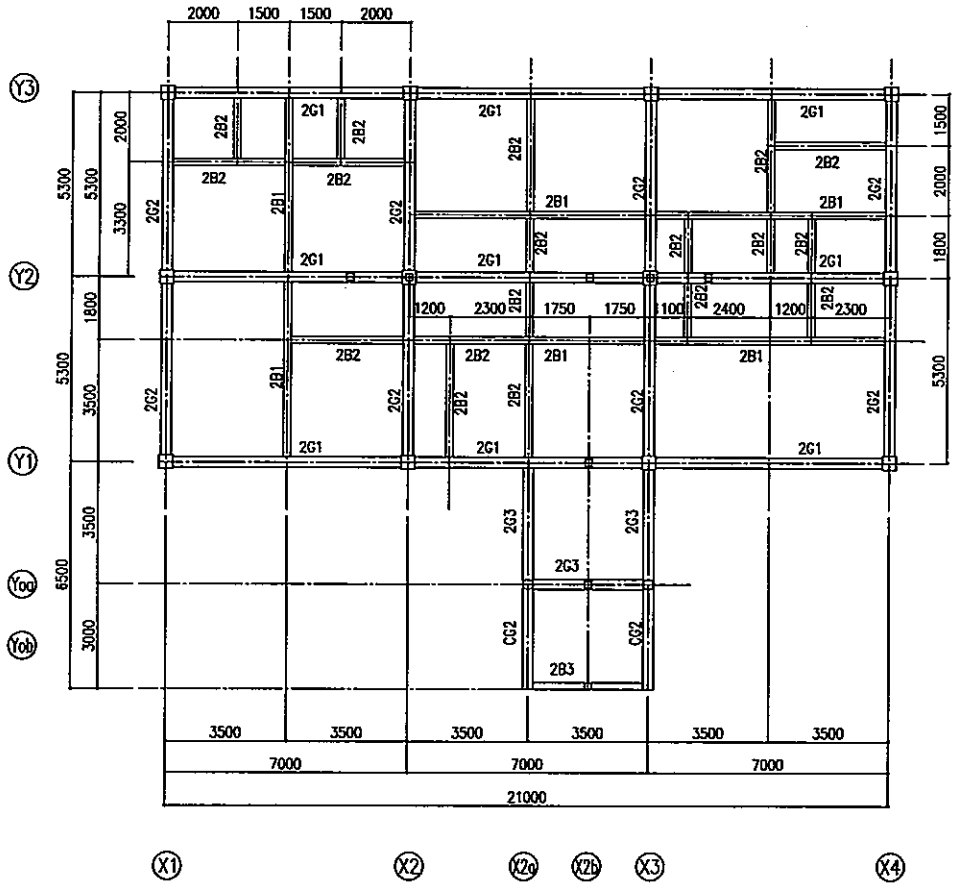
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

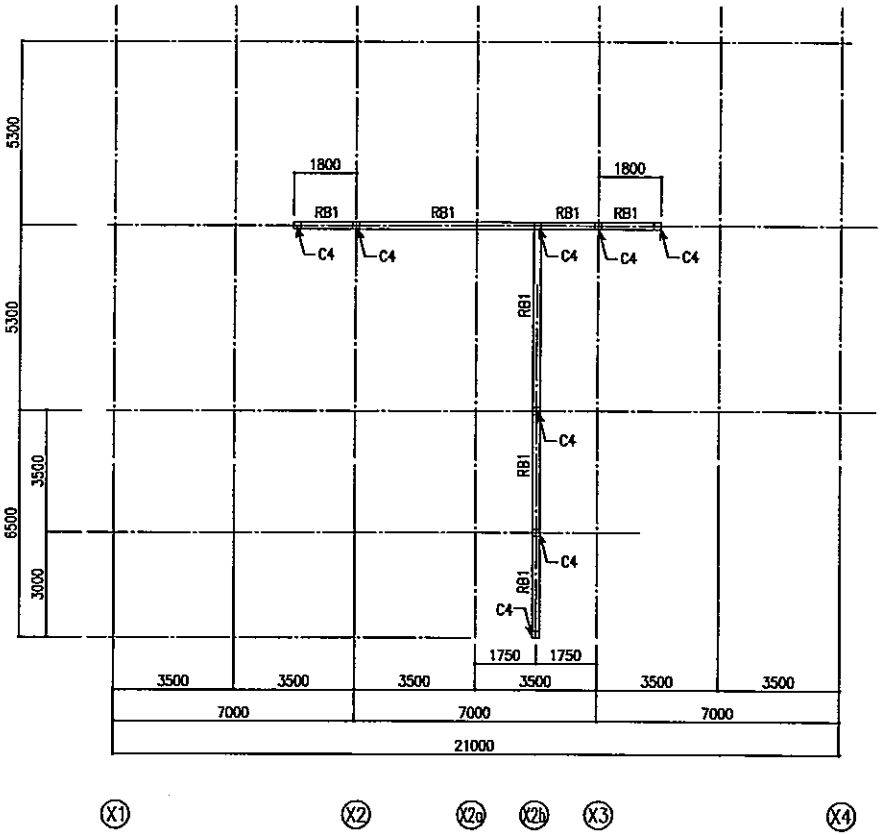
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Foundation Plan/1st Floor Beam Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	S-01	



2G1:300x500 2B1:200x200
2G2:300x500 2B2:200x200
2G3:300x500 2B3:250x500
2G4:250x500
CG2:300x500

Roof Beam Plan 1/150



C4:250x250
RB1:250x250

Roof Top Beam Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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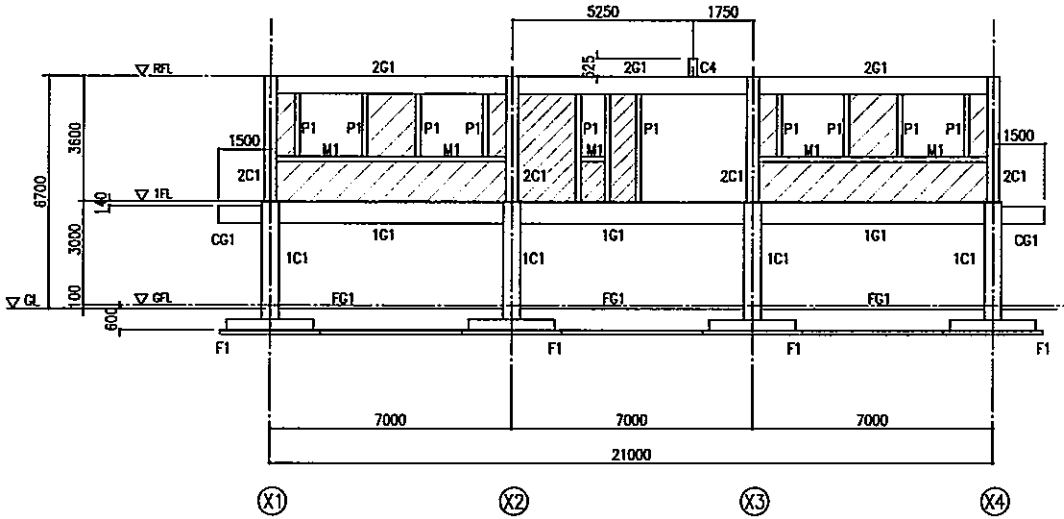
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

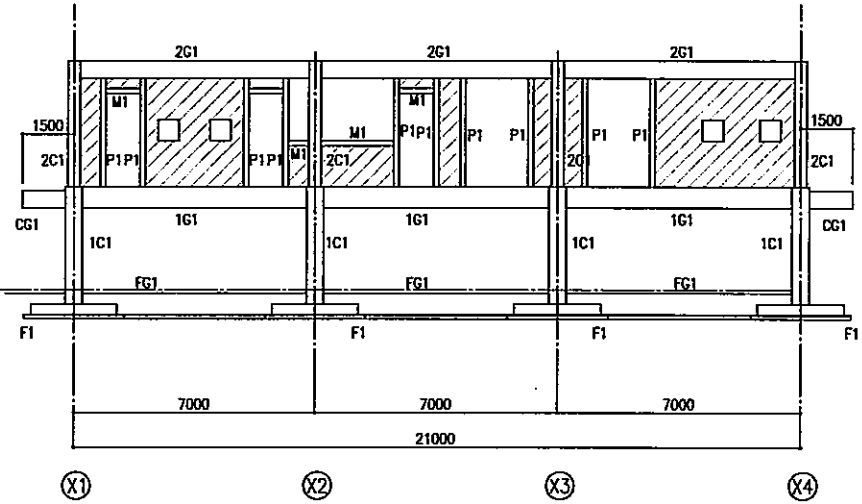
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Roof Beam Plan/Roof Top Beam Plan

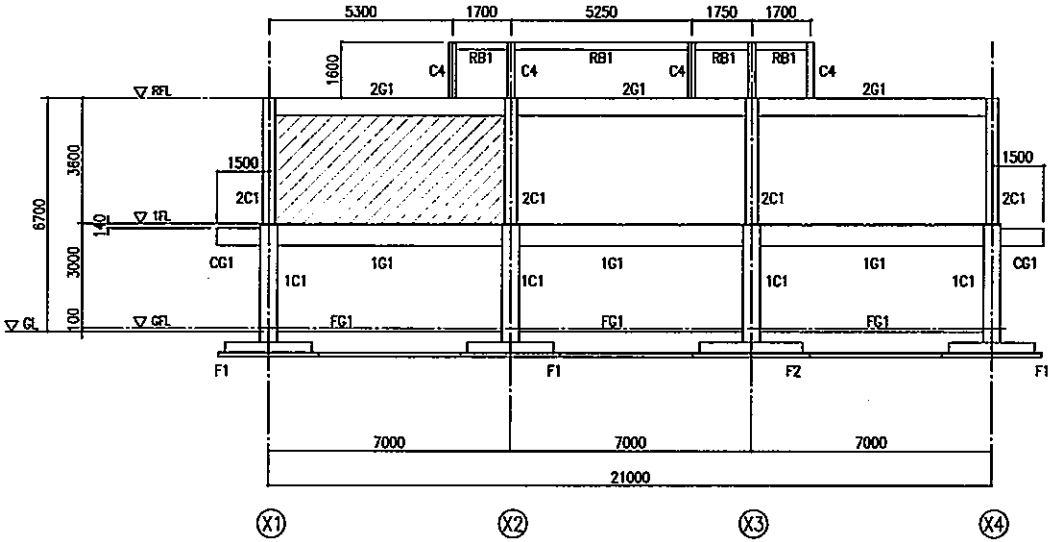
SCALE	SHEET NO.	REV. NO.
1 : 150	S-02	



Line Y1 1/150



Line Y3 1/150



Line Y2 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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NIPPON KOEI CO.,LTD.

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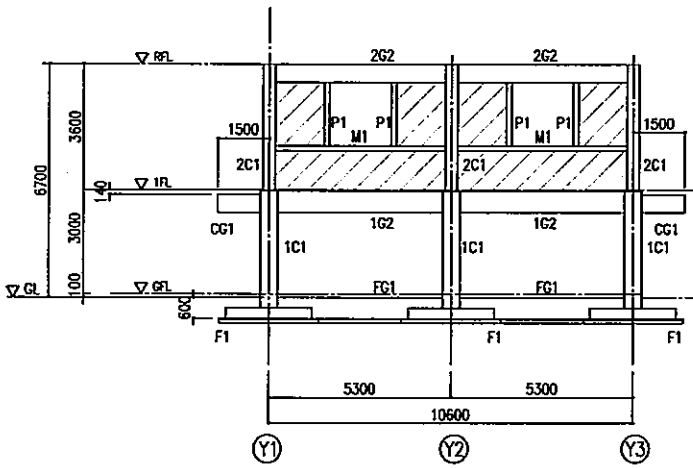
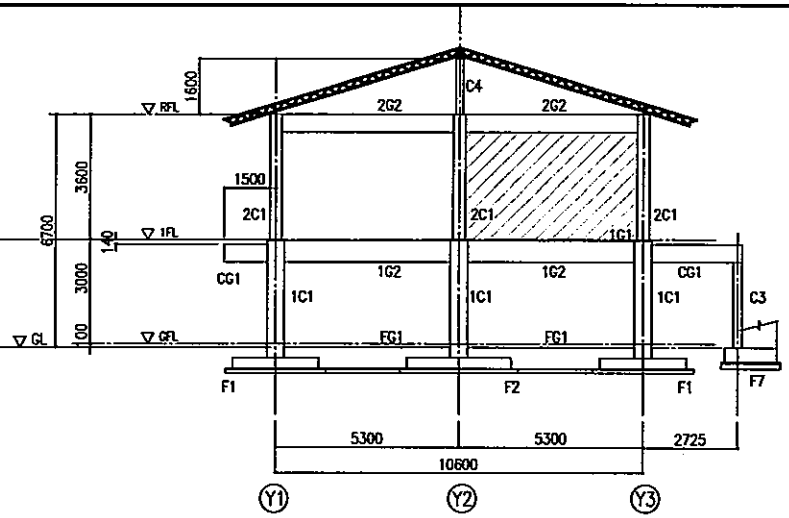
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Structure : Framing Elevation
Line Y1/Y2/Y3

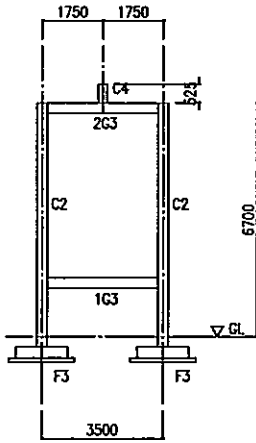
SCALE	SHEET NO.	REV. NO.
1 :150	S-03	



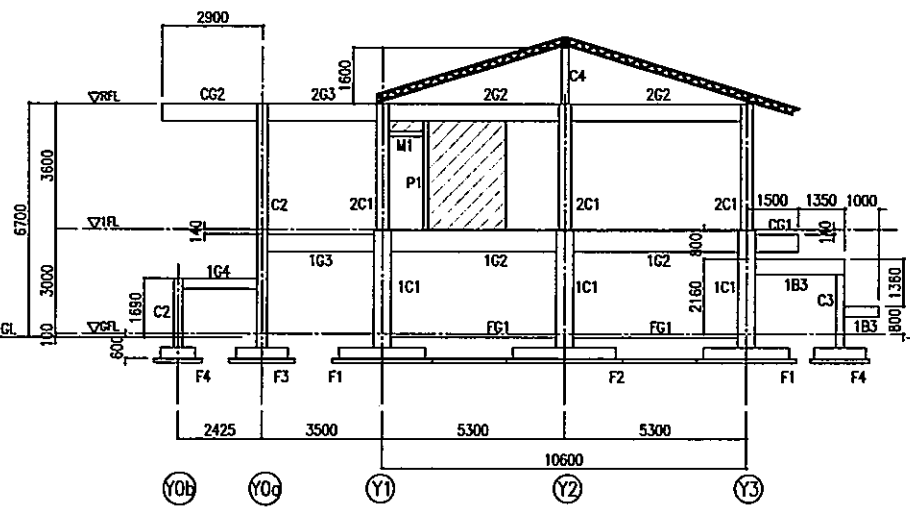
Line X1 1/150



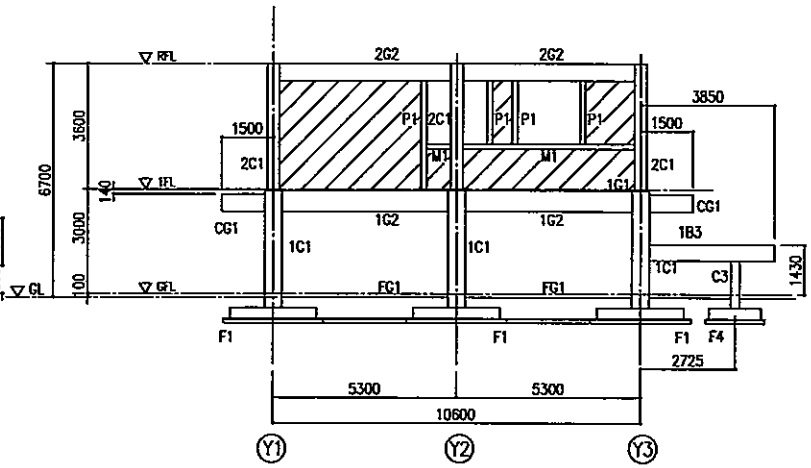
Line X2 1/150



Line Y0a 1/150



Line X3 1/150



Line X4 1/150

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

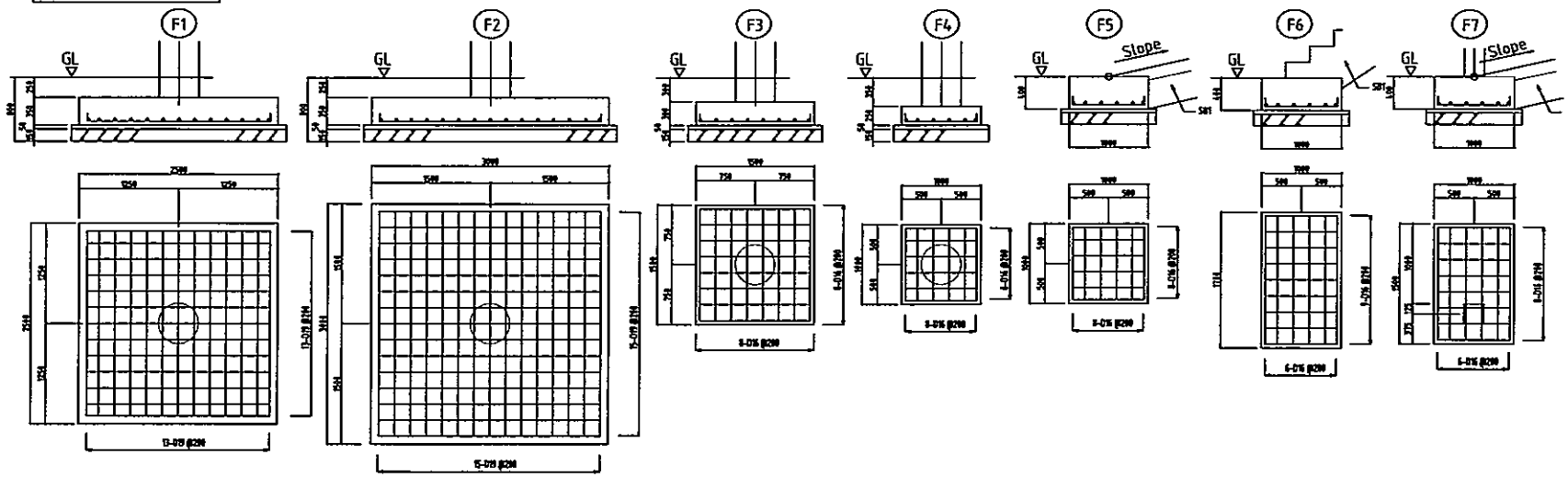
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

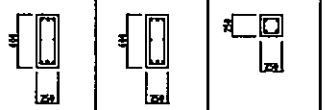
DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Flaming Elevation
Line- X1/X2/X3/X4

SCALE	SHEET NO.	REV. NO.
1 :150	S-04	

FOUNDATION SCHEDULE

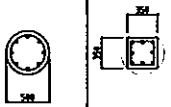


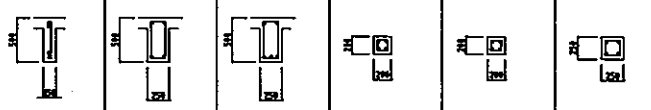
BEAM SCHEDULE 1/30

NAME	FG1		FB1
	At Mid-support	At End-support	At Section
SECTION			
TOP BARS	3-D19	3-D19	2-D13
BOTT BARS	3-D19	3-D19	2-D13
STIRRUP	□-D10@250	□-D10@250	□-D10@250
MID BARS	2-D10	2-D10	

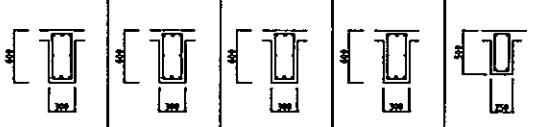
COLUNM SCHEDULE 1/30

UNLESS OTHERWISE INDICATED,HOOP -D10@200 NOTE.
PLANNING LAYOUT DIRECTION

NAME	1C1	2C1	C2	C3	C4
SECTION					
MAIN BARS	8-D19	8-D19	8-D19	8-D16	4-D13
HOOP	O-D10@150	□-D10@150	O-D10@150	□-D10@150	□-D10@150

NAME	1B2	1B3/2B3	SB1	2B1	2B2	RB1
	ALL	ALL	ALL	ALL	ALL	ALL
SECTION						
TOP BARS	3-D19	2-D19	2-D19	2-D13	2-D19	2-D13
BOTT BARS	3-D19	2-D19	3-D19	2-D13	2-D19	2-D13
STIRRUP	□-D10@250	□-D10@150	□-D10@150	□-D10@250	□-D10@250	□-D10@250
MID BARS	—	—	—	—	—	—

BEAM SCHEDULE 1/30

NAME	1G1/1B1		1G2		1G3	CG1	1G4	2G1		2G2		2G3	CG3
	At Mid-support	At End-support	At Mid-support	At End-support	ALL	ALL	ALL	At Mid-support	At End-support	At Mid-support	At End-support	ALL	ALL
SECTION													
TOP BARS	3-D19	3-D19	3-D19	3-D19	2-D19	3-D19	3-D19	3-D19	3-D19	3-D19	3-D19	3-D19	3-D19
BOTT BARS	3-D19	3-D19	3-D19	3-D19	2-D19	2-D16	3-D19	3-D19	3-D19	3-D19	3-D19	3-D19	3-D19
STIRRUP	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150
MID BARS	2-D10	2-D10	2-D10	2-D10	—	—	—	—	—	—	—	—	—

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

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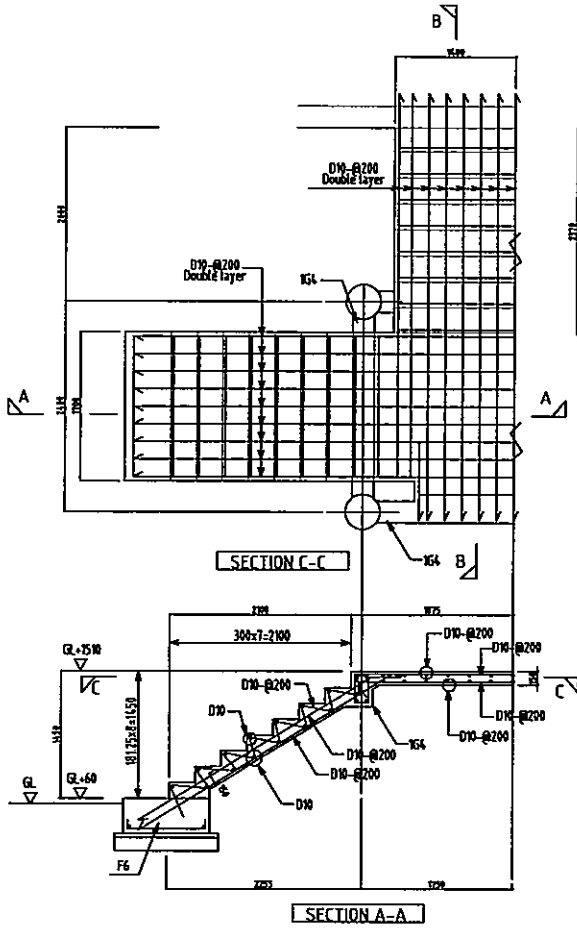
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

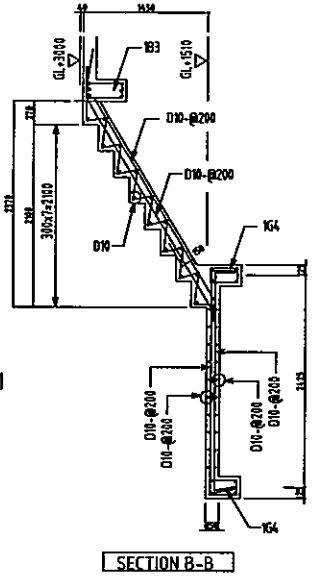
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

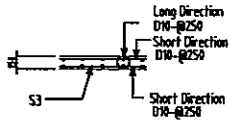
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

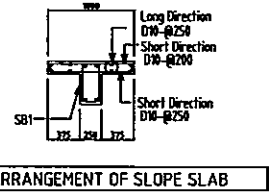
DRAWING TITLE: Island Office (Fonadhoo, Laamu Atoll) Bar Arrangement of Foundation/Column/Beam

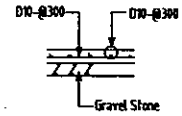
SCALE	SHEET NO.	REV. NO.
1 : 60	S-05	

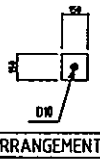


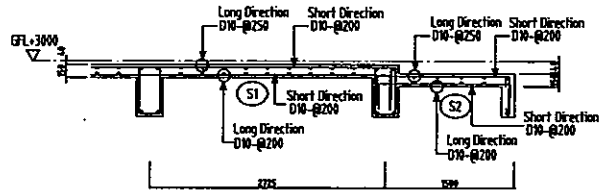












JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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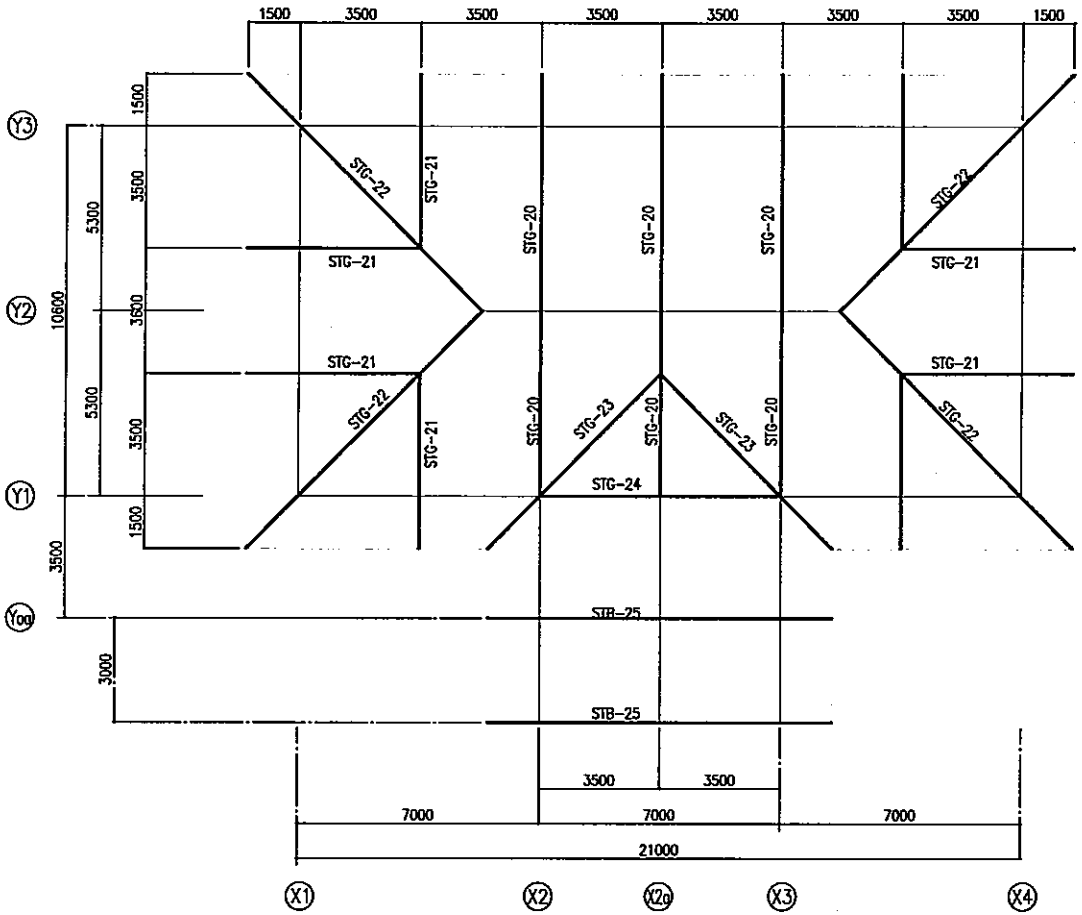
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

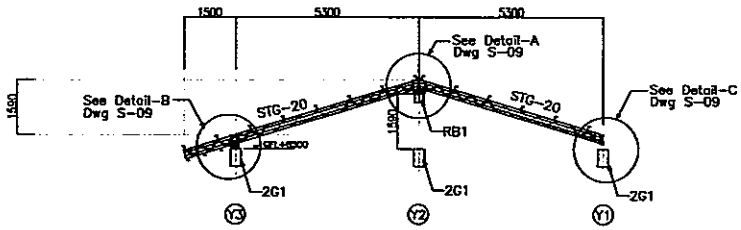
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Island Office (Fonadhoo, Laamu Atoll) Bar Arrangement of Slab/Stair/Slope etc

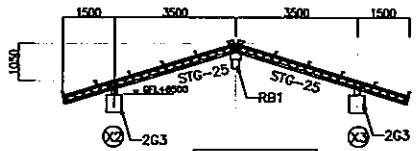
SCALE	SHEET NO.	REV. NO.
1 : 60	S-06	



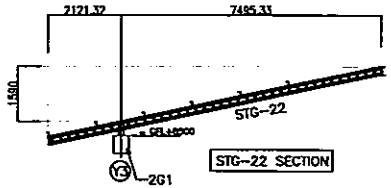
Roof Truss Arrangement Plan 1/150



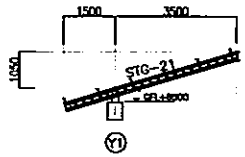
STG-20 SECTION



STG-25 SECTION



STG-22 SECTION



STG-21 SECTION

Notes
1) Structural Steel; JIS G3101(SS400) or Equivalent
2) Light Gauge Steel ; JIS G3350 (SSC400) or Equivalent
3) Bolt ; Ordinary Bolt, nut and washer ; JIS B1180 /JIS B1256 or Equivalent
4) Welding rod; JIS Z3211, 3212 or Equivalent
5) Zinc Hot-dip Galvanizing shall conform to JIS H8641 Class-2 or Equivalent
Coated amount of zinc is over 350 g/m2

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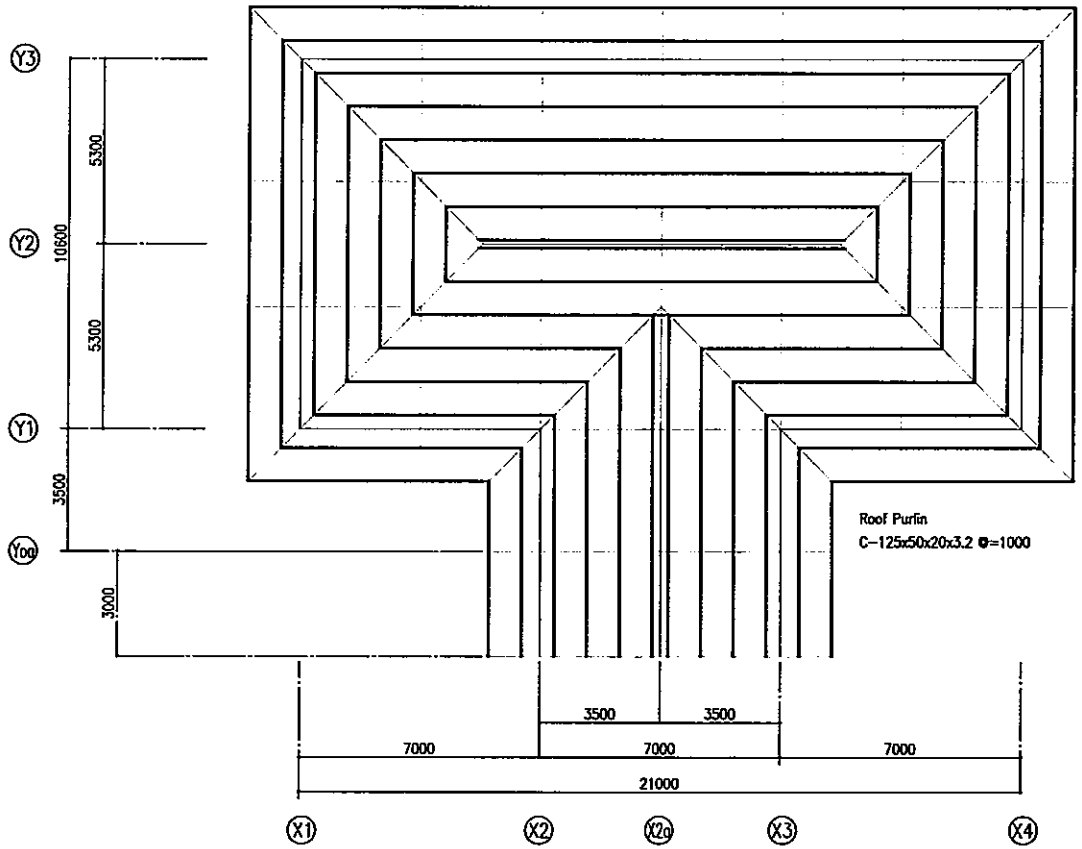
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY*	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Roof Truss Arrangement Plan / Section

SCALE	SHEET NO.	REV. NO.
1 : 150	S-07	



Roof Truss Arrangement Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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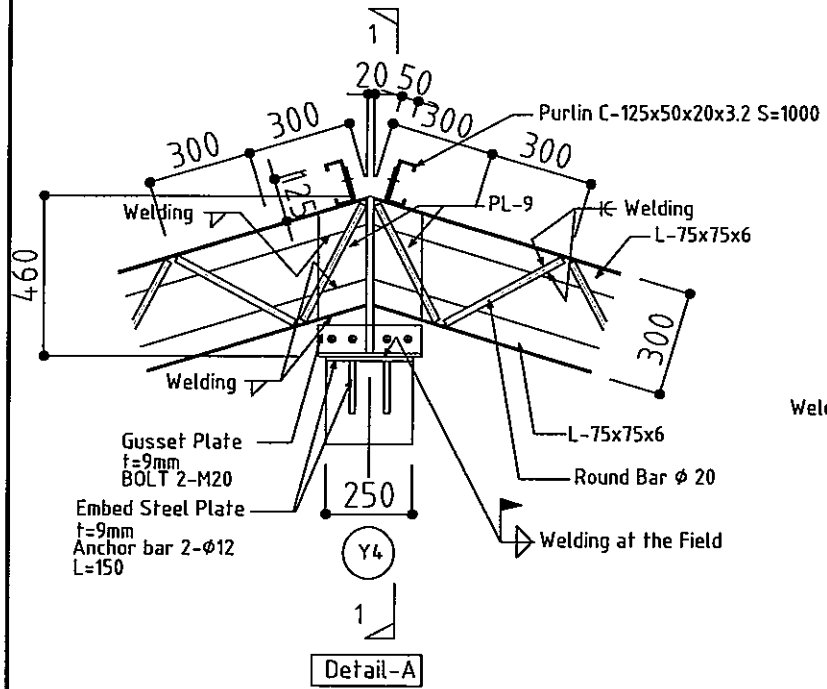
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

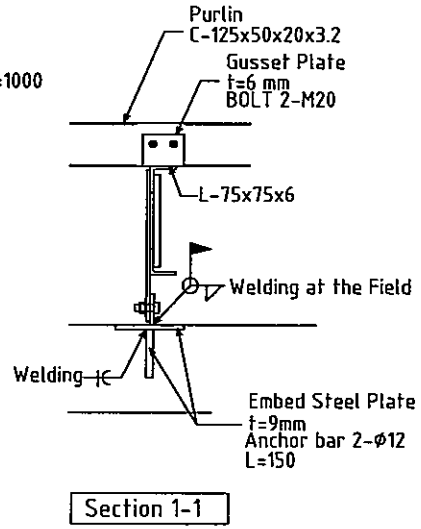
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Island Office (Fonadhoo, Laamu Atoll) Roof Purlin Arrangement Plan

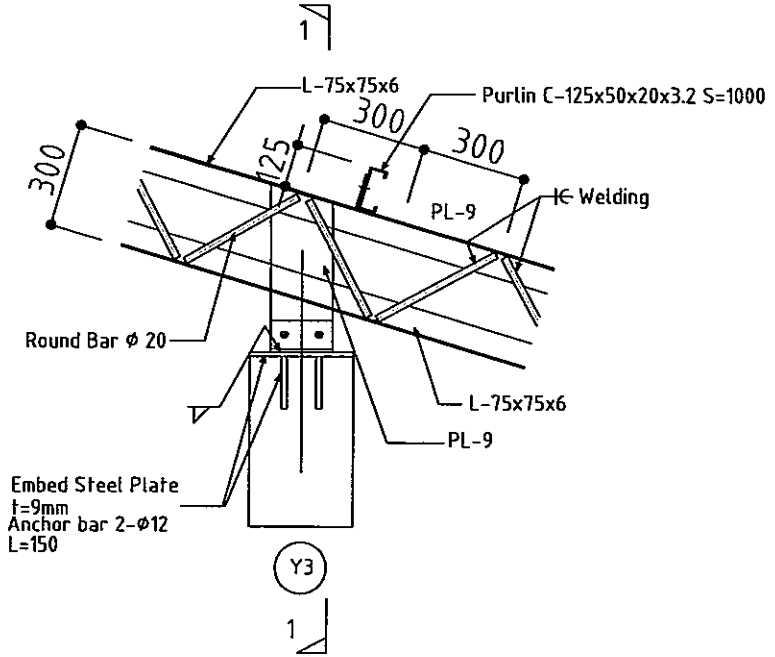
SCALE	SHEET NO.	REV. NO.
1 : 150	S-08	



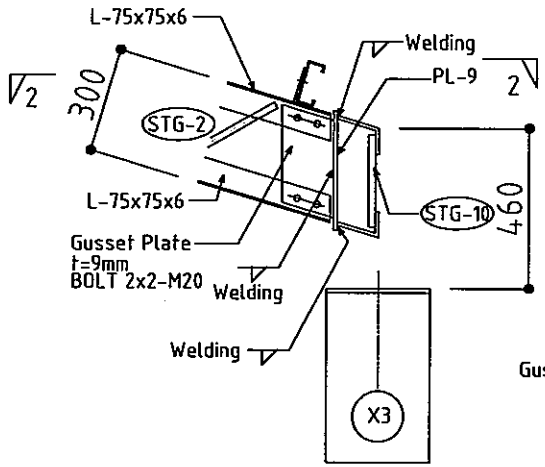
Detail-A



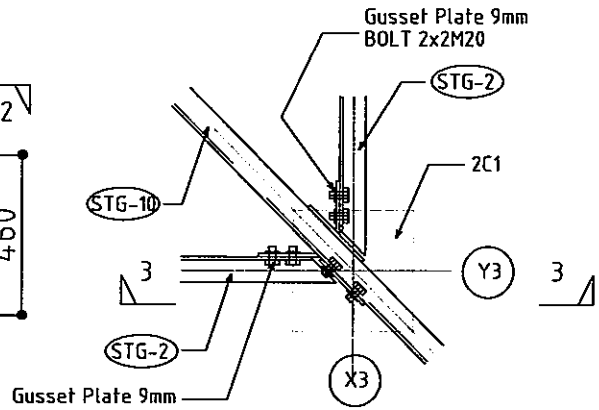
Section 1-1



Detail-B



Detail-C (Section 3-3)



Detail-D (Section 2-2)

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

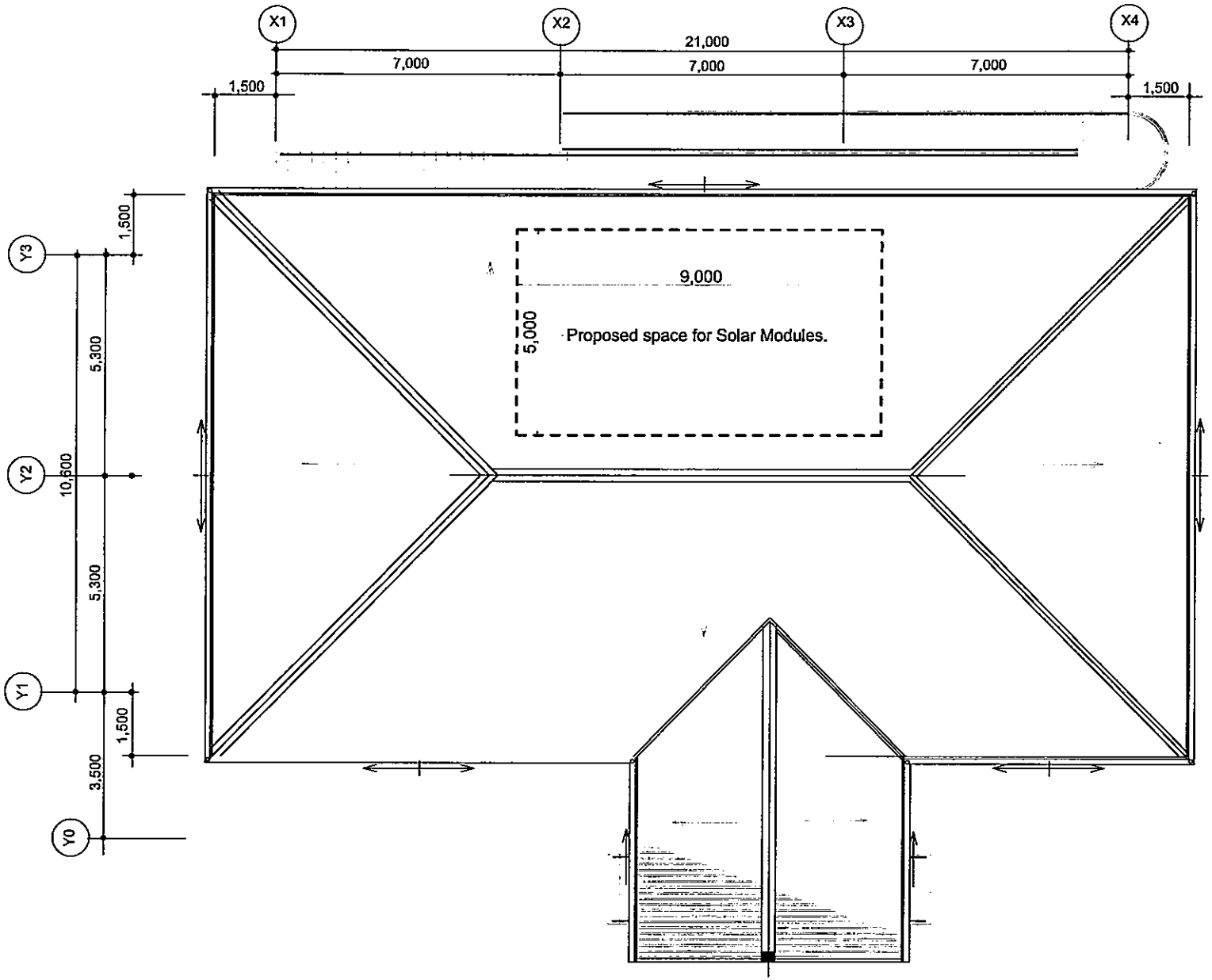
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Roof Truss Joint Detail

SCALE	SHEET NO.	REV. NO.
1 : 60	S-09	



JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

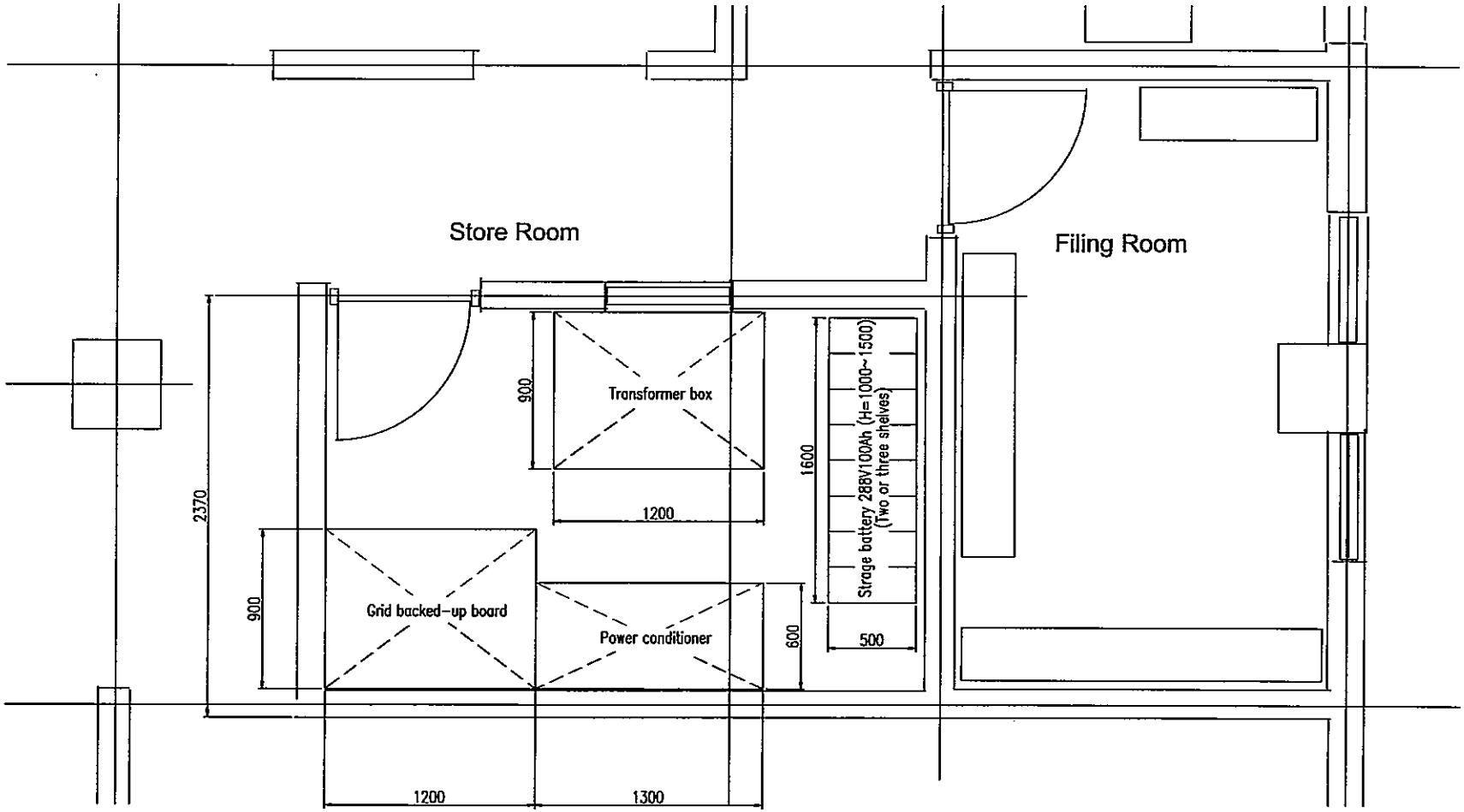
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO, LTD.
NIPPON KOEI CO, LTD.

	DESIGNED BY	CHECKED BY	APPROVED BY
NAME	T.Ogawa	T.Kobayashi	M.Komiya
SIGNATURE			
DATE	22-05-05	22-05-05	22-05-05

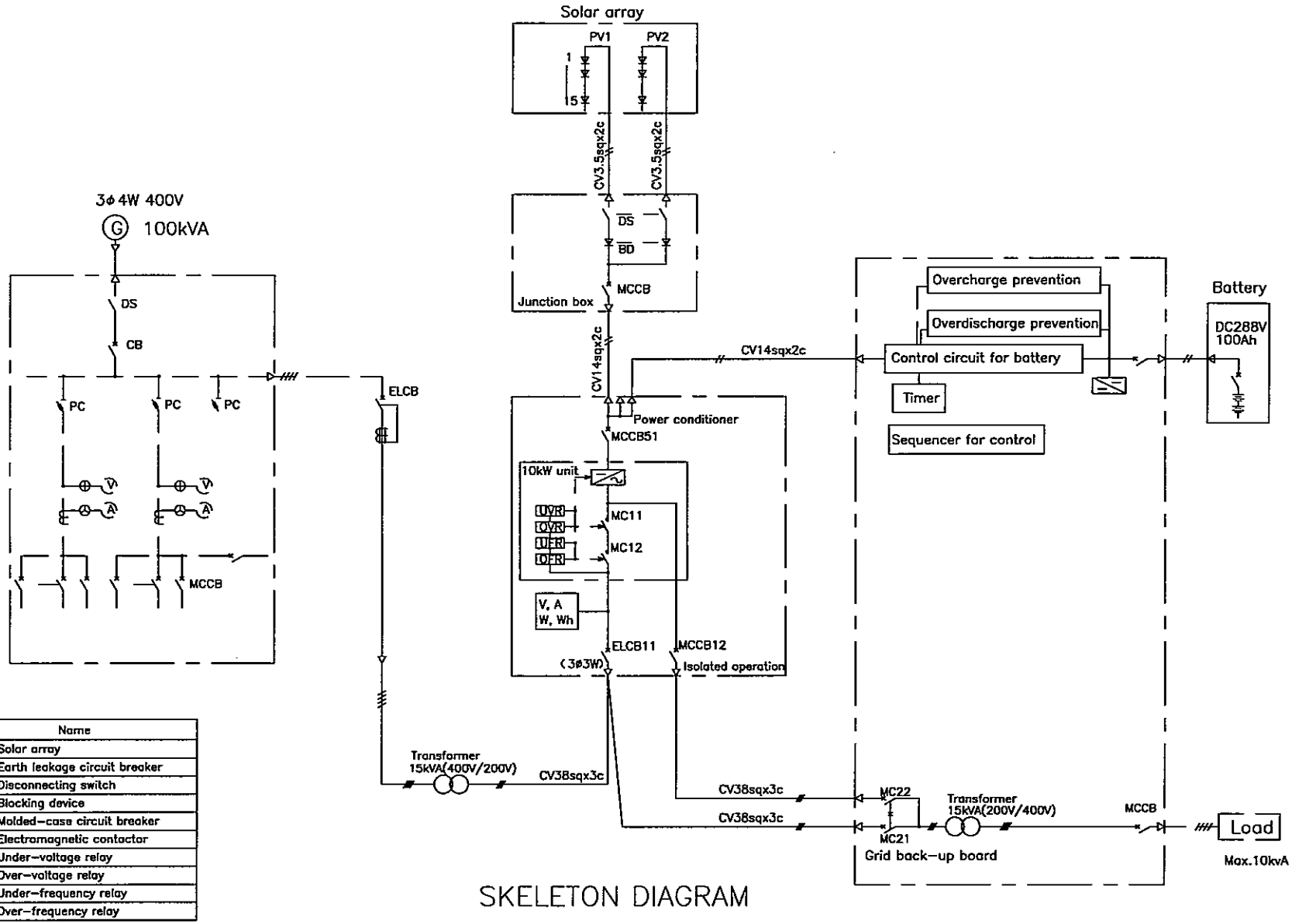
DRAWING TITLE
ISLAND OFFICE
Solar Modules Arrangement PLan

SCALE	SHEET NO.	REV. NO.
1:100	10-PV-01	



JAPAN INTERNATIONAL COOPERATION AGENCY	NOTES:	THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES	
REPUBLIC OF MALDIVES MINISTRY OF FOREIGN AFFAIRS MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT		YACHIYO ENGINEERING CO, LTD. NIPPON KOEI CO, LTD.	DRAWING TITLE: ISLAND OFFICE Layout for Solar Power Equipment (Inside Store and Equipment Room on 1st Floor)

	DESIGNED BY	CHECKED BY	APPROVED BY	SCALE	SHEET NO.	REV. NO.
NAME	T.Ogawa	T.Kobayashi	M.Komiya			
SIGNATURE				1:25	IO-PV-02	
DATE	22-05-05	22-05-05	22-05-05			



	Name
PV	Solar array
ELCB	Earth leakage circuit breaker
DS	Disconnecting switch
BD	Blocking device
MCCB	Molded-case circuit breaker
MC	Electromagnetic contactor
UVR	Under-voltage relay
OVR	Over-voltage relay
UFR	Under-frequency relay
OFR	Over-frequency relay

SKELETON DIAGRAM

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

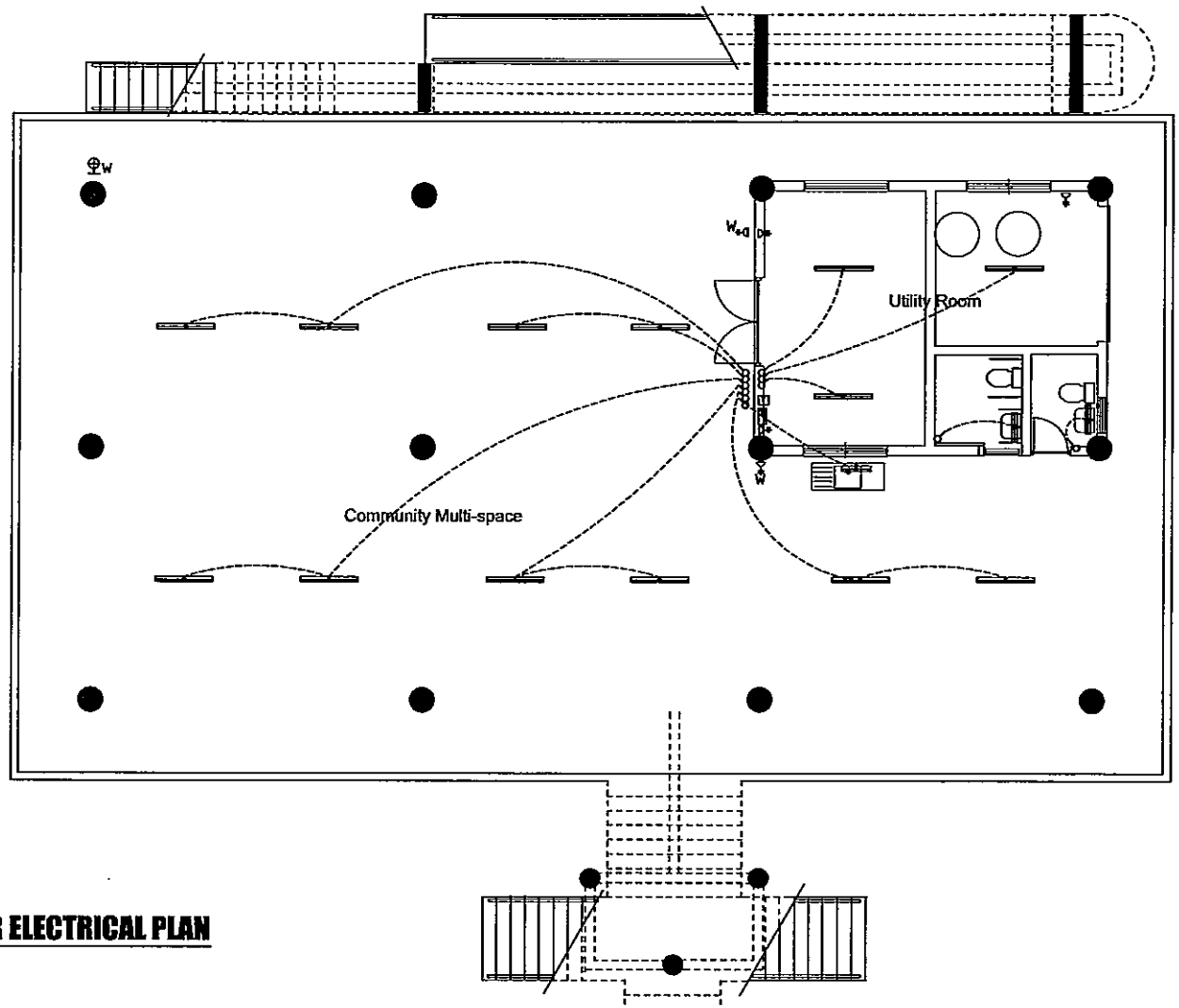
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO, LTD.
NIPPON KOEI CO, LTD.

	DESIGNED BY	CHECKED BY	APPROVED BY
NAME	T.Ogawa	T.Kobayashi	M.Kamiya
SIGNATURE			
DATE	22-05-05	22-05-05	22-05-05

DRAWING TITLE
ISLAND OFFICE
Single Line Program

SCALE	SHEET NO.	REV. NO.
1:25	I0-PV-03	



GROUND FLOOR ELECTRICAL PLAN

SCALE 1:100

ELECTRICAL LEGEND:

- EMERGENCY LIGHT ONE HOUR NON-MAINTAINED (WALL MOUNT)
- CEILING FAN
- EXHAUST FAN
- 1x13A SOCKET OUTLET (300/1000 FFL)
- 2x13A SOCKET OUTLET (300 FFL)
- 1x13A SOCKET OUTLET (2500 FFL)
- 1x15A AC SOCKET OUTLET (2500 FFL)
- 1x15A WATER HEATER SOCKET OUTLET (2500 FFL)
- FEEFER OUTLET (TV)
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED WEATHERPROOF
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M)
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M) WEATHERPROOF
- WALL MOUNT LIGHT (2.5M) WEATHERPROOF
- ONE WAY SWITCH
- 2- WAY SWITCH
- FAN REGULATOR
- TELEPHONE OUTLET
- PANEL BOARD
- DISTRIBUTION BOARD

NOTE : ALL ELECTRICAL WIRING SHALL BE INSTALLED IN THE CONDUIT PIPE AND EMBEDDED IN THE SLABS AND WALLS.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

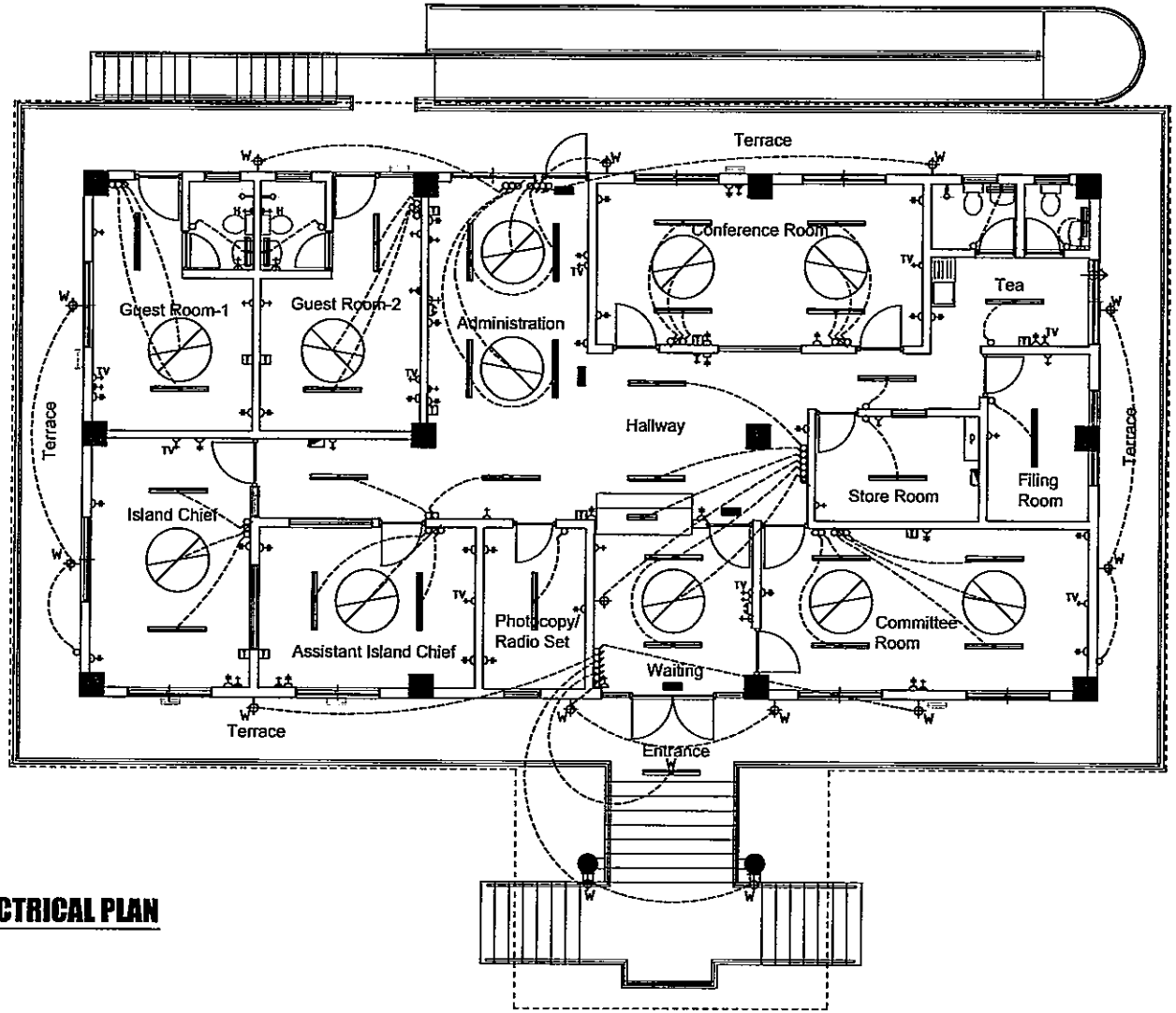
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	T. Ogawa	T. Ogawa	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Ground Floor Electrical Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	E-01	



1ST FLOOR ELECTRICAL PLAN

SCALE 1:100

ELECTRICAL LEGEND:

- EMERGENCY LIGHT ONE HOUR NON-MAINTAINED (WALL MOUNT)
- CEILING FAN
- EXHAUST FAN
- 1x13A SOCKET OUTLET (300/1000 FFL.)
- 2x13A SOCKET OUTLET (300 FFL.)
- 1x13A SOCKET OUTLET (2500 FFL.)
- 1x15A AC SOCKET OUTLET (2500 FFL.)
- 1x15A WATER HEATER SOCKET OUTLET (2500 FFL.)
- FEEFER OUTLET (TV)
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED WEATHERPROOF
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M)
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M) WEATHERPROOF
- WALL MOUNT LIGHT (2.5M) WEATHERPROOF
- ONE WAY SWITCH
- 2- WAY SWITCH
- FAN REGULATOR
- TELEPHONE OUTLET
- PANEL BOARD
- DISTRIBUTION BOARD
- AC. OUTDOOR UNIT
- SIGN BOARD FOR EMERGENCY ESCAPE

NOTE : ALL ELECTRICAL WIRING SHALL BE INSTALLED IN THE CONDUIT PIPE AND EMBEDDED IN THE SLABS AND WALLS.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

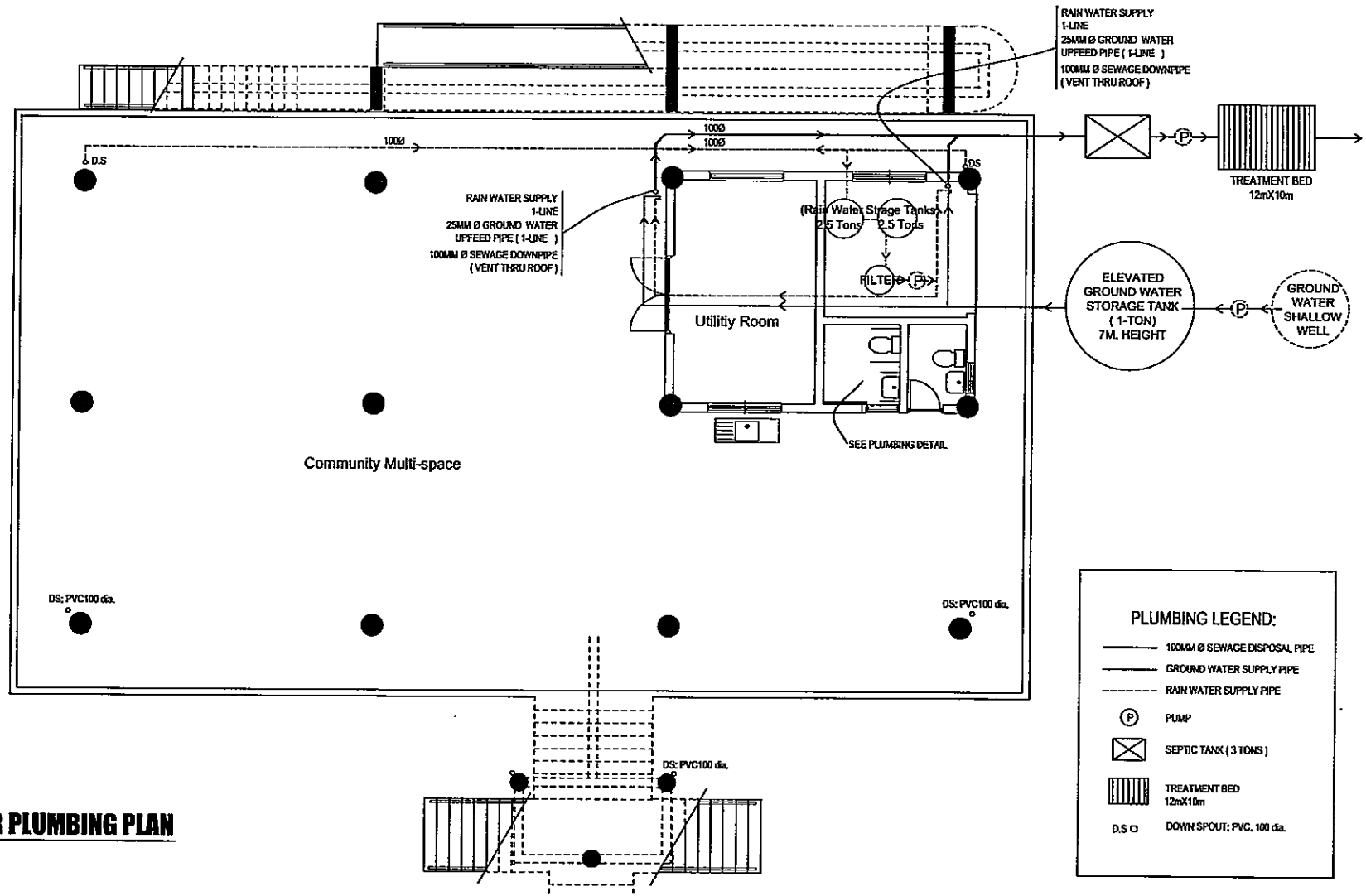
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YEC YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	T. Ogawa	T. Ogawa	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
1st Floor Electrical Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	E-02	



GROUND FLOOR PLUMBING PLAN

SCALE 1:100

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Steel stage for Elevated Water Storage Tank shall be designed and constructed, of which design shall be subject to the approval of the Engineer.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

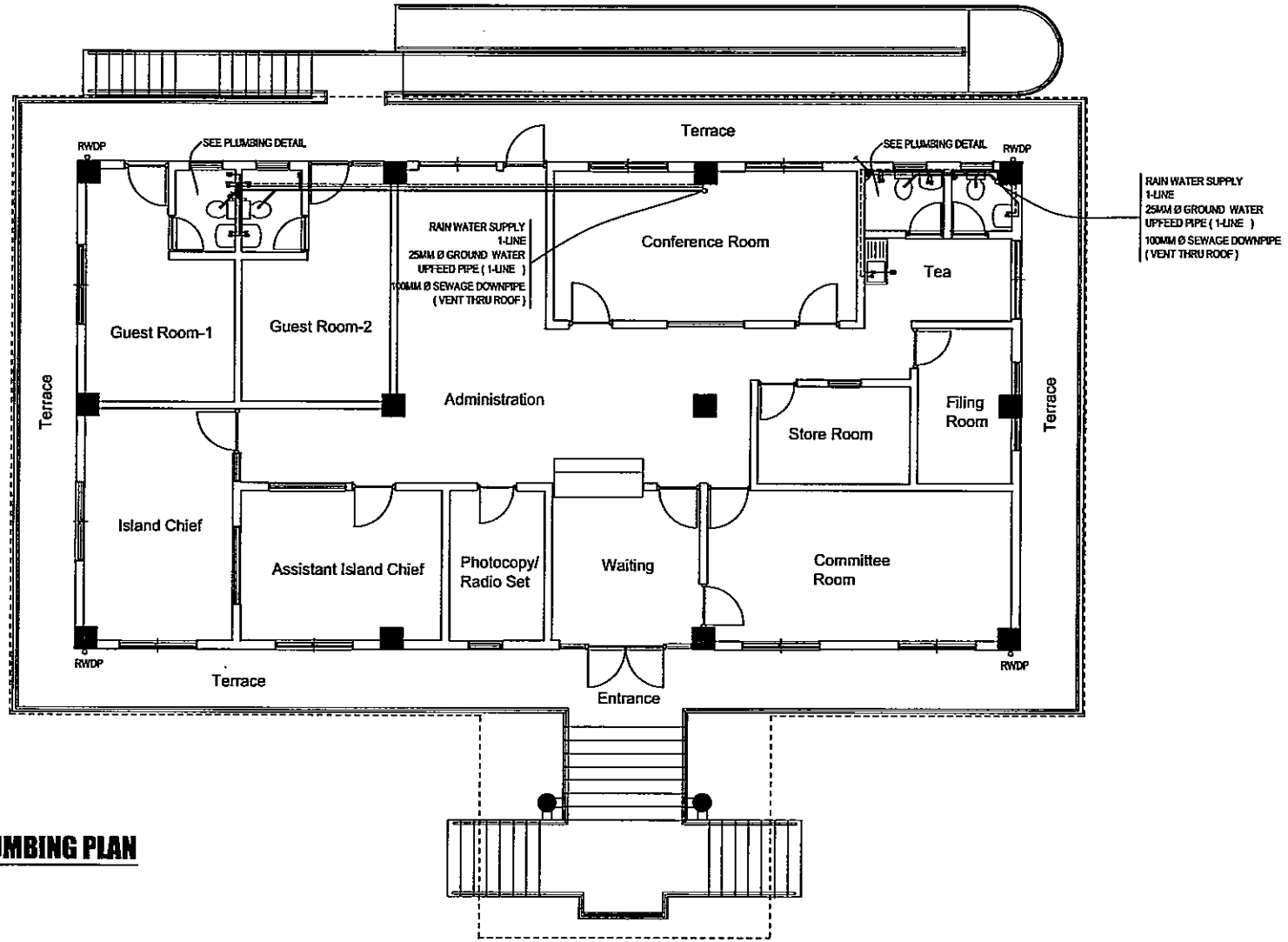
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE

Island Office
(Fonadhoo, Laamu Atoll)
Ground Floor Plumbing Plan

SCALE	SHEET NO.	REV. NO.
1 : 100	P-01	



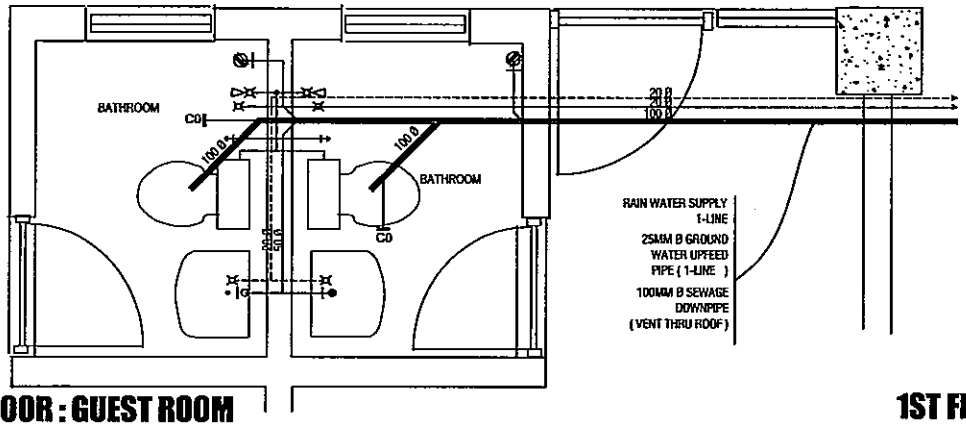
1ST FLOOR PLUMBING PLAN

SCALE 1:100

JICA JAPAN INTERNATIONAL COOPERATION AGENCY	NOTES:	THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES	
REPUBLIC OF MALDIVES MINISTRY OF FOREIGN AFFAIRS MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT		YACHIYO ENGINEERING CO.,LTD. NIPPON KOEI CO.,LTD.	DRAWING TITLE: Island Office (Fonadhoo, Laamu Atoll) 1st Floor Plumbing Plan

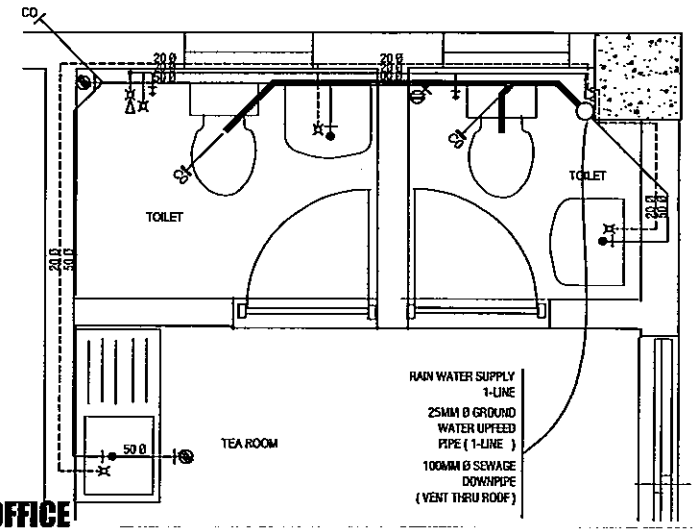
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

SCALE	SHEET NO.	REV. NO.
1 : 100	P-02	



1ST FLOOR : GUEST ROOM

SCALE 1:30



1ST FLOOR : OFFICE

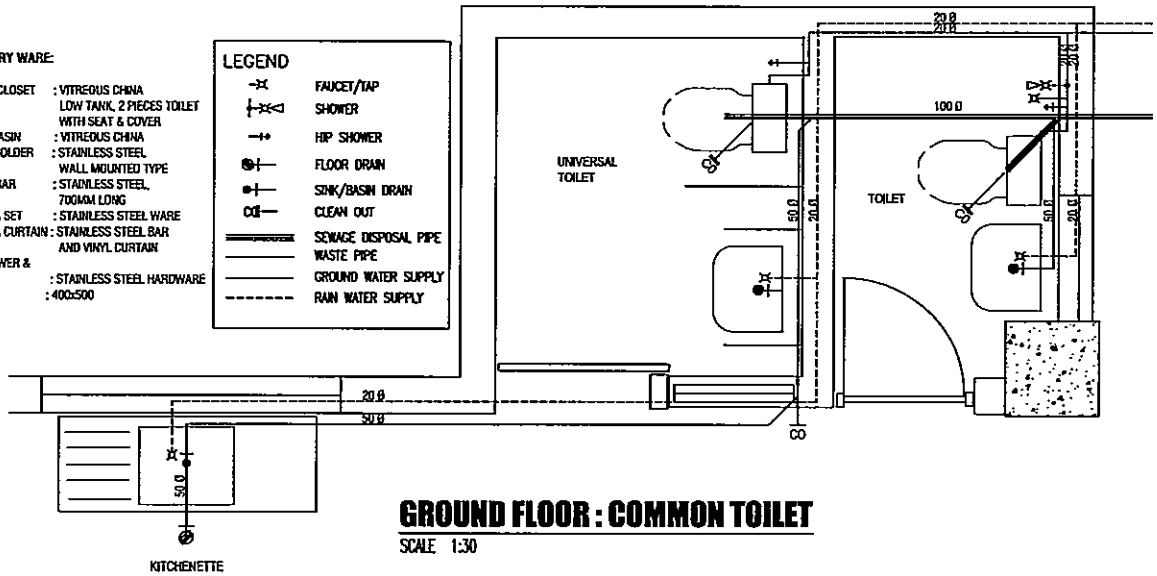
SCALE 1:30

SANITARY WARE:

WATER CLOSET	: VITREOUS CHINA LOW TANK, 2 PIECES TOILET WITH SEAT & COVER
WASH BASIN	: VITREOUS CHINA
PAPER HOLDER	: STAINLESS STEEL WALL MOUNTED TYPE
TOWEL BAR	: STAINLESS STEEL, 700MM LONG
SHOWER SET	: STAINLESS STEEL WARE
SHOWER CURTAIN	: STAINLESS STEEL BAR AND VINYL CURTAIN
HIP SHOWER & FAUCET	: STAINLESS STEEL HARDWARE
MIRROR	: 400x500

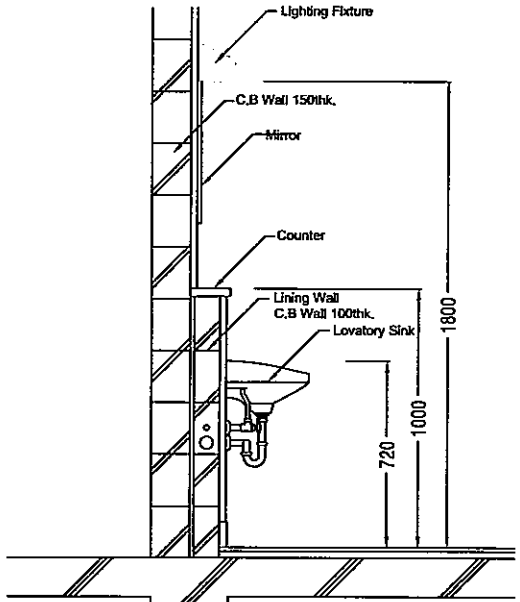
LEGEND

- FAUCET/TAP
- SHOWER
- HIP SHOWER
- FLOOR DRAIN
- SINK/BASIN DRAIN
- CLEAN OUT
- SEWAGE DISPOSAL PIPE
- WASTE PIPE
- GROUND WATER SUPPLY
- RAIN WATER SUPPLY



GROUND FLOOR : COMMON TOILET

SCALE 1:30



STANDARD HEIGHT OF SANITARY FIXTURES

SCALE 1:20

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Island Office
(Fonadhoo, Laamu Atoll)
Plumbing details

SCALE	SHEET NO.	REV. NO.
1 : 30	P-03	

THE PROJECT FOR CONSTRUCTION OF MULTI PURPOSE BUILDING AND ISLAND OFFICE
WITH SOLAR POWER SYSTEM IN LAAMU ATOLL IN MALDIVES

Volume-II Part-B Attachment

BUILDING DESIGN DRAWINGS FOR THE MULTI PURPOSE BUILDING

In Thundi, Gan Island, LAAMU ATOLL

Architectural Drawing

Dwg. No.	Title
A-01	Project Location and Layout Plan
A-02	Finish Schedule, Floor area & Abbreviation
A-03	Ground Floor Plan
A-04	1st Floor Plan
A-05	Roof Plan
A-06	Front & Rear Elevations
A-07	Side Elevations
A-08	Sectional Detail
A-09	Miscellaneous Detail
A-10	Doors & Windows Schedules
A-11	Details of Toilets (1st Floor)
A-12	Stair & Handrails Details
A-13	Sunshade & Window Details
A-14	Ceiling Plan-1st Floor

Structural Drawing

Dwg. No.	Title
S-00	Bar Arrangement / Standard Specification
S-01	Foundation Plan / 1st Floor PLan
S-02	1st Floor Beam Plan
S-03	Roof Beam PLan
S-04	Roof Top Beam Plan
S-05	Framing Elevation Y1/Y2
S-06	Framing Elevation Y3/Y4
S-07	Framing Elevation Y5
S-08	Framing Elevation X1/X2/X3
S-09	Framing Elevation X4/X5
S-10	Framing Elevation X6/X7/X8/X9
S-11	Bar Arrangement of the Foundation/Slab/Stair/Wall etc
S-12	Bar arrangement of the Column/Beam
S-13	Roof Truss Arrangement Plan
S-14	Roof Purlin Plan
S-15	Roof Truss Section Detail
S-16	Roof Truss Joint Detail

Solar Modules Drawing

Dwg. No.	Title
PV-01	Solar Modules Arrangement Plan
PV-02	Solar Modules Equipment PLan
PV-03	Single Diagram

Electric and Plumbing Drawing

Dwg. No.	Title
E-01	Electricity Layout Plan ; Ground Floor
E-02	Electricity Layout Plan
P-01	Plumbing Layout Plan ; Ground Floor
P-02	Plumbing Layout Plan ; 1st Floor
P-03	Plumbing Details-1
P-04	Plumbing Details-2
P-05	Plumbing Details-3

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

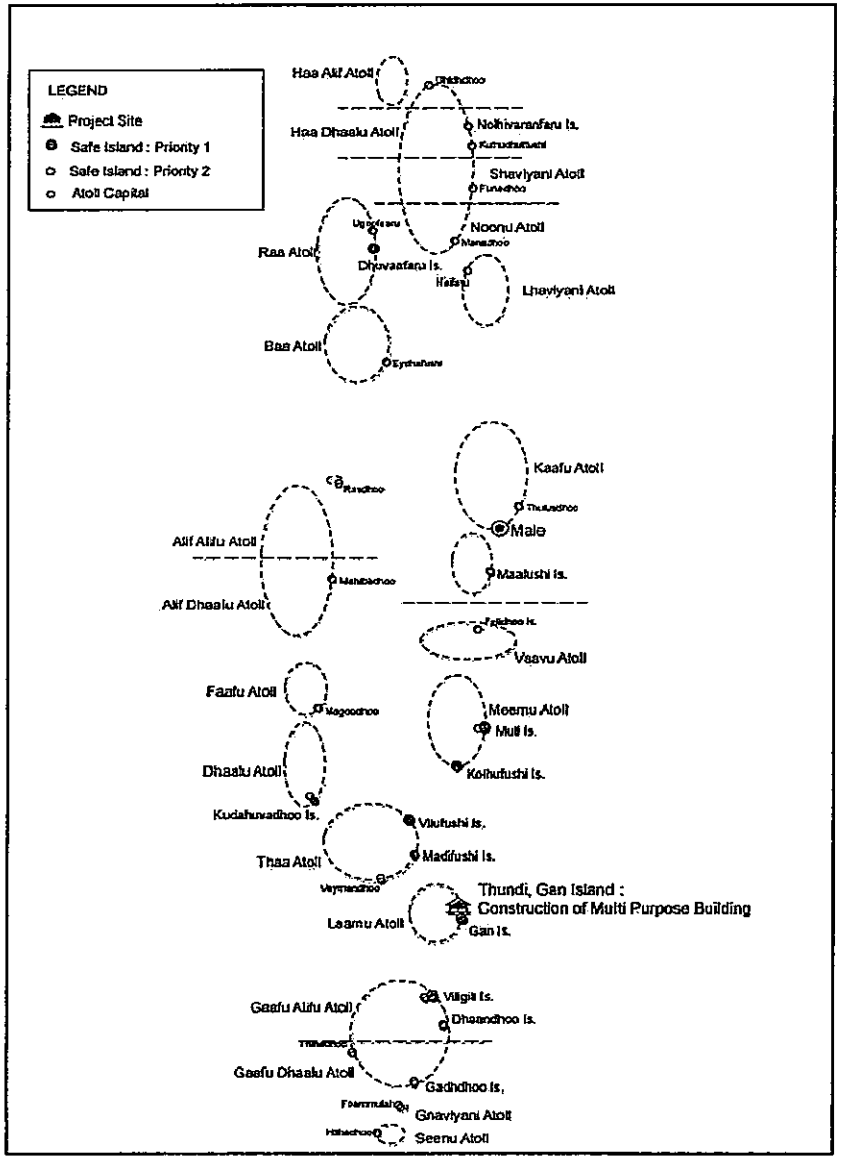
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

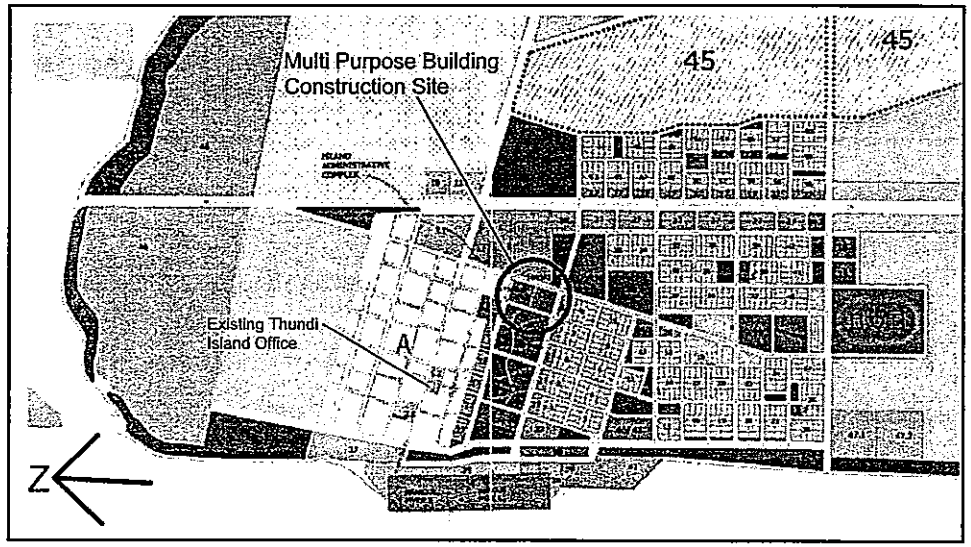
DRAWING TITLE
Multi Purpose Building
(Thundi, Gan Island, Laamu Atoll)
Drawing List

SCALE	SHEET NO.	REV. NO.
Not to Scale		

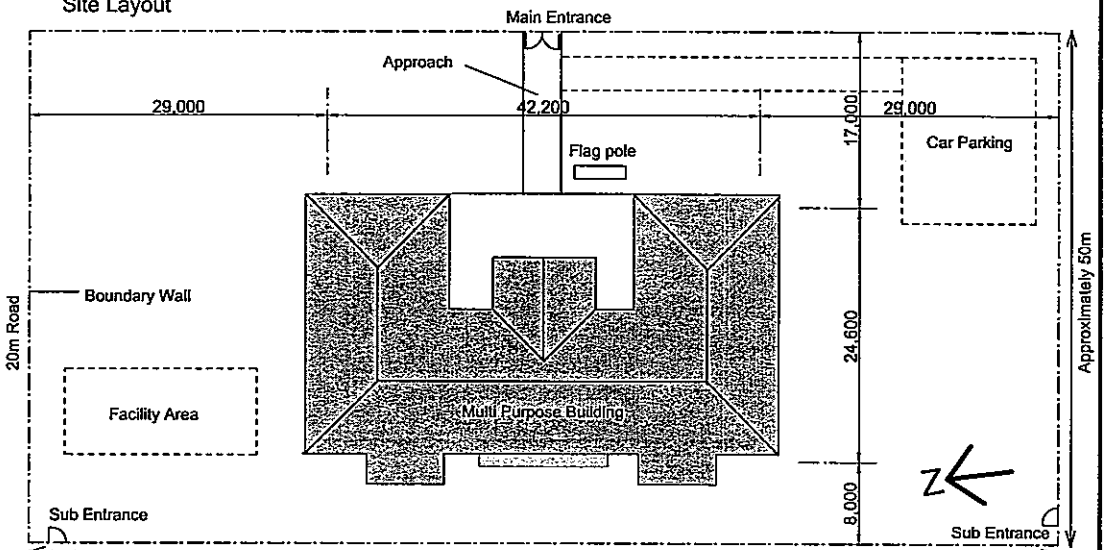
Project Location Map - 1 : National



Project Location Map - 2 : Gan Island



Site Layout



Note; Final location shall be decided at site.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:
* Site clearance, grading and access road construction shall be done by the Contractor.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Project Location and Layout Plan

SCALE	SHEET NO.	REV. NO.
Not to Scale	A-01	

External Works

Boundary Wall : Along the whole perimeter line (Length of wall is shown on the site layout)
Concrete block with cement sand plaster, sprayed texture paint finish, wall height = 1,500
Provide 1 main gate and 2 sub-gates; constructed by stainless steel pipe with padlocks.
Facility nameplate on the wall; stainless steel 300 x 500, described by Dhivehi and English, painted by silkscreen (refer to miscellaneous detail)

Landscaping : Approach; hard surface pavement (inter-locking block) width=3,000, other area: Natural sandy finishes.

Tree plantation, 6 young coconut trees and 4 young broadleaf trees (planting location and kind of species to be instructed on site)

Flag Pole : Stainless steel pipe, concrete foundation 1,000 x 3,000 x 700 depth, Pole height = 6,000, 3 sets

Nameplate : Stainless steel nameplate 200 x 400, described by Dhivehi and English, painted by silkscreen
For [Island Office] [Island Court] [Police Office] [Post Office] [Banking Booth] [Community Hall]

External Finish

Roofing : Colourbond profile roofing metal sheet (per sample approval), Sunshade: corrugated glass fiber reinforced sheet.
Soler Cell foundation see Sht. No. A-05.

Eaves Ceiling: Waterproof ceiling board, partially ventilation hole, with V.P.

Fascia : Timber fascia 30 x 250 (upper and lower) with O.P.
(Fascia at entrance canopy: timber with oil paint)

Rain gutter : P.V.C. rain gutter with chamber and Downspout 100dia.

Canopy ceiling : Waterproof ceiling board with V.P.

Wall : Textured spray paint on cement sand plaster (per sample approval)

Skirting : Same as wall finish but dark colour paint
height = 300

Barm : Coloured interlocking block 80thk.

Terrace/Stair : Porcelain floor tile 300 x 300, non-slip surface

Slope : Mortar troweled finish with non-slip groove 5mm depth @30, Underside; Exposed natural concrete.

Internal Finish

Floor	Room	Location	Finishing
Ground Floor	Utility Room Store Room	Floor	Mortar troweled finish, Slab on-grade: 100 thk., Foundation for Water Tanks.
		Skirting	Nil
		Wall	Cement sand plaster 25 thk.
		Ceiling	Exposed natural concrete
	Toilet, Handicapped Toilet	Floor	Porcelain tile 200 x 200
		Skirting	Nil
		Wall	Ceramic tile 200 x 200
		Ceiling	Waterproof ceiling board 6 thk. Ceiling height 2,800
	Reception / Security	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.1set of Reception Counter
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 2,500
	Community Multi-space	Floor	Coloured interlocking block 150 x 250 x 80thk. (design pattern to be required)
		Skirting	-
		Wall	-
		Ceiling	Exposed Natural Concrete
1st Floor	Island Office (Island Chief, Assist, Island Chiefs, Administration, Meeting Room, Committee Room, Investigation Room, Communication Room, Sock Room, Tea Room, Sore & Equipment Room)	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Height 3,400 (Store & Equipment room : without ceiling)
	Island Court (Senior Magistrate's Room, Magistrate's Room, Senior Staff Room, Investigation Room, Meeting Room, Stock Room, Equipment's Room, Reception & Counter Area, Tea Room)	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 3,400
	Police Office (Office, Investigation Room, Reception, Store Room, Tea Room Cell-1, Cell-2)	Floor	Porcelain tile 300 x 300 (Cell-1 &2 : Mortar troweled finish)
		Skirting	Ceramic tile, height 100 (Cell-1 &2:cement sand plaster H100, 25 thk. with E.P.)
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 3,350 (Cell-1 & 2 : RC Slab 150 thk. w/E.P.)
	Post Office (Mail Operation Room, Office, Reception, Tea Room)	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. Ceiling height 3,400
	Banking Booth (Back Room, Chief Officer's Room, Front Room, Tea Room, Strong Room/Record Room)	Floor	Porcelain tile 300 x 300
		Skirting	Ceramic tile, height 100
		Wall	Cement sand plaster 25 thk. with E.P.
		Ceiling	Gypsum ceiling board 12 thk. H=3,300 (Strong Room: R.C Slab 200 thk.)
	Toilet Bath Room (Common)	Floor	Porcelain tile 200 x 200
		Skirting	Nil
		Wall	Ceramic tile 200 x 200
		Ceiling	Waterproof ceiling board, Ceiling height 2,800 V.P
Common	Nameplate	Room name : Stainless steel nameplate 200 x 400, English and Dhivehi, painted by silkscreen, at beside of each entrance door Toilet sign : Plastic nameplate 100 x 200, pictogram sign for Gent. and Lady	

Miscellaneous

FLOOR AREA

(sqm)

Ground Floor

Reception / Security	25.7
Utility/Store room	74.2
Toilet	37.1
Community Multi-space	535.0
(Sub total	672.0)
Circulation (stairs and slope)	42.5
Total	714.5

Total of Ground and 1st Floor 1,484.7 sqm.

1st Floor

Island Office

Island chief room	15.9
Assistant island chief	21.2
Investigation room	12.6
Meeting room	24.5
IDC/WDC committee	17.9
Administration	25.2
Communication room	8.1
Stock room	8.1
Store room & Equip.	23.1
Tea room	8.1
Toilet	4.5
Reception area	18.9
Hallway	12.2
Corridor	22.3
Total	222.6

Island Court

Senior Magistrate	15.6
Magistrate office	12.7
Senior staff office	25.9
Reception area	7.3
Investigation room	11.7
Meeting room	21.7
Equipment room	10.3
Stock room	7.5
Tea room	8.2
Toilet	7.4
Corridor	14.9
Total	143.2

Community Facility

Community hall	27.3

Police Office

Reception	9.6
Office	14.1
Investigation room	8.0
Cell-1	5.4
Cell-2	5.4
Store room	6.1
Tea room	6.1
Toilet	5.3
Corridor	6.1
Total	66.1

Post Office

Mail operation room	18.0
Office	20.7
Reception	6.5
Tea room	6.3
Toilet	3.3
Total	54.8

Banking Booth

Front room	6.6
Back room	11.4
Chief Officer's room	9.2
Tea room	4.8
Toilet	3.3
Total	44.5

Circulation

Open corridor & terrace	169.2
Stairs & slope	42.5
Total	211.7

Total of 1st Floor 770.2

Abbreviations

@ : at
AW: Aluminum Window
AD: Aluminum Door
C.H: Ceiling Height
DN: Down
DS: Downspout
EP: Emulsion Paint (or AEP: Acrylic Emulsion Paint)
FL: Floor Finished Line
GL: Ground Line
IDC: Island Development Committee
O.P: Oil Paint
PVC: Polyvinyl Chloride
RBL: Roof Beam Level
SD: Steel Door
SS: Stainless Steel
sqm: Square Meter
SR: Steel Rolling Door
thic: Thickness
V.P: Vinyl Paint
w/: with
WD: Wooden Door
WDC: Women's Development Committee

Notes)
1. For general notes, see Technical Specifications in the Tender Documents.
2. Dimention shown on the whole Drawings are in millimeter of the metric system.

NOTES:
Service area of established offices in Multi-purpose Building

	Service Area
Island Office	Thundi and resettlement community
Island Court	Whole Gan (Thundi, Mathimaradhoo, Mukurimagu)
Police Office	4 Islands (Gan, Maandhoo, Kaddhoo, Fonadhoo)
Post Office	4 Islands (Gan, Maandhoo, Kaddhoo, Fonadhoo)
Banking Booth	4 Islands (Gan, Maandhoo, Kaddhoo, Fonadhoo)
Community Hall	4 Islands (Gan, Maandhoo, Kaddhoo, Fonadhoo)

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

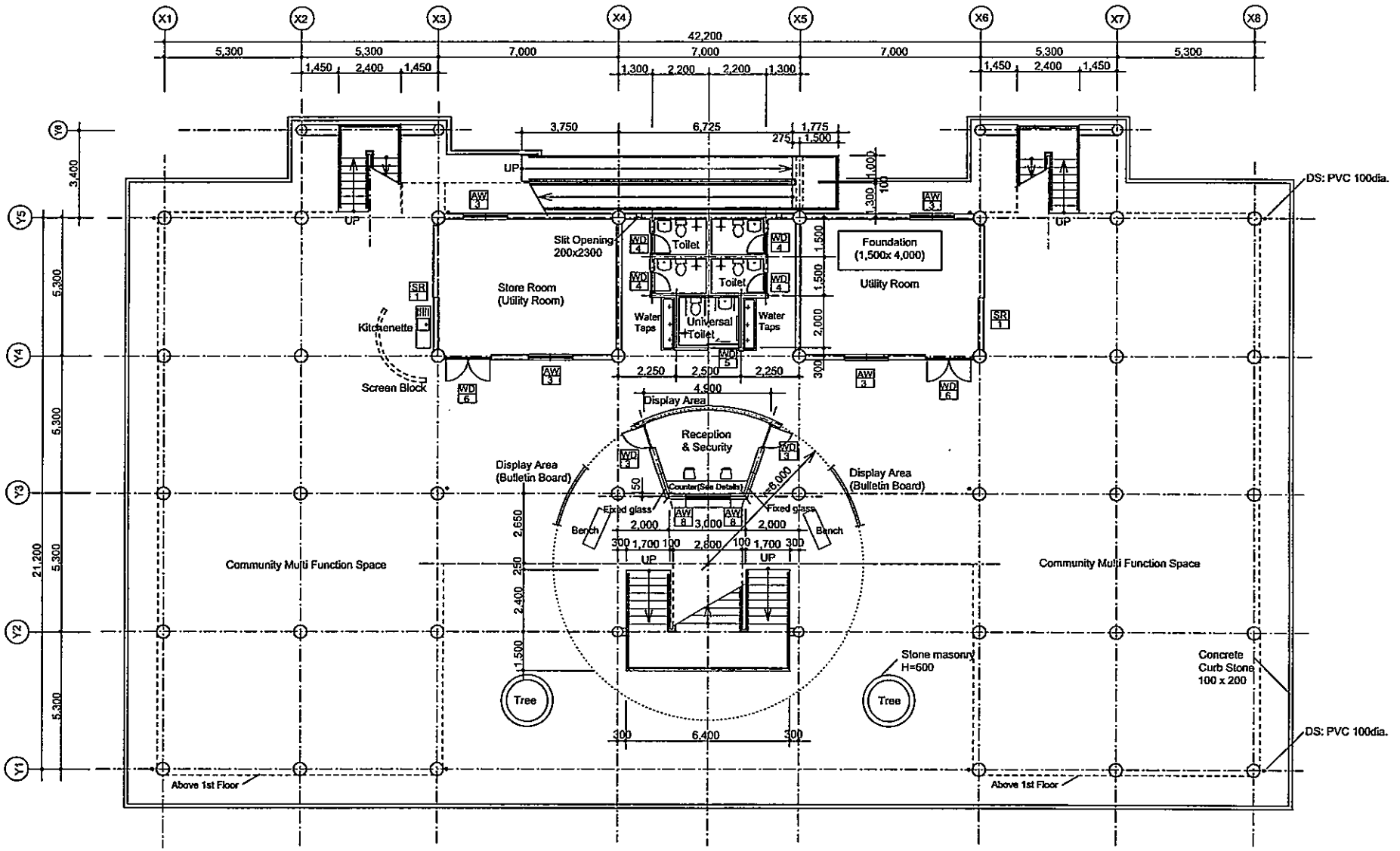
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Finish Schedule, Floor Area & Abbreviations

SCALE	SHEET NO.	REV. NO.
Not to Scale	A-02	



JICA JAPAN INTERNATIONAL COOPERATION AGENCY REPUBLIC OF MALDIVES MINISTRY OF FOREIGN AFFAIRS MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT	NOTES:	THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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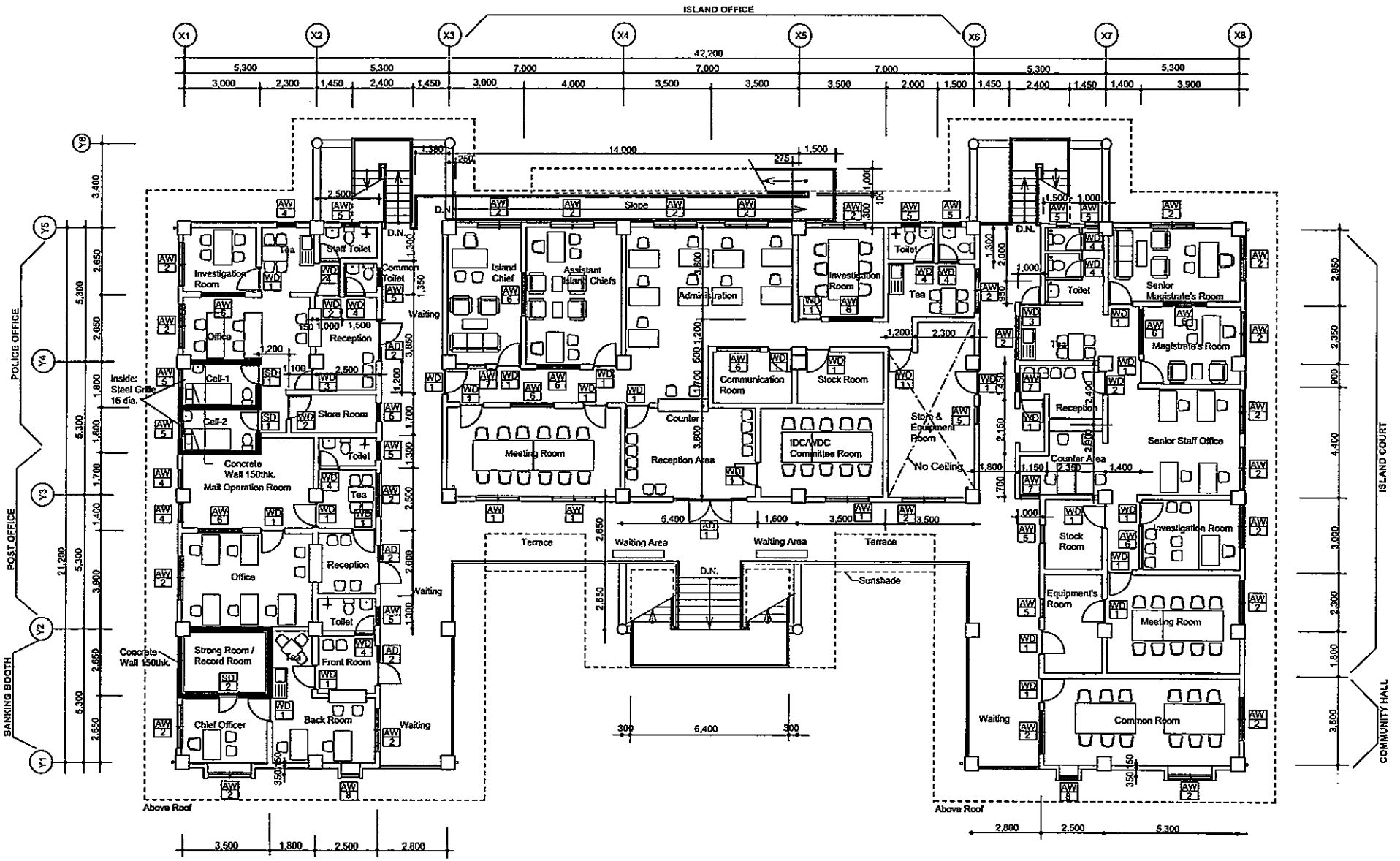
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Ground Floor Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	A-03	



JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* The furniture shown on the Dwg shall be tentative only, for which final number and type shall be determined by the Engineer on site.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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NIPPON KOEI CO.,LTD.

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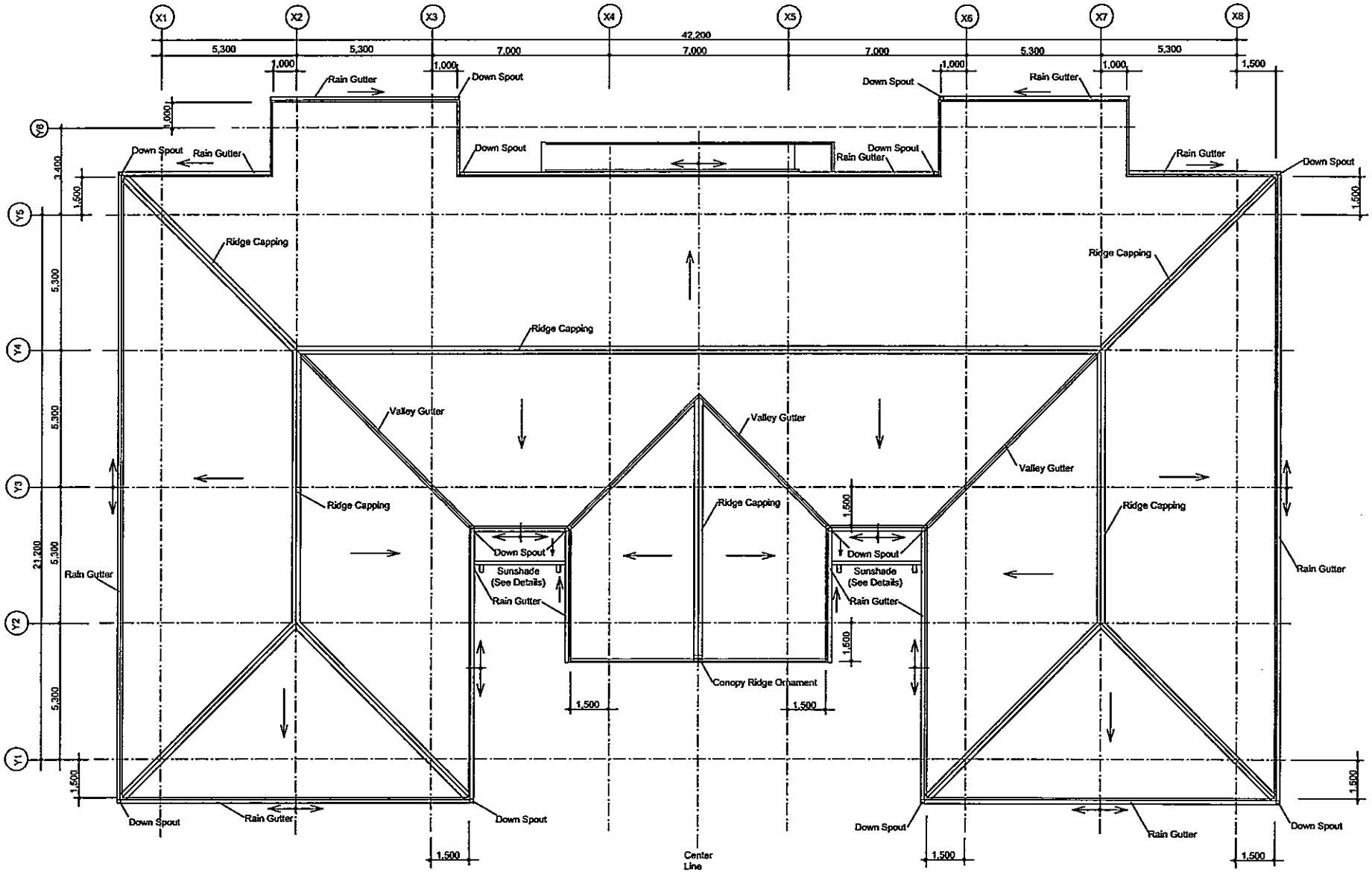
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
1st Floor Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	A-04	



JAPAN INTERNATIONAL COOPERATION AGENCY

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MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Foundations for Solar Cells shall be provided on the roof as required by the Solar system Docu.
All portions penetrate through roofing shall be sealed to completely watertight.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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SIGNATURE			
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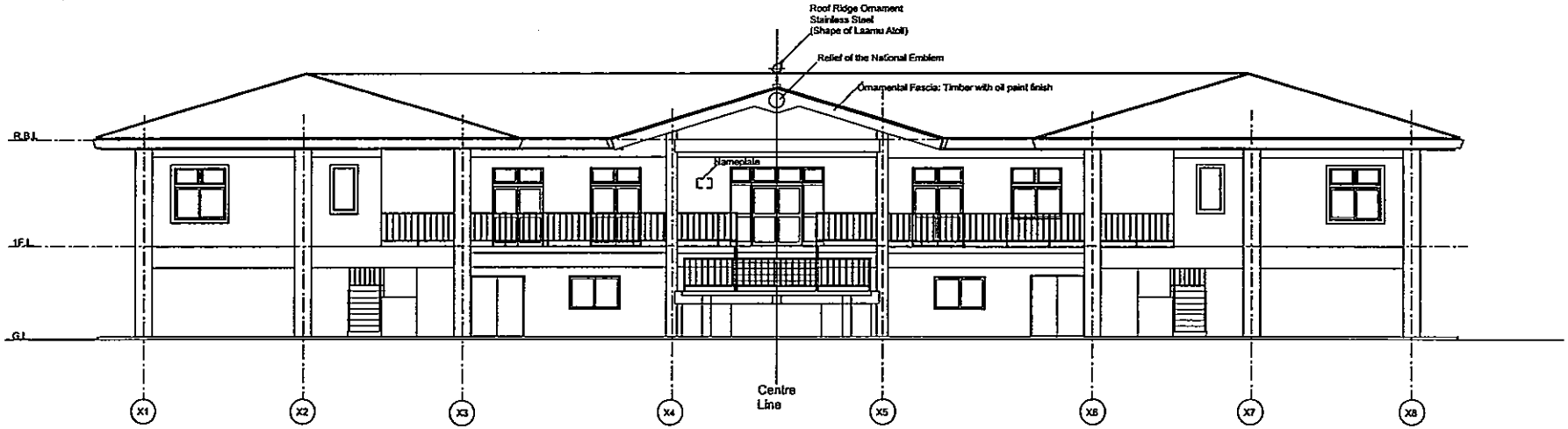
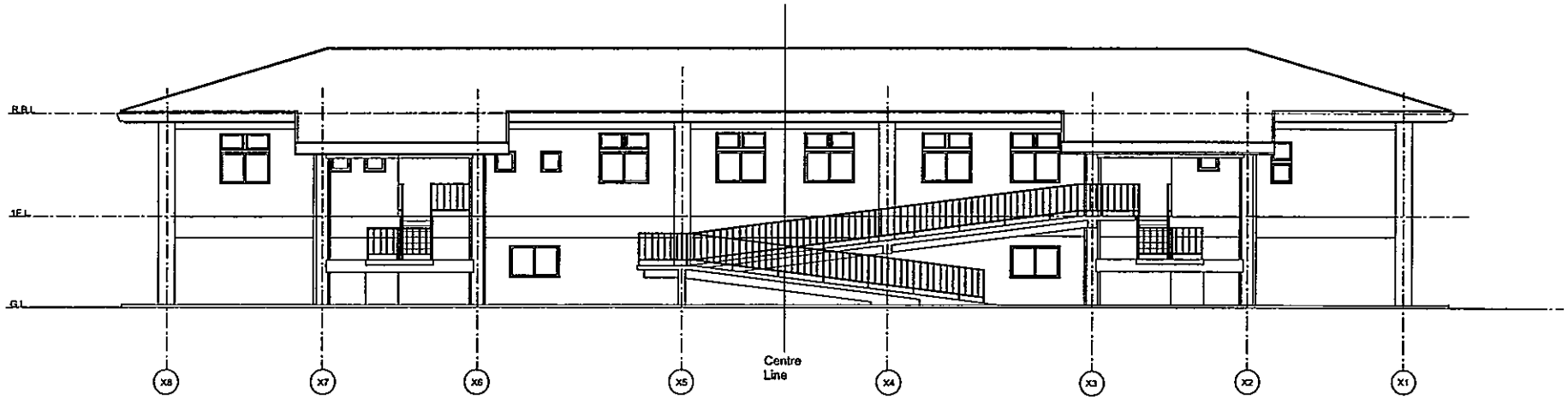
DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Roof Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	A-05	



Front Elevation



Rear Elevation

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
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SIGNATURE			
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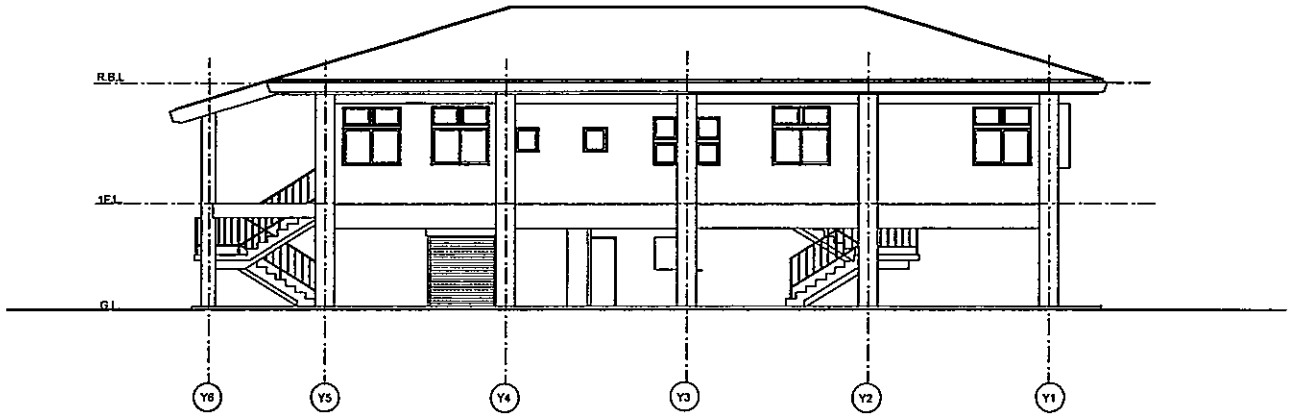
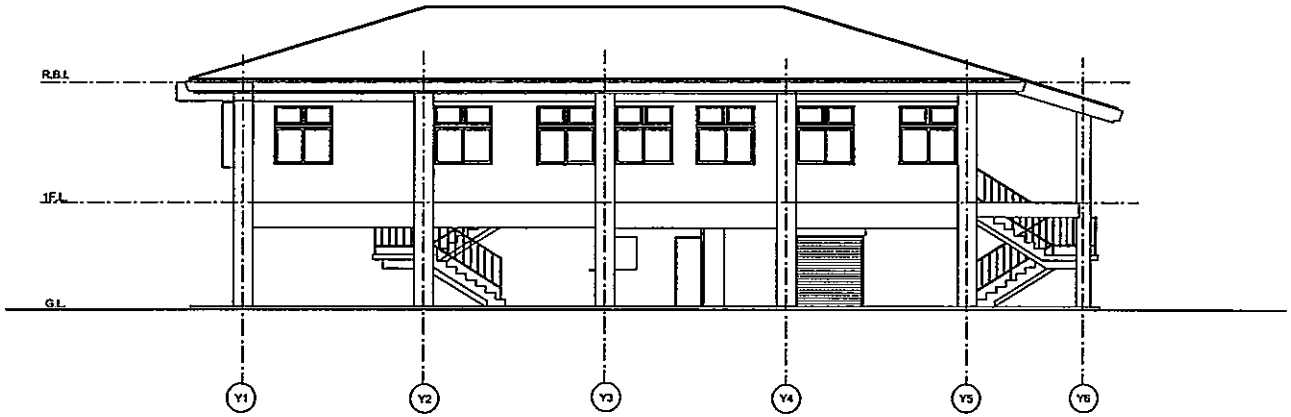
DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Front & Rear Elevations

SCALE	SHEET NO.	REV. NO.
1 : 150	A-06	



Left Side Elevation



Right Side Elevation

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

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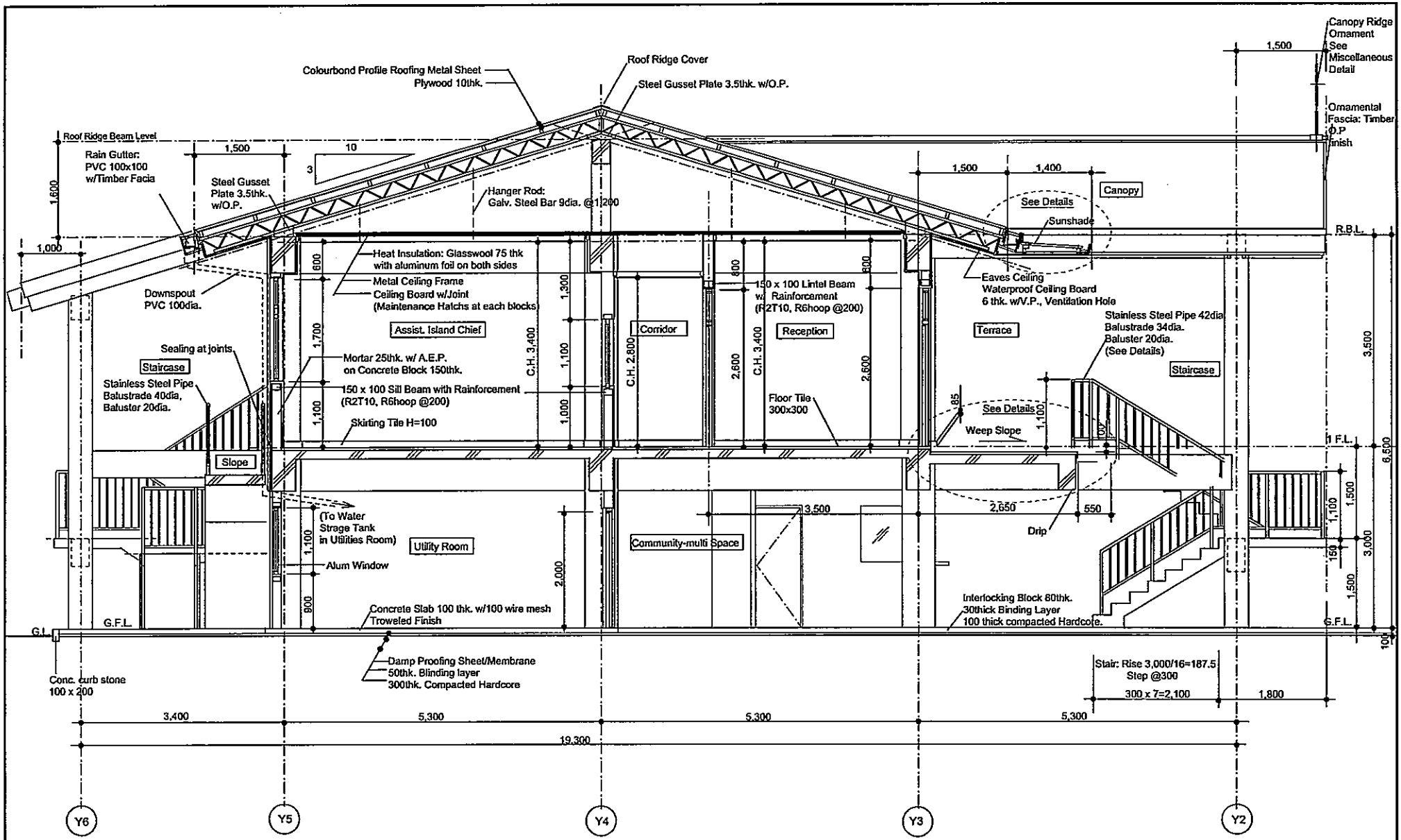
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Side Elevations

SCALE	SHEET NO.	REV. NO.
1 : 150	A-07	



JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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NIPPON KOEI CO.,LTD.

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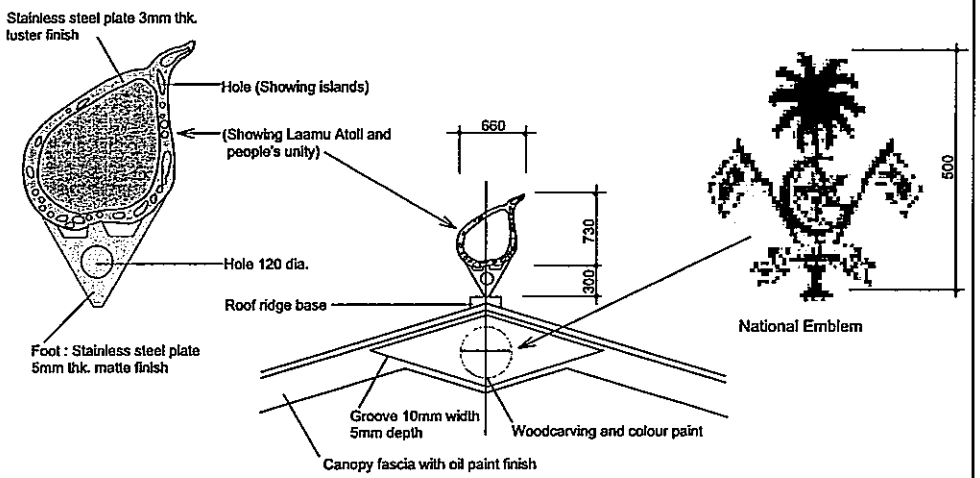
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Sectional Details

SCALE	SHEET NO.	REV. NO.
1 : 60	A-08	



Detail of Ornamental Fascia at Entrance Canopy Scale 1 : 50

<Sample Drawing>

From the People of Japan

- Dhivehi-

ISLAND ADMINISTRATION COMPLEX

- Thundi Island Office
- Gan Island Court
- Police Office
- Post Office
- Banking Booth
- Community Hall

Gan
Maandhoo
Kaddhoo
Fonadhoo

- Dhivehi-

Nameplate at Main Gate :
Stainless steel plate 300 x 500, 2mm thk.
Printed by silk screen

* Required final confirmation for each description

Scale 1 : 5

<Sample Drawing>

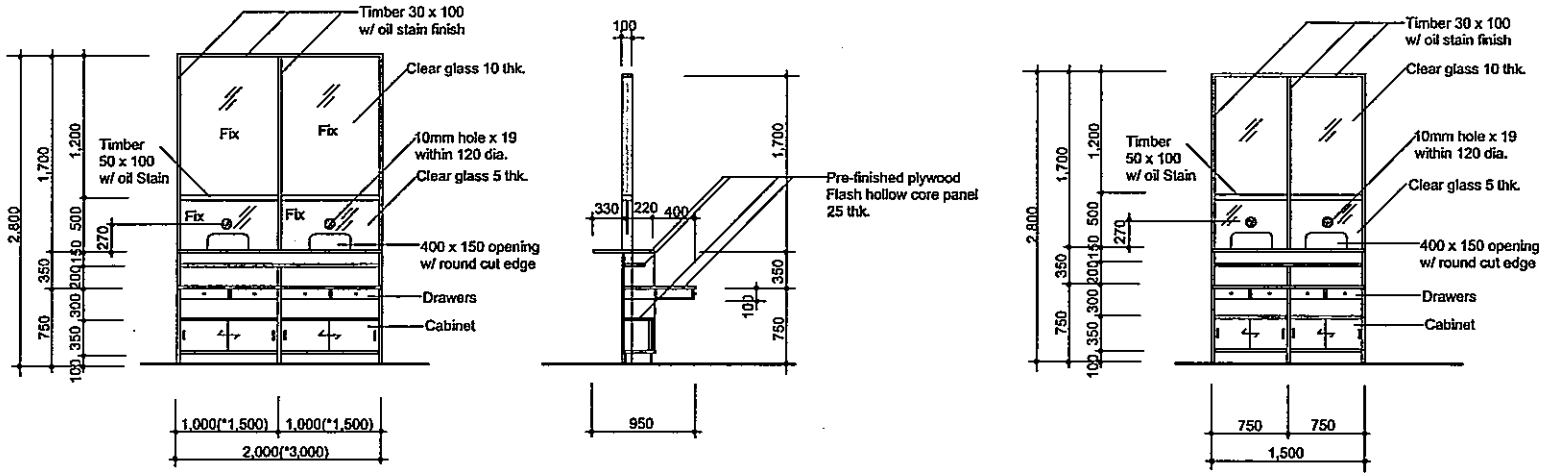
- Dhivehi-

THUNDI ISLAND OFFICE

Nameplate at Each Office :
Stainless steel plate 200 x 400, 2mm thk.
Printed by silk screen

* Required final confirmation for each description

Scale 1 : 5



Reception Counter Detail Scale 1 : 50

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REPUBLIC OF MALDIVES
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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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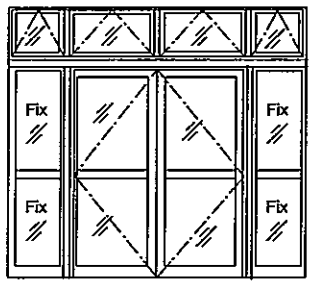
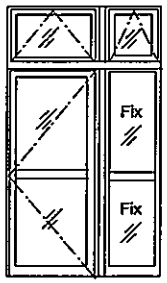
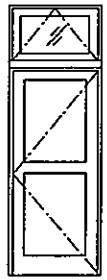
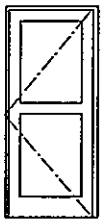
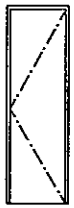
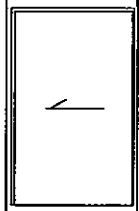
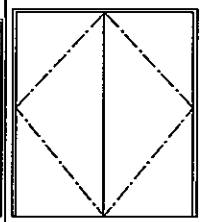
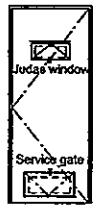
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

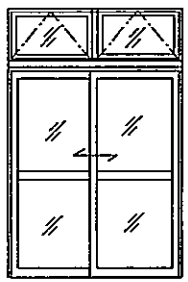
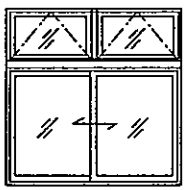
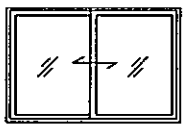
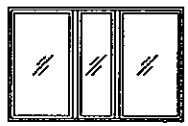
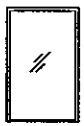
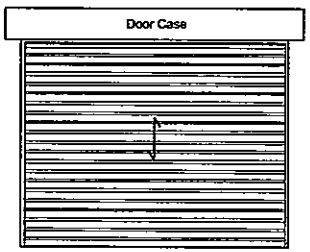
DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Miscellaneous Details

SCALE	SHEET NO.	REV. NO.
1 : 5, 50 & NTS	A-09	

Door

	AD-1	AD-2	WD-1	WD-2	WD-3	WD-4	WD-5	WD-6	SD-1	SD-2
Type	Double swing casement alminum door with transom and side window	Single swing casement alminum door with transom and side window	Single sing wooden casement door with Transom	Single sing wooden casement door Oil stain finish	Single sing wooden casement door Oil stain finish	Single sing wooden flash door, Hollow core, Oil paint finish	Slide wooden flash door, Hollow core Oil paint finish	Double swing wooden flash door, Hollow core Oil paint finish	Single swing steel door with judas window and service gate Oil paint finish	Single swing steel flush door, Inside : heat insulation Oil paint finish
Size	W-2,900 x H-2,600 (Door: 1,700 x 2,000) (Transom: 2,900 x 500) (Side window: 600 x 2,000 both side)	W-1,500 x H-2,600 (Door: 900 x 2,000) (Transom: 1,500 x 500) (Side window: 600 x 2,000 both side)	W-900 x H-2,600 (Door: 900 x 2,000) (Transom: 900 x 500)	W-900 x H-2,030	W-800 x H-2,030	W-600 x H-1,900	W-1,200 x H-1,900	W-1,800 x H-2,000	W-800 x H-1,900	W-800 x H-1,900
Fittings	- 6 sets of hinge (6 locations) - 2 sets of door handle - 1 set of cylinder lock - 4 sets of lever lock (transom) - 1 set of dead bolt - 2 sets of door closer - Smoke coloured glass 5mm thk. (door), 3mm thk. (window)	- 3 sets of hinges - 1 set of door handle - 1 set of cylinder lock - 2 sets of lever lock (transom) - 1 set of door closer - Smoke coloured glass 5mm thk. (door) 3mm thk. (window)	- 3 sets of hinges - 1 set of door handle - 1 set of tumbler lock - 1 set of lever lock - 1 set of door closer - Smoke-coloured glass 3mm thk.	- 3 sets of hinges - 1 set of door handle - 1 set of tumbler lock - 1 set of door closer	- 3 sets of hinges - 1 set of door handle - 1 set of tumbler key - 1 set of door closer	- 2 sets of hinges - 1 set of door handle - 1 set of toilet lock	- 1 set of hanger rail and accessories - 1 set of door handle - 1 set of slide-door lock	- 6 sets of hinge (6 locations) - 2 sets of door handle - 1 set of cylinder lock - 1 set of dead bolt - 2 sets of door closer	- 4 sets of hinges - 1 set of door handle - 1 set of tumbler lock - Judas window with cover and stop hook - Service gate with cover and stop hook	- 4 sets of hinges - 1 set of door handle - 1 set of safety vault lock
										

Window

	AW-1	AW-2	AW-3	AW-4	AW-5	AW-6	AW-7	AW-8	SR-1
Type	Sliding aluminum window with transom	Sliding aluminum window with transom	Sliding aluminum window	Double aluminum awning window	Single aluminum awning window	Fixed aluminum window	Fixed aluminum window	Fixed aluminum window	Steel rolling door
Size	W-1,700 x H-2,600 (Window: 1,700 x 2,000) (Transom: 1,700 x 500)	W-1,700 x H-1,700 (Window: 1,700 x 2,000) (Transom: 1,700 x 500)	W-1,700 x H-1,100	W-700 x H-1,700	W-500 x H-500	W-1,700 x H-1,100	W-700 x H-1,100	W-700 x H-1,400 (*W-700 x H-1,700)	W-2,600 x H-2,000
Fittings	- 1 set of crescent lock - 2 sets of lever lock (transom) - Smoke-coloured glass 5mm thk. (window), 3mm thk. (transom)	- 1 set of crescent lock - 2 sets of lever lock (transom) - Smoke-coloured glass, 5mm thk. (window), 3mm thk. (transom)	- 1 set of crescent lock - Smoke-coloured glass 5mm thk.	- 2 sets of sliding stay - 2 sets of lever lock - Smoke-coloured glass, 3mm thk.	- 1 set of sliding stay - 1 set of lever lock - Smoke-coloured glass, 3mm thk.	- Smoke-coloured glass 5mm thk.	- Smoke-coloured glass 5mm thk.	- Smoke-coloured glass 5mm thk.	- Door case - Shutter lock - Hook stick for draw out shutter - Guide rail - Bottom bar
								 (* For Reception & Security)	

2 units

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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NOTES:
* All dimensions shall be checked on site prior to fabrication
* For the direction of door swing, refer to floor plans.
* Provide lintel and sill to all openings.

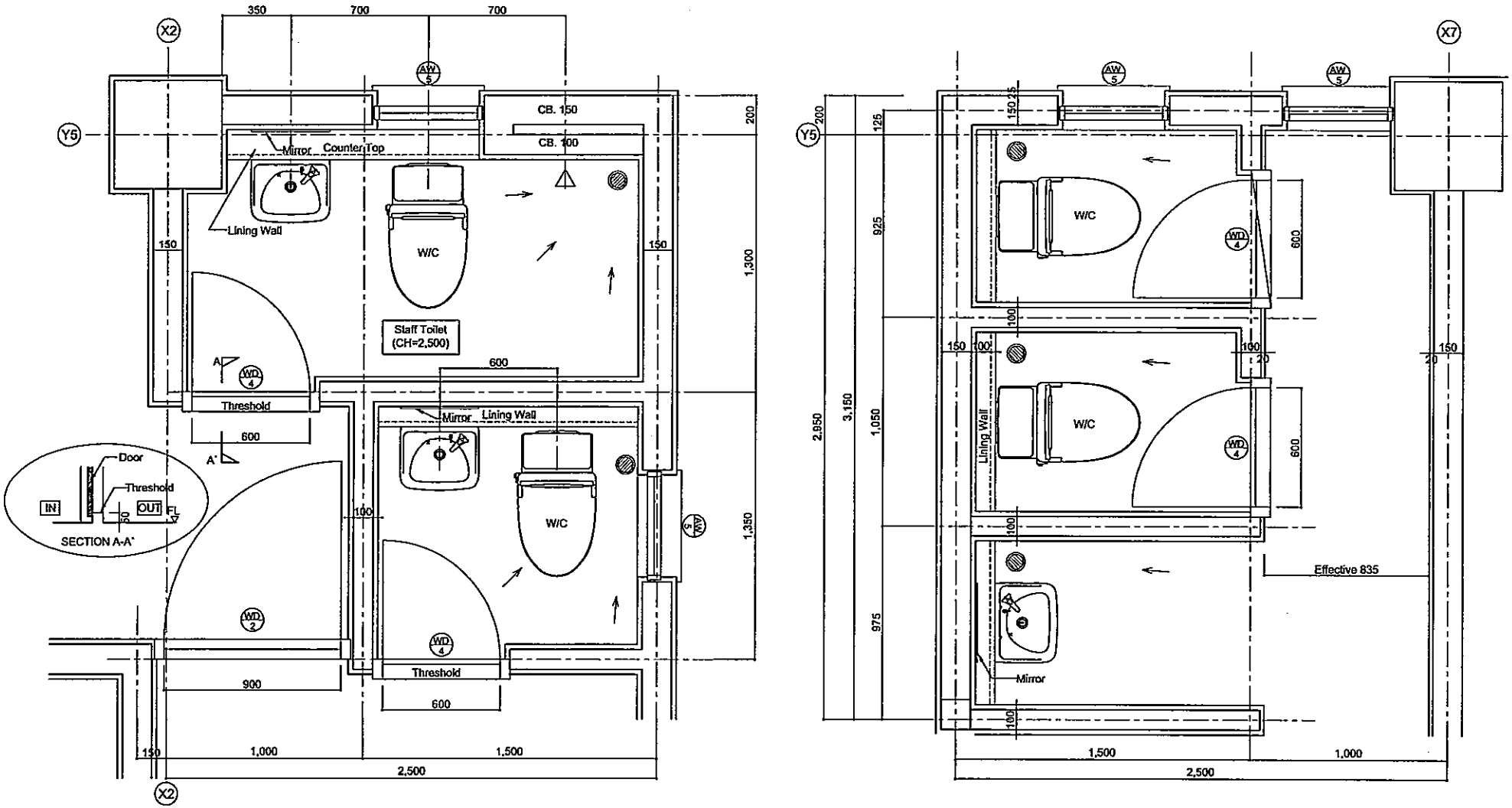
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Door and Window Schedules

SCALE	SHEET NO.	REV. NO.
Not to Scale	A-10	



FLOOR PLAN (TOILET ON THE 1st FLOOR S=1:20

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
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NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

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NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
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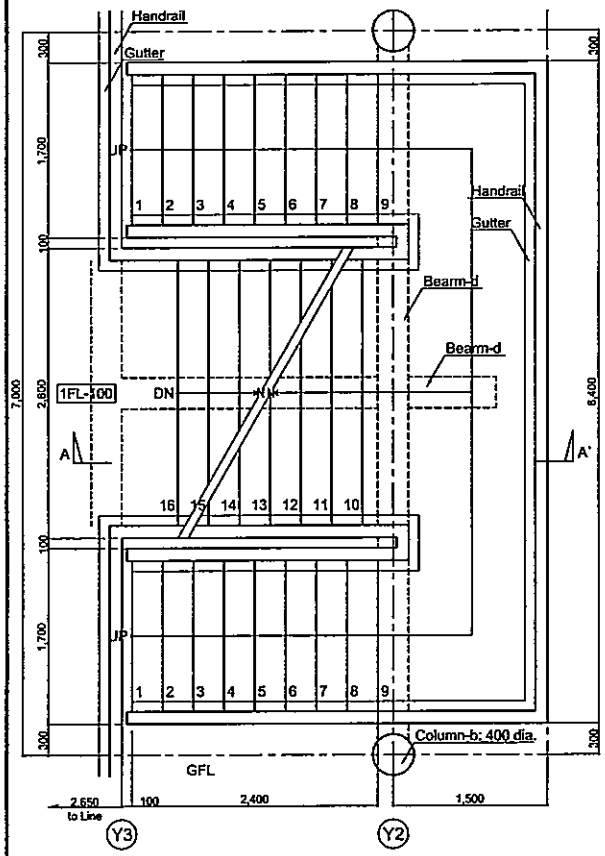
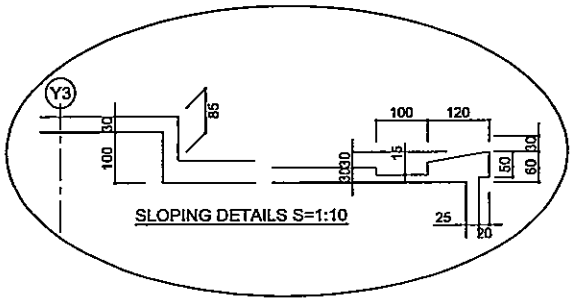
DRAWING TITLE
Multi Purpose Building
(Thundi, Gan, Laamu Atoll)
Details of Toilet (1st Floor)

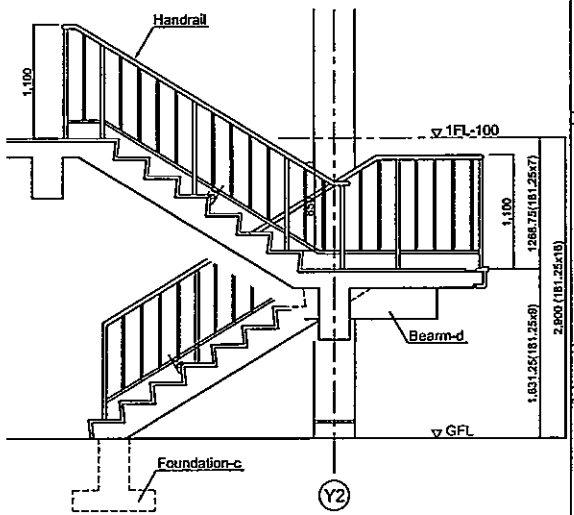
SCALE	SHEET NO.	REV. NO.
1 : 20	A-11	



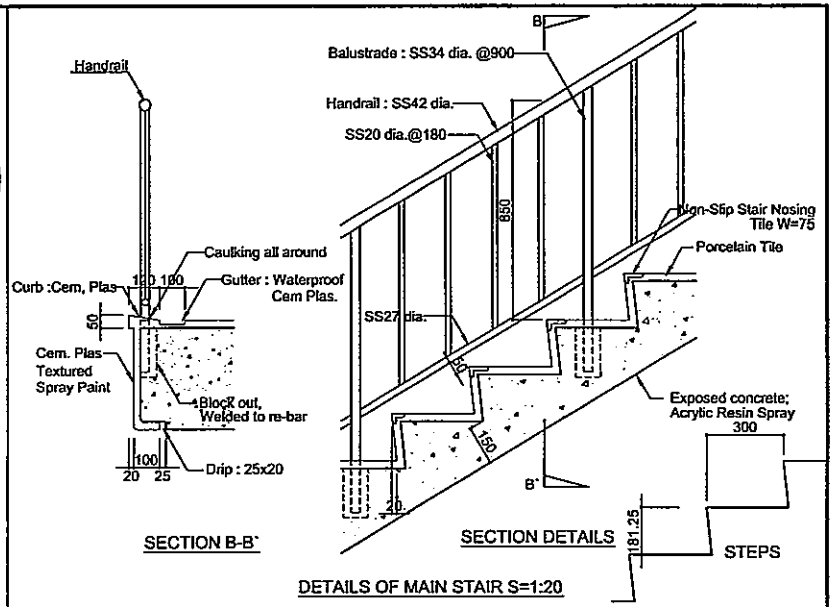
DETAILED PLAN OF MAIN STAIR S=1:50



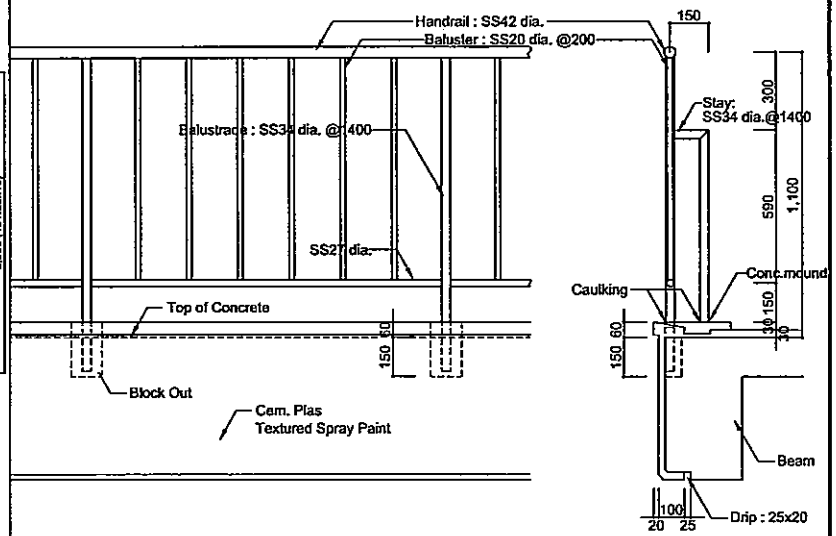
SLOPING DETAILS S=1:10



SECTION A-A' S=1:50



DETAILS OF MAIN STAIR S=1:20



DETAILS OF HANDRAILS AT TERRACE S=1:20

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

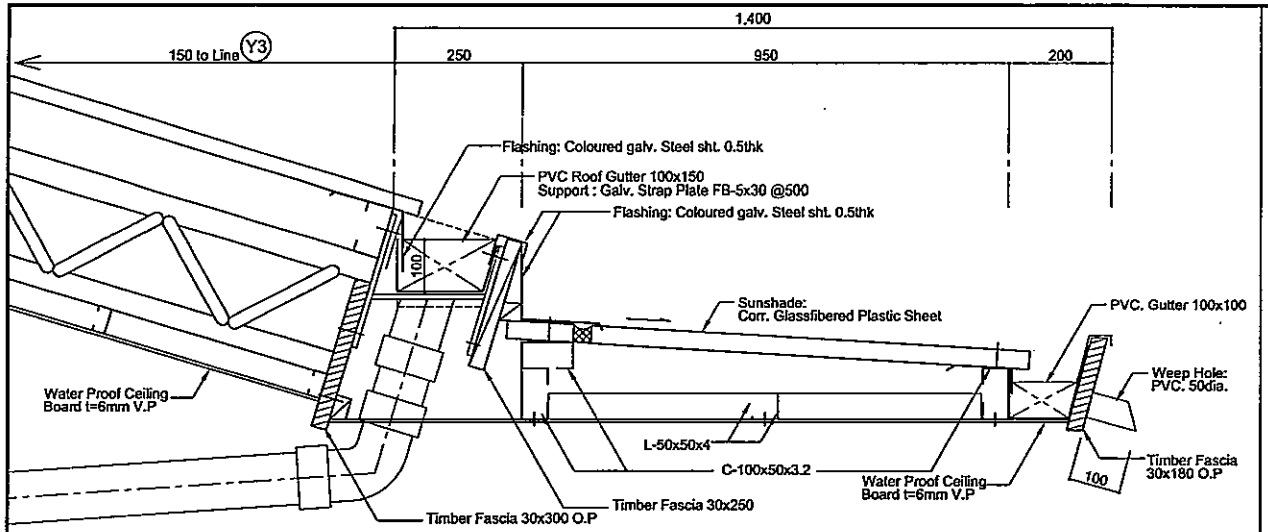
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

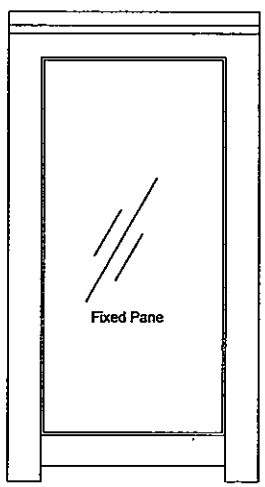
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi Purpose Building
(Thundi, Gan, Laamu Atoll)
Stair & Handrails Details

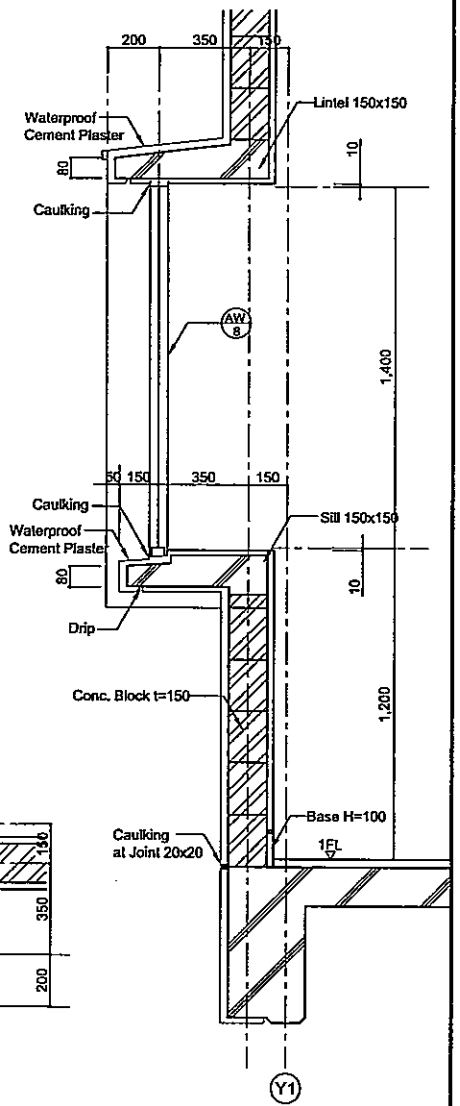
SCALE	SHEET NO.	REV. NO.
1 : 20, 1 : 50	A-12	



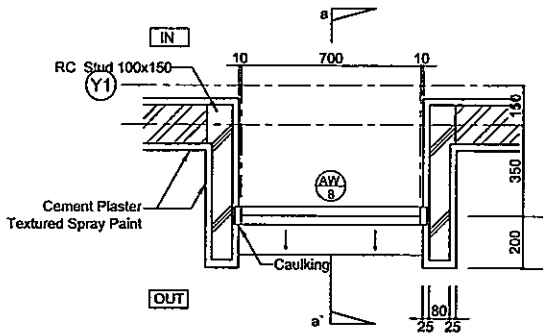
SECTION DETAILS OF SUNSHADE S=1:10



FRONT VIEW



SECTION a-a`

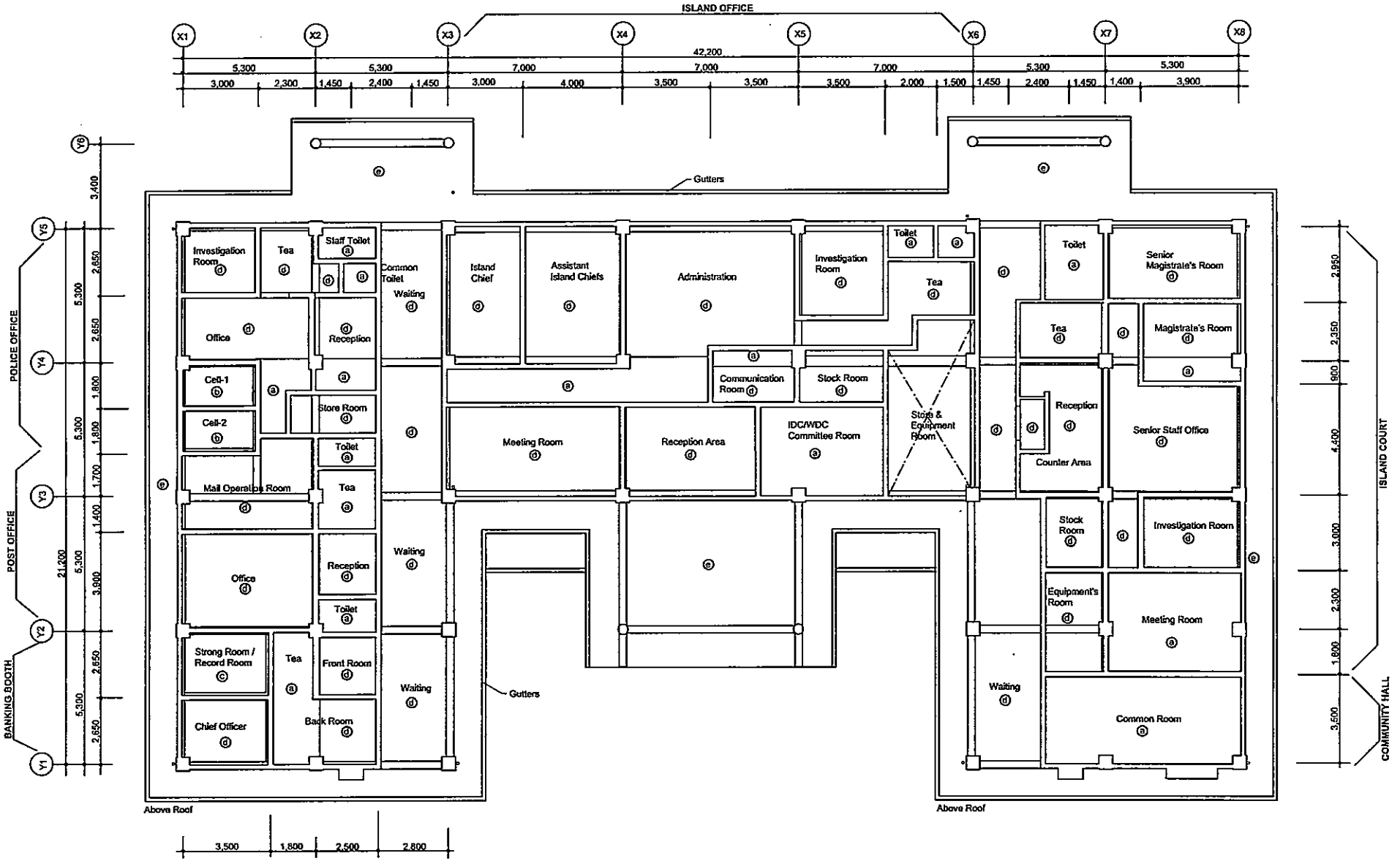


PLAN

WINDOW DETAILS S=1:20

JICA JAPAN INTERNATIONAL COOPERATION AGENCY	NOTES:	THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES	
REPUBLIC OF MALDIVES MINISTRY OF FOREIGN AFFAIRS MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT		YACHIYO ENGINEERING CO.,LTD. NIPPON KOEI CO.,LTD.	DRAWING TITLE: Multi Purpose Building (Thundi, Gan, Laamu Atoll) Sunshade & Window Details

	PREPARED BY	CHECKED BY	APPROVED BY	SCALE	SHEET NO.	REV. NO.
NAME	K. Seki	A. Morioka	M. Komiya	1 : 10, 1 : 20	A-13	
SIGNATURE						
DATE	July 08, 2005	July 08, 2005	July 08, 2005			



JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

ⓐ Ceiling height shall be 2,800
ⓑ 150mm thick roof slab with 3,350ht.
ⓒ 200mm thick roof slab with 3,300 ht.
ⓓ all other areas shall be 3,400 in ceiling height.
ⓔ Eaves ceiling

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Ceiling Plan - 1st Floor Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	A-14	

1. Materials

Reinforcing bar shall conform to Table-1

Table-1

Round bar	JIS 3101/3112 SR235 or equal
Deformed bar	JIS G3112 SD295A or equal

Concrete Strength Fc28=21N/mm2

2. Material Tests

No material test are needed for standard JIS and/or equivalent product as a rule, however, a certificate of standard should be submitted to the Engineer for approval. If no certificate, following tests shall be required,

Test	Yield point, tensile strength and elongation
Testing method	Tenseil tests by JIS3112/JIS3117 or equal
Number of tests	Once for weight of every 20ton for every diameter.
Remarks	Number of test pieces in once test shall be at least three

3. Processing and Assembly

3-1 Reinforcing bars with dangerous bends, cracks, splits or other defects, may not be used under any circumstances

3-2 The diameter for deformed reinforcing bar shall be conform to Table-2

3-3 Reinforcing splices shall be lap joint, and the lap length shall be conform to Table-3 However, lap joint is not permitted for the reinforcing bar over 29mm Dia. The place of the lap joint shall be in compression zone

3-4 Reinforsing bars shall be cut by shearcuttersorsaws. Gas cutting is permitted where unavoidable, if approved by the Engineer

3-5 Spot welding and arc strike is not permitted for reinforcing bars,

3-6 Install hooks at each end of reinforcing bars.

(1) The main reinforcing bars located at the four corners of a column at lap joint, and at the top of column at the highest story

(2) Hoop, stirrup and yoke bar

4. Minimum thickness of cover concrete for reinforcing bars

Type of structural elements			Minimum thickness of cover concrete
Elements not in contact with soil	Slab and walls	With finishing	20mm
		No finishing	30mm
	Column Beam	With finishing	40mm
		No finishing	40mm
Elements contact with soil	Column, beam, floor, slab, wall		50mm
	Foundation, retaining wall		70mm

5. Minimum clearance between the reinforcing bars

Clearance shall be more than 25mm and 1.25 times the maximum size of coarse aggregate and 1.5 times of largest outsaid diameter of reinforcing bar

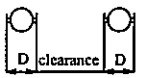


Table-2 Minimum diameter for bending of reinforcing bars

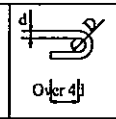
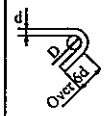
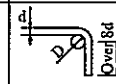
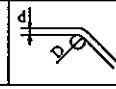
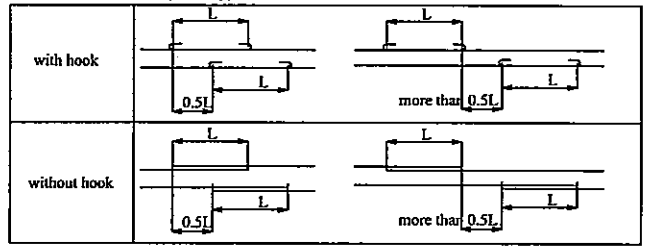
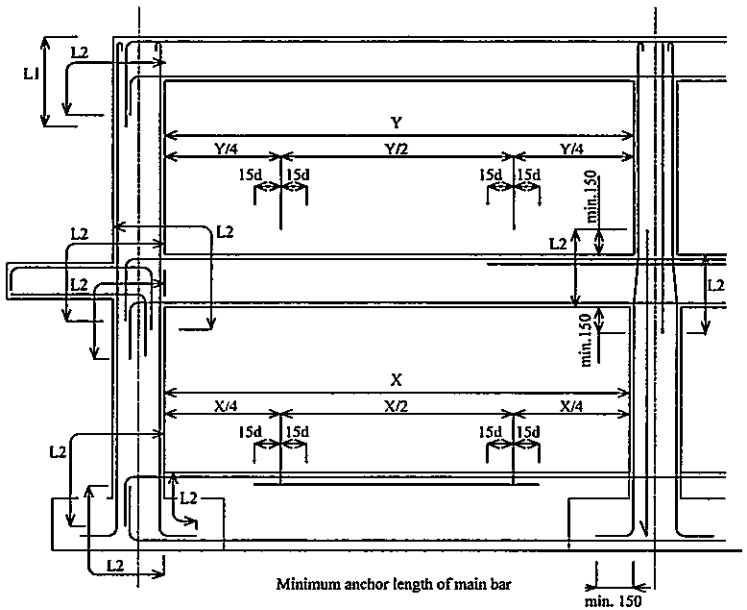
Bending Shape			Under 16mm Dia.	19 to 38mmDia.	Previous location
180°		D	More than 3d	More than 4d	Main bars for column and beam etc.
135°		D	More than 3d	More than 4d	Stirrup,hoop,spiral bar
90°		D	More than 3d	More than 4d	Stirrup,hoop,spiral bar
Less than 90°		D	More than 4d	More than 6d	

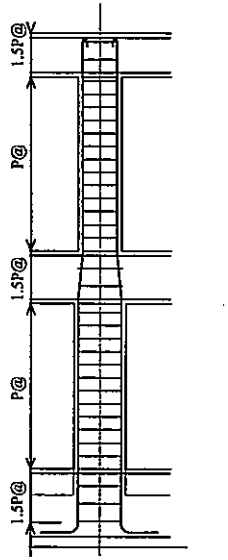
Table-3 Minimum lap length and Anchor length

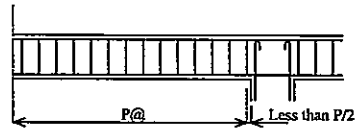
Concrete Design strength	without hook				with hook			
	L1	L2	L3		L1	L2	L3	
			Small Beam	Slab			Small Beam	Slab
Over Fc28=21N/mm2 but under Fc28=27N/mm2	40d	35d	25d	10d and over 150mm	30d	25d	15d	—

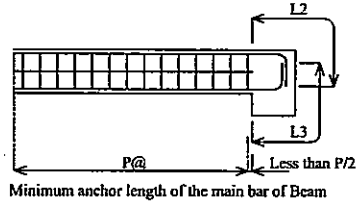
Table-4 Location of neighboring joints











JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

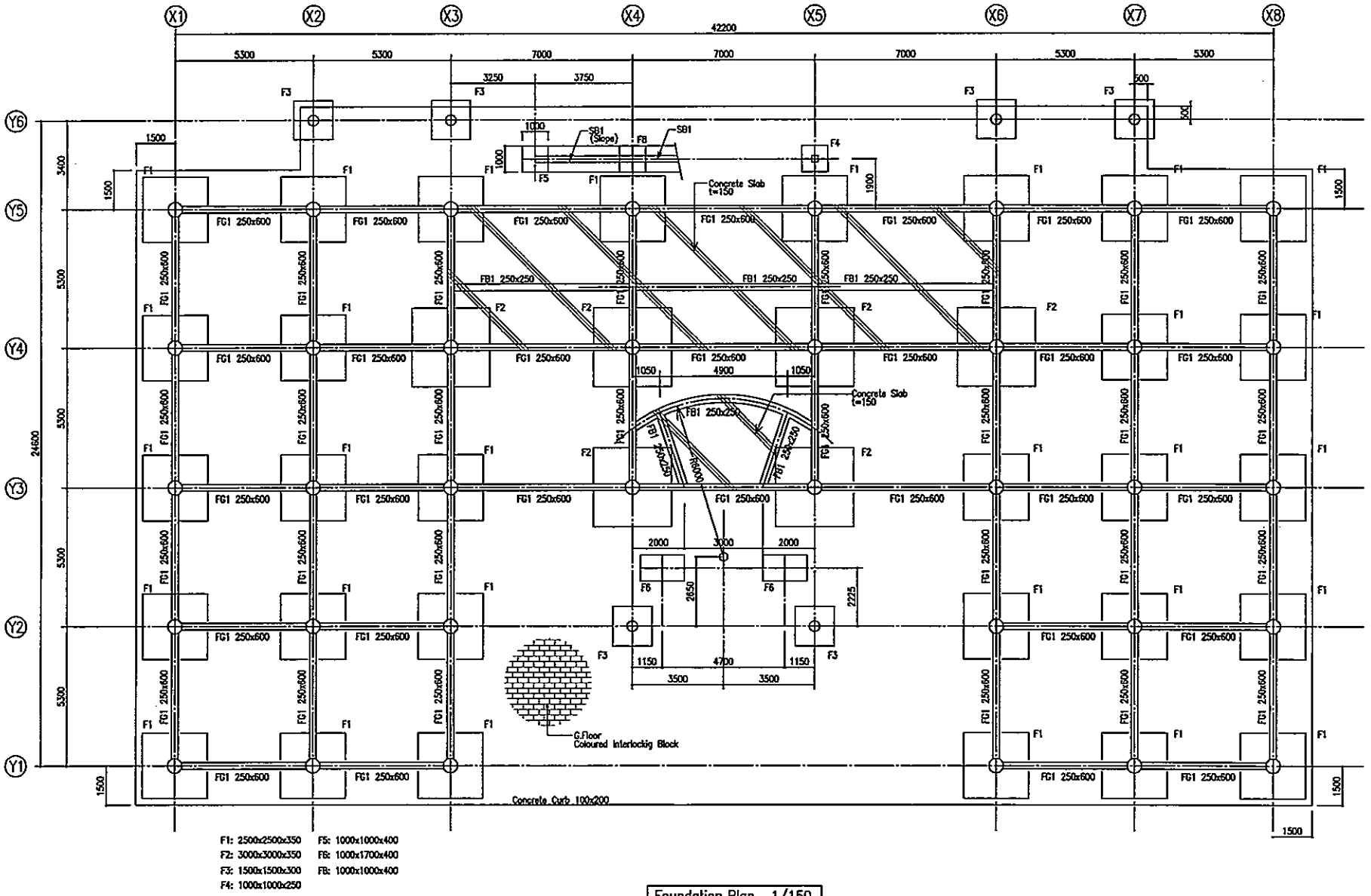
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Multi Purpose Building (Thundi,Gan Island Laamu Atoll) Bar Arrangement Standard Specification

SCALE	SHEET NO.	REV. NO.
1 : 60	S-00	



Foundation Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

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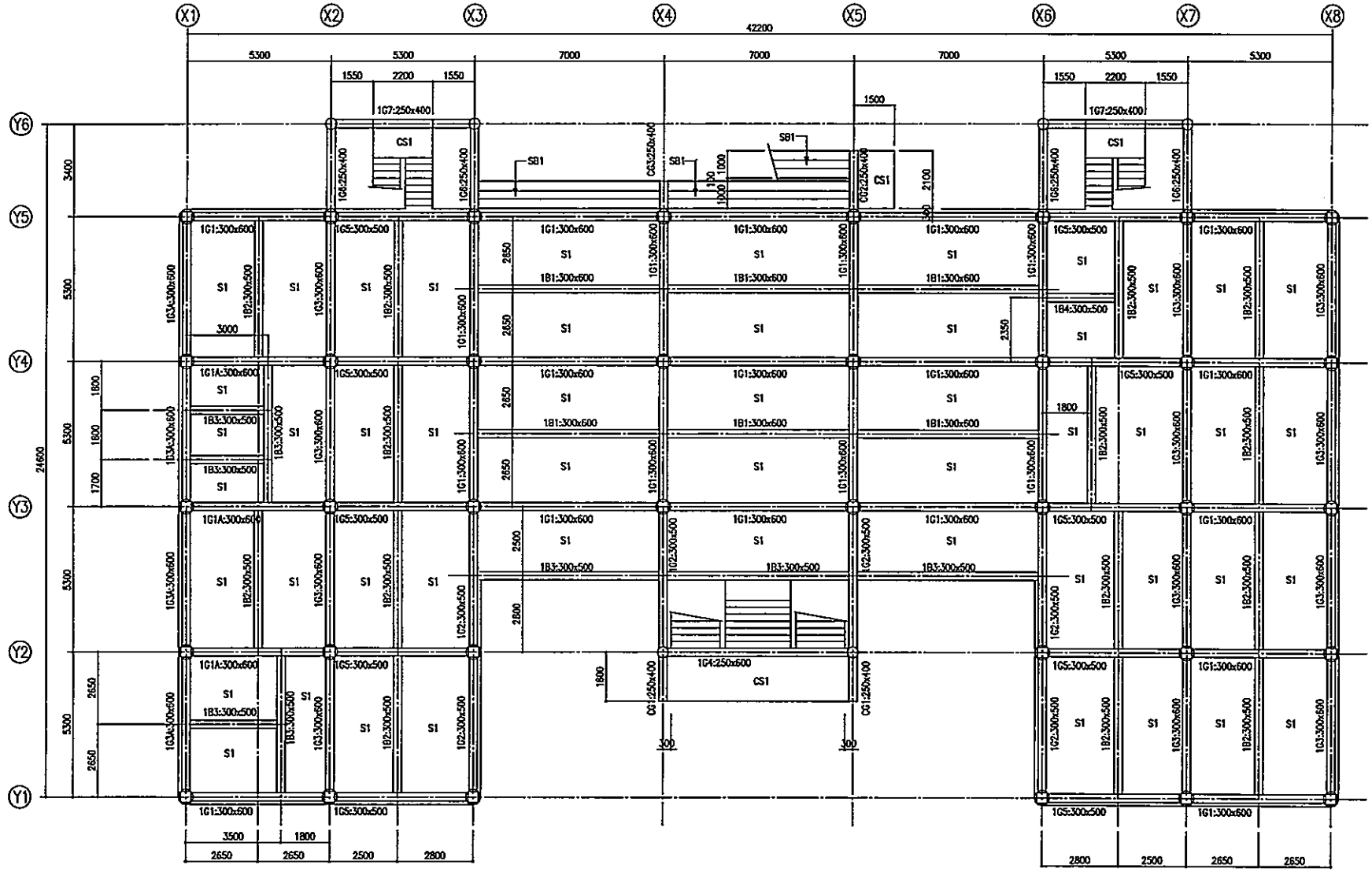
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Foundation Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	S-01	



1st Floor Beam Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Installation of supporting base for solar cell panel on the roof is required. Location and number is instructed by solar system documents.

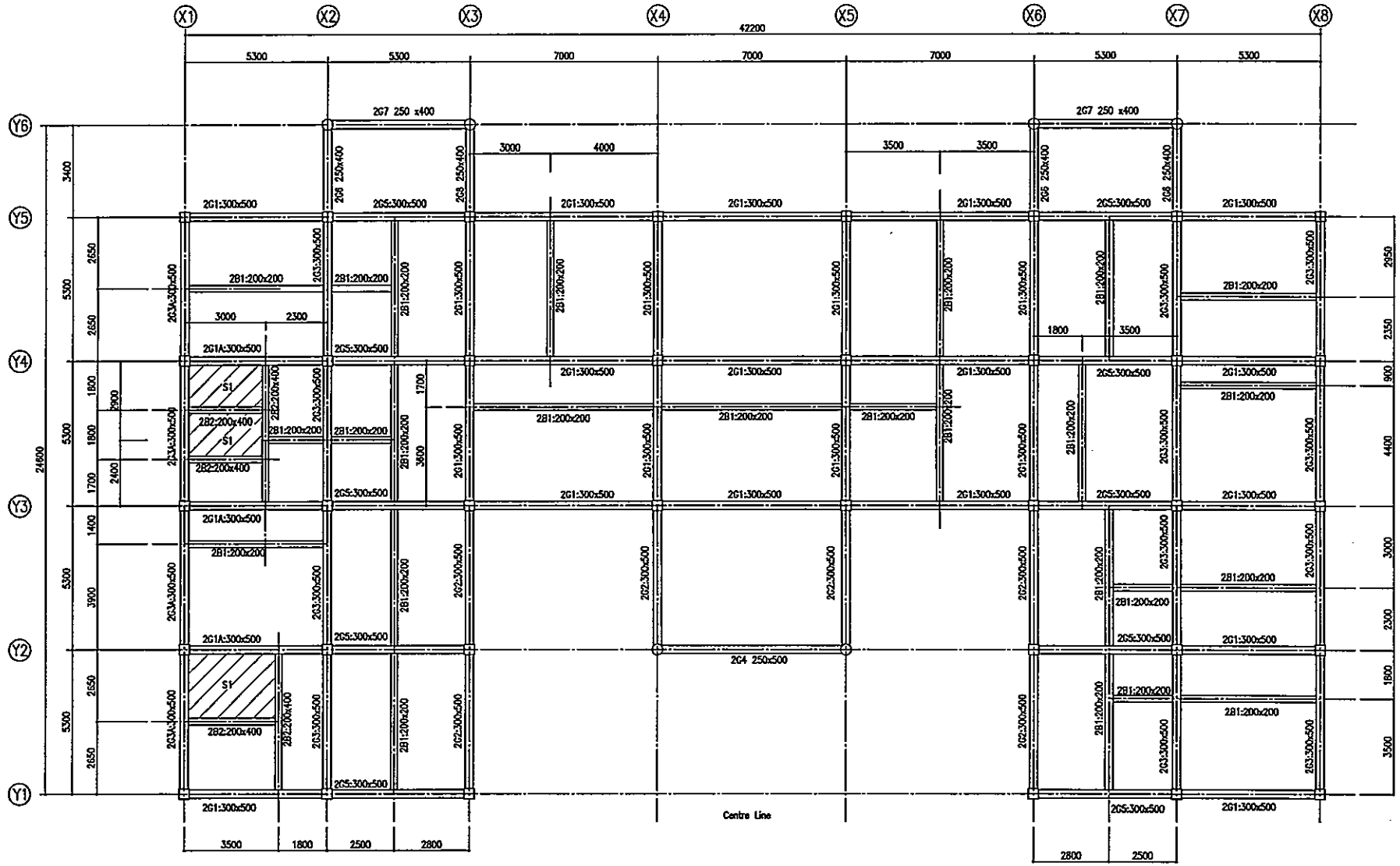
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Structure : 1st Floor Beam Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	S-02	



1st Floor Beam Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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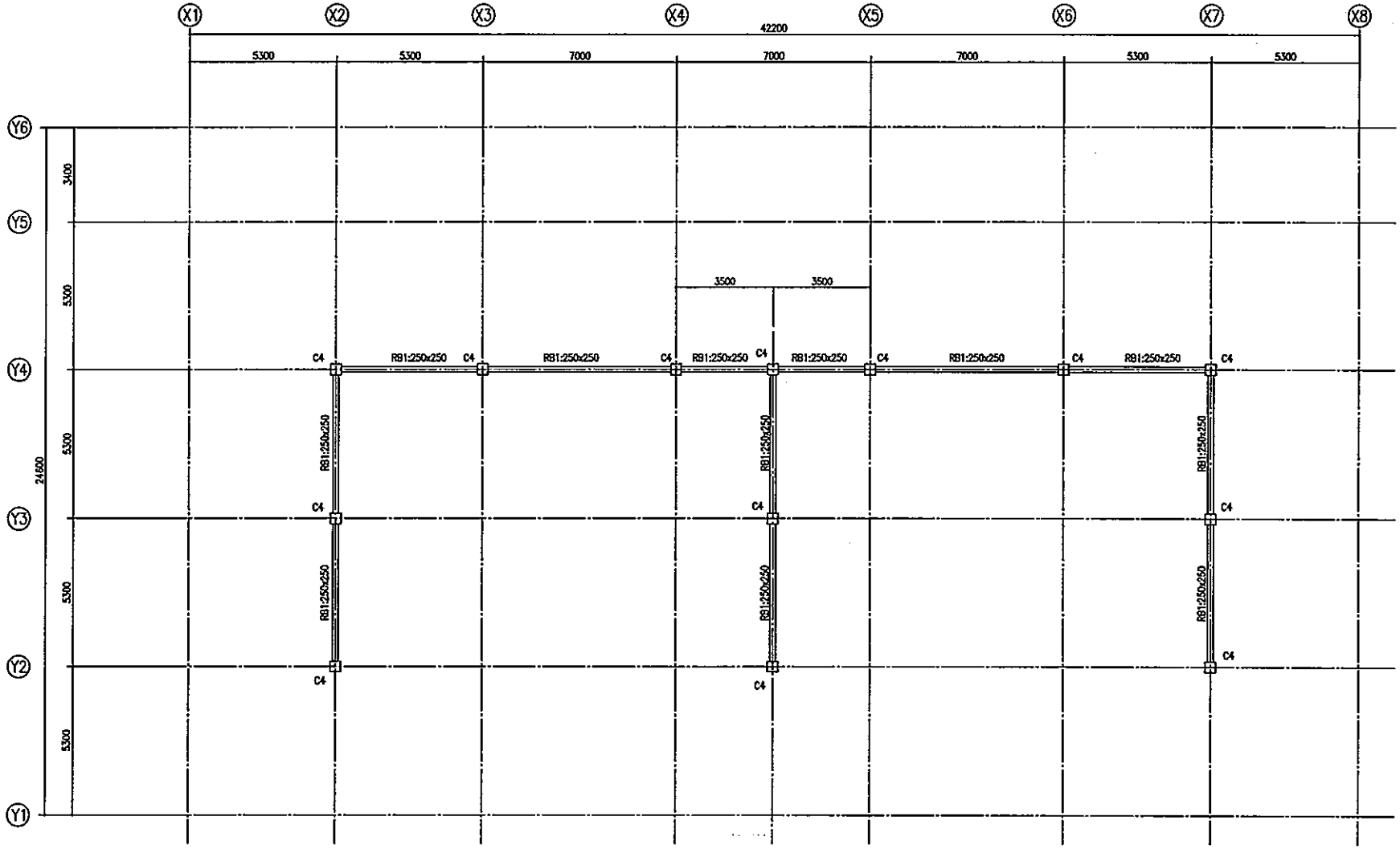
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Structure : Roof Beam Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	S-03	



Roof Support Beam Plan 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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SIGNATURE			
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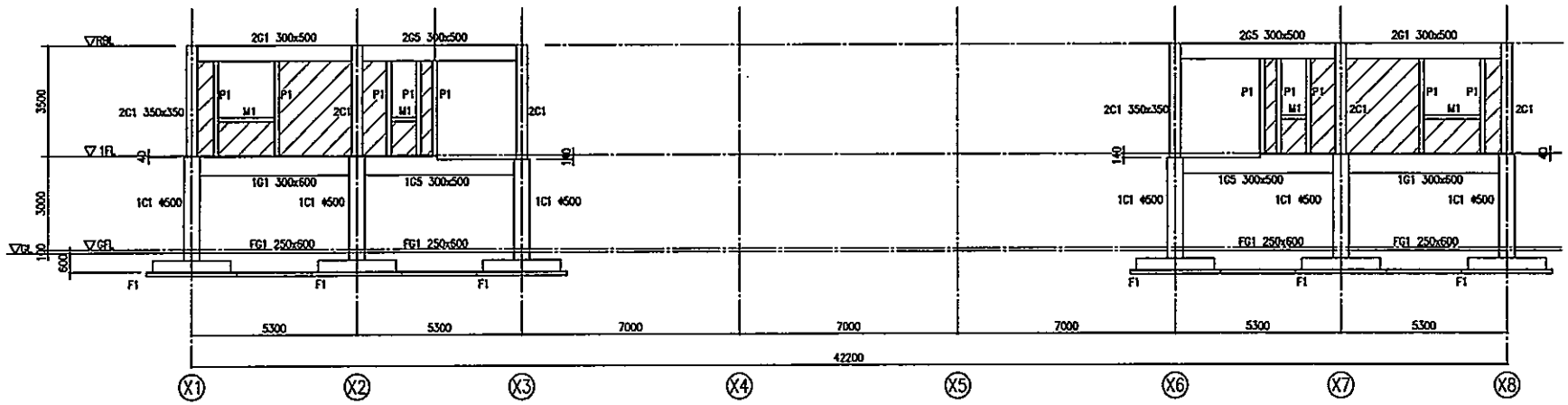
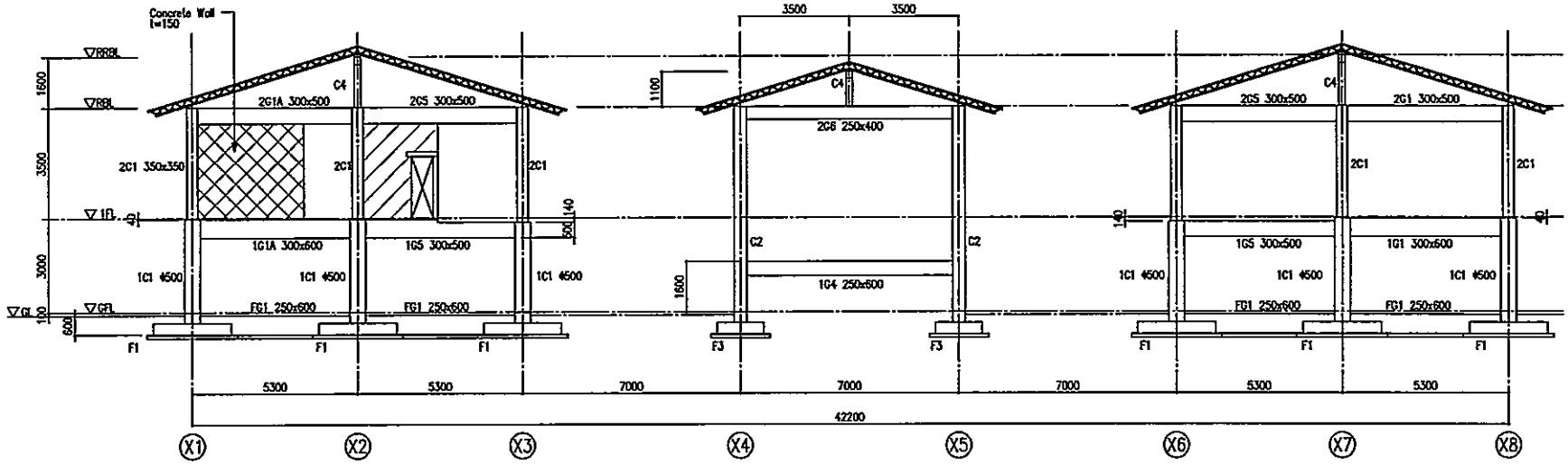
DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Roof Top Beam Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	S-04	



Line Y1 1/150



Line Y2 1/150

Concrete Block Wall t=150

JAPAN INTERNATIONAL COOPERATION AGENCY

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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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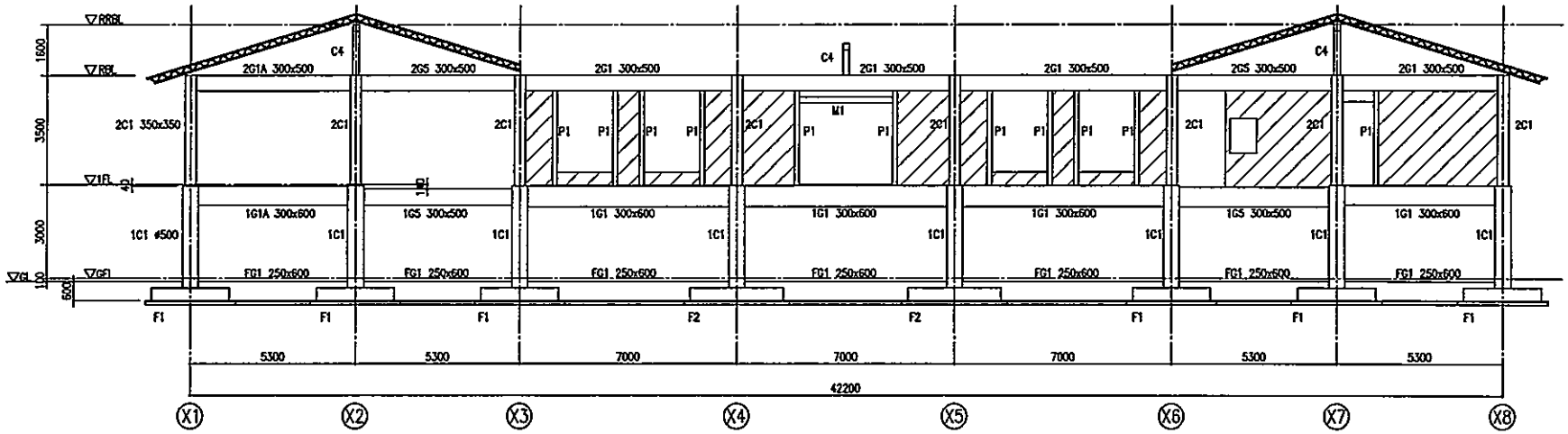
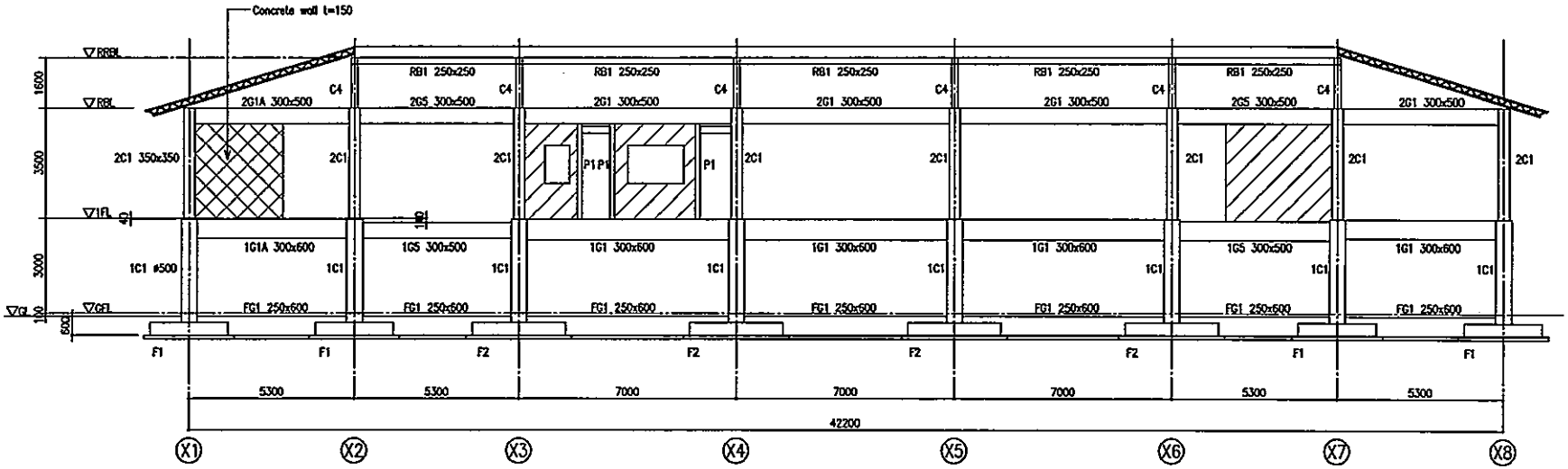
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Multi-purpose Building (Thundi, Gan Island, Laamu Atoll) Framing Elevation Y1/Y2

SCALE	SHEET NO.	REV. NO.
1 : 150	S-05	



Line Y3 1/150



Line Y4 1/150

Concrete Block t=150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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SIGNATURE			
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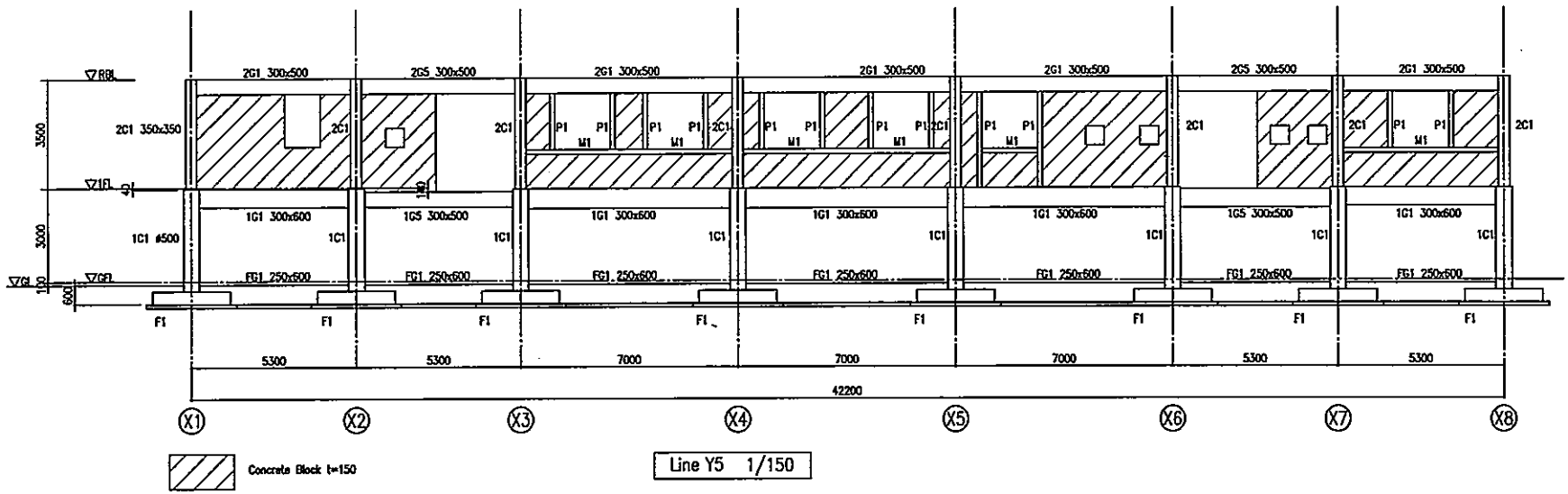
DRAWING TITLE: Multi-purpose Building (Thundi, Gan Island, Laamu Atoll) Framing Elevation Y3/Y4

SCALE	SHEET NO.	REV. NO.
1 : 150	S-06	



Line Y5 1/150

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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NIPPON KOEI CO.,LTD.

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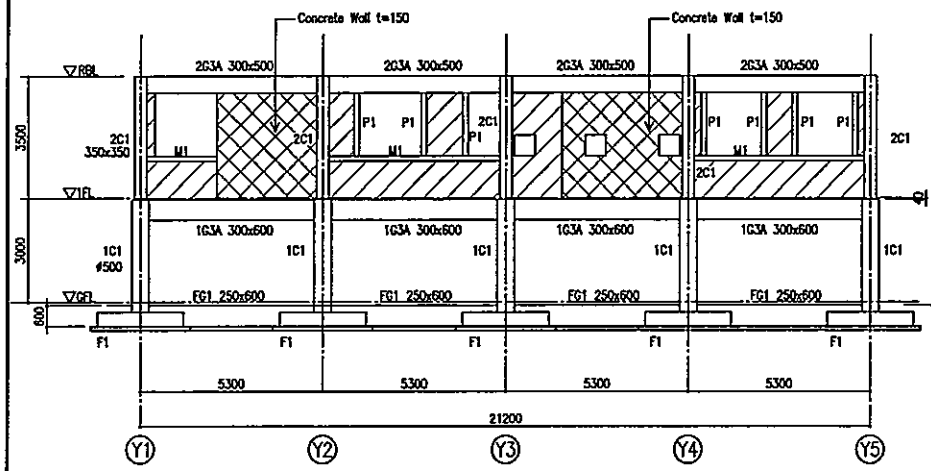
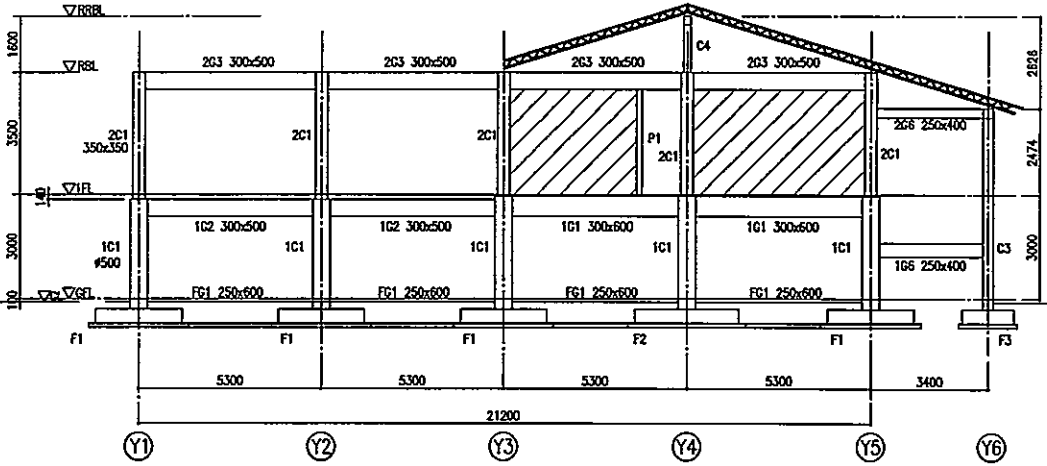
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Framing Elevation-Y5

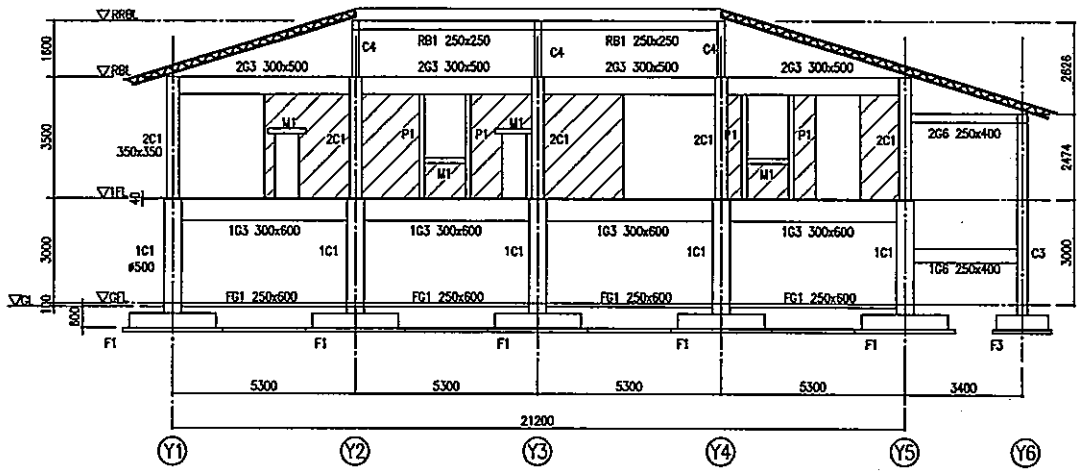
SCALE	SHEET NO.	REV. NO.
1 : 150	S-07	



Line X1 1/150



Line X3 1/150



Line X2 1/150

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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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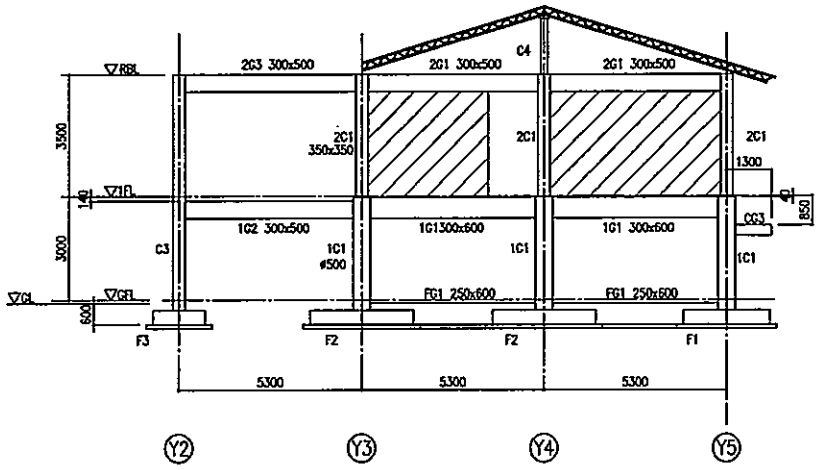
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

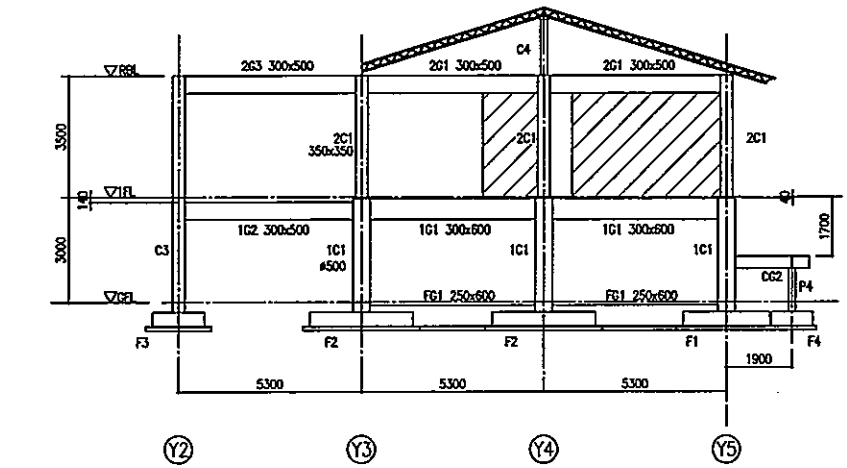
DRAWING TITLE

Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Framing Elevation-X1/X2/X3

SCALE	SHEET NO.	REV. NO.
1 : 150	S-08	



Line X4 1/150



Line X5 1/150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

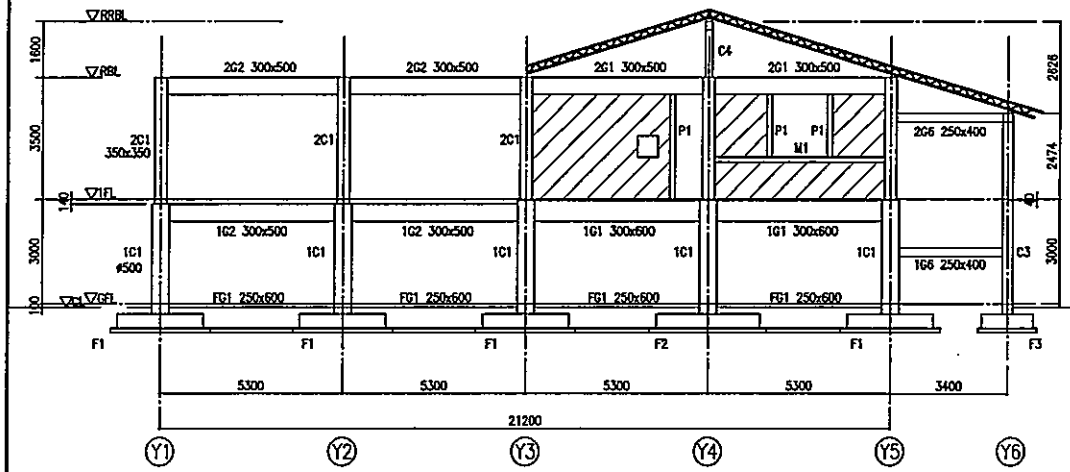
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

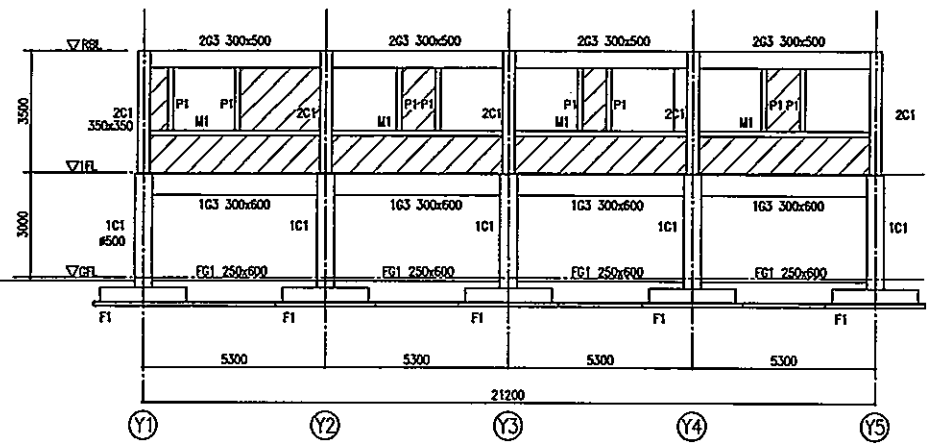
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Framing Elevation-X4/X5

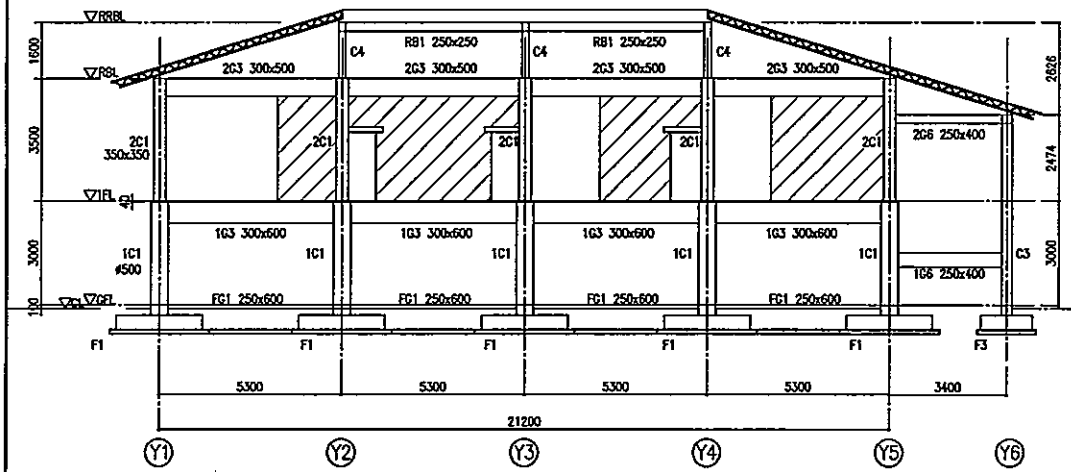
SCALE	SHEET NO.	REV. NO.
1 : 150	S-09	



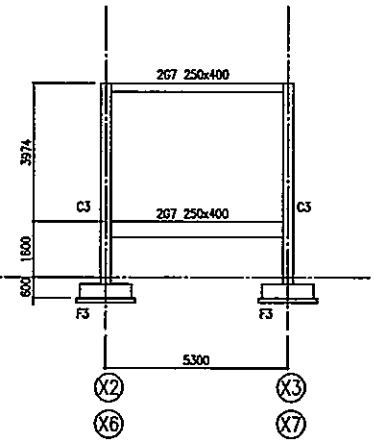
Line X6 1/150



Line X8 1/150



Line X7 1/150



Line Y6 1/150

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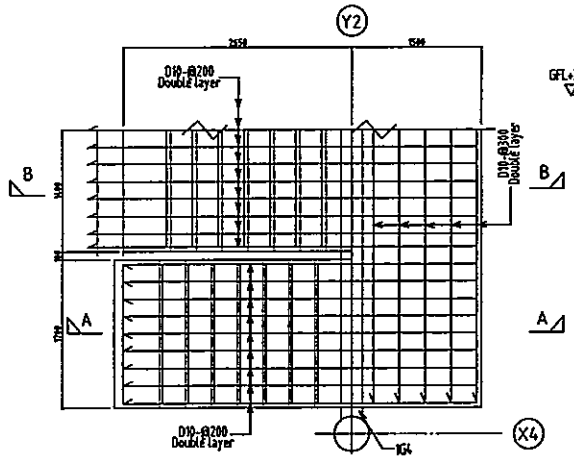
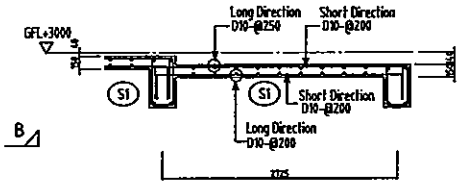
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Framing Elevation-X6/X7/X8/Y6

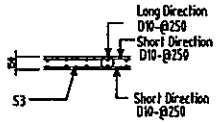
SCALE	SHEET NO.	REV. NO.
1 : 150	S-10	



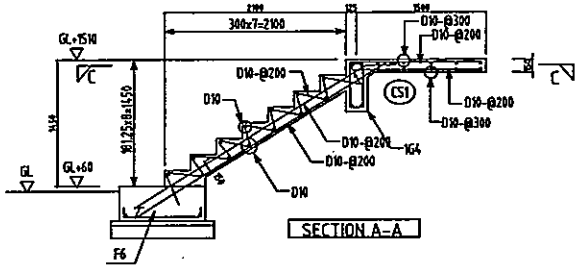
SECTION C-C



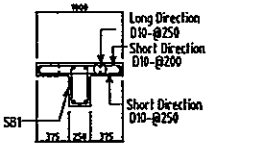
BAR ARRARNGEMENT OF SLAB : S1



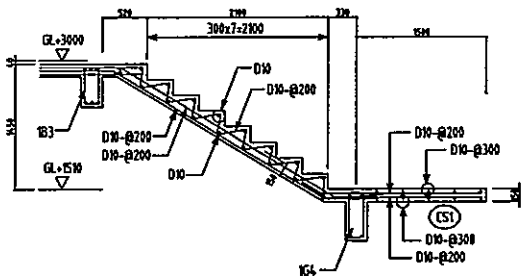
BAR ARRANGEMENT OF S3



SECTION A-A

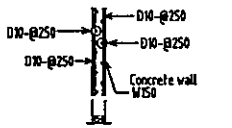


BAR ARRANGEMENT OF SLOPE SLAB

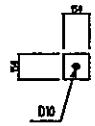


SECTION C-C

BAR ARRANGEMENT OF STAIR

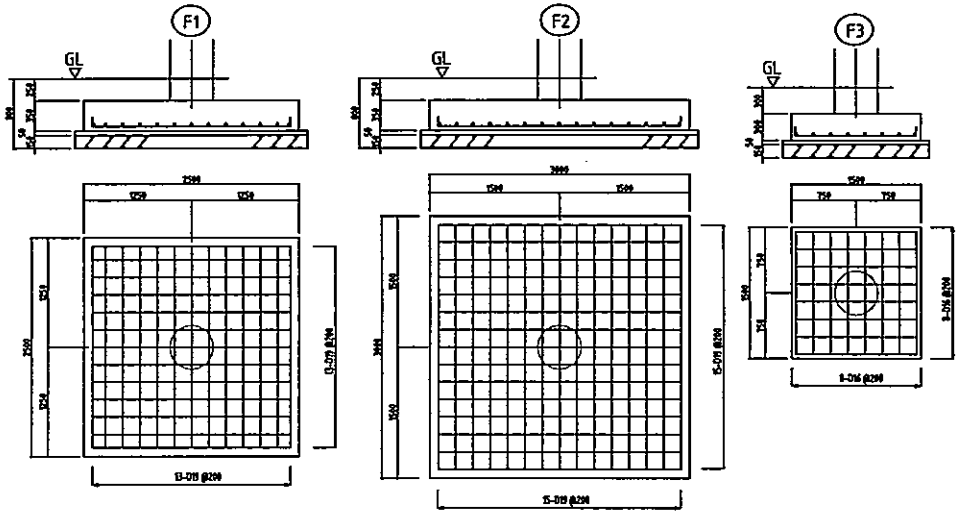


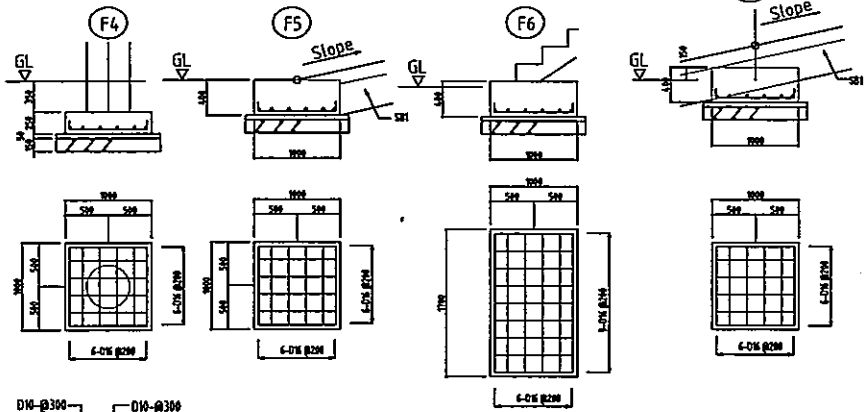
BAR ARRANGEMENT OF W150

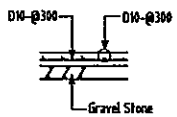


BAR ARRANGEMENT OF P1 and M1

FOUNDATION SCHEDULE







Bar Arrangement of Ground Floor Slab

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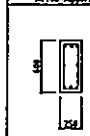
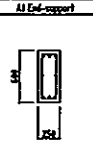
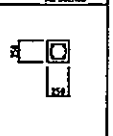
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Multi Purpose Bilding (Thundi, Gan Island, Laamu Atoll) Bar Arrangement of the Foundation/Slab/stair/wall etc

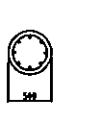
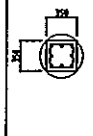
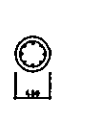
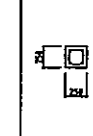
SCALE	SHEET NO.	REV. NO.
1 : 60	S-11	

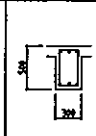
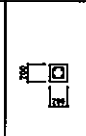
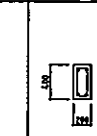
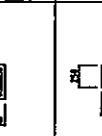
BEAM SCHEDULE 1/30

NAME	FG1		FB1
	At Mid-support	At End-support	All Section
SECTION			
TOP BARS	3-D19	3-D19	2-D13
BOTT BARS	3-D19	3-D19	2-D13
STIRRUP	□-D10@200	□-D10@200	□-D10@200
MID BARS	2-D10	2-D10	

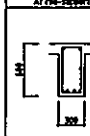
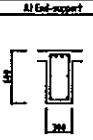
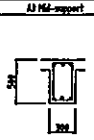
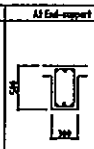
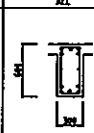
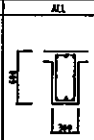
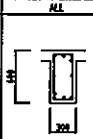
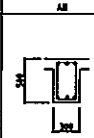
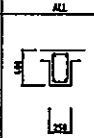
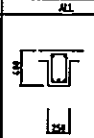
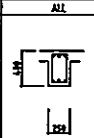
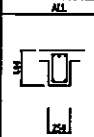
COLUNM SCHEDULE 1/30

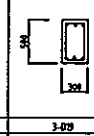
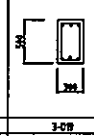
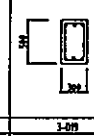
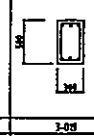
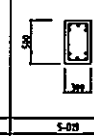
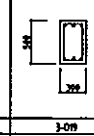
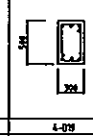
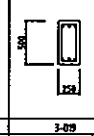
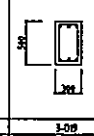
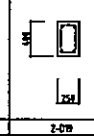
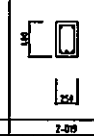
UNLESS OTHERWISE INDICATED,HOOP □-D10@200 NOTE.
PLANNING LAYOUT DIRECTION

NAME	1C1	2C1	C2	C3	C4
SECTION					
MAIN BARS	8-D19	8-D19	8-D19	8-D16	4-D13
HOOP	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150

NAME	1B2/1B4	1B3		2B1	2B2	RB1	
	ALL	ALL		ALL	ALL	ALL	
SECTION							
TOP BARS	3-D19	3-D19		2-D13	2-D19	2-D13	
BOTT BARS	3-D19	5-D19		2-D13	2-D19	2-D13	
STIRRUP	□-D10@150	□-D10@150		□-D10@250	□-D10@250	□-D10@250	
MID BARS	—	—		—	—	—	

BEAM SCHEDULE 1/30

NAME	1G1/1B1		1G2		1G1A	1G3	1G3A	1G4	1G5	1G6/CG1	1G7	CG2	CG3
	At Mid-support	At End-support	At Mid-support	At End-support	ALL	ALL	ALL	All	All	ALL	ALL	ALL	ALL
SECTION													
TOP BARS	2-D22	4-D22	3-D22	3-D22	5-D22	3-D22	4-D22	3-D22	3-D22	2-D19	2-D19	3-D19	3-D19
BOTT BARS	4-D22	2-D22	3-D22	3-D22	5-D22	3-D22	4-D22	3-D22	3-D22	2-D19	3-D19	3-D19	2-D19
STIRRUP	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150
MID BARS	2-D10	2-D10	2-D10	2-D10	—	—	—	—	—	—	—	—	—

NAME	2G1		1G2		2G1A	2G3	2G3A	2G4	2G5	2G6	2G7
	At Mid-support	At End-support	At Mid-support	At End-support	ALL	ALL	ALL	All	All	ALL	ALL
SECTION											
TOP BARS	3-D19	3-D19	3-D19	3-D19	5-D19	3-D19	4-D19	3-D19	3-D19	2-D19	2-D19
BOTT BARS	3-D19	3-D19	3-D19	3-D19	5-D19	3-D19	4-D19	3-D19	3-D19	2-D19	3-D19
STIRRUP	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150	□-D10@150
MID BARS	2-D10	2-D10	2-D10	2-D10	—	—	—	—	—	—	—

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

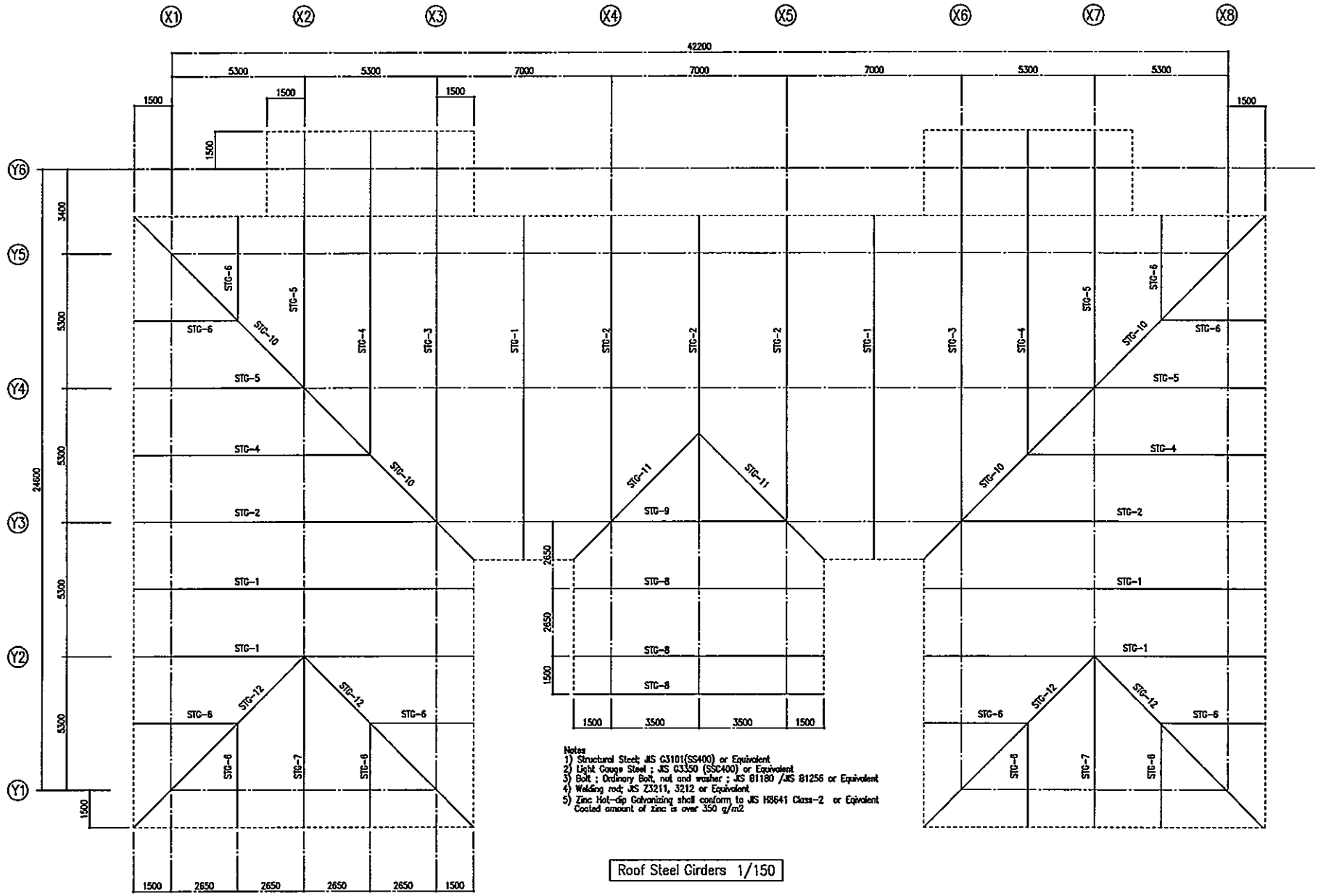
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE: Multi Purpose Building (THundi,Gan Island, Laamu Atoll) Bar Arrangement of the Column/Beam

SCALE	SHEET NO.	REV. NO.
1 : 60	S-12	



Notes
1) Structural Steel; JIS G3101(SS400) or Equivalent
2) Light Gauge Steel ; JIS G3350 (SSC400) or Equivalent
3) Bolt ; Ordinary Bolt, nut and washer ; JIS B1180 /JIS B1256 or Equivalent
4) Welding rod; JIS Z3211, 3212 or Equivalent
5) Zinc Hot-dip Galvanizing shall conform to JIS H8641 Class-2 or Equivalent
Coated amount of zinc is over 350 g/m2

Roof Steel Girders 1/150

JAPAN INTERNATIONAL COOPERATION AGENCY

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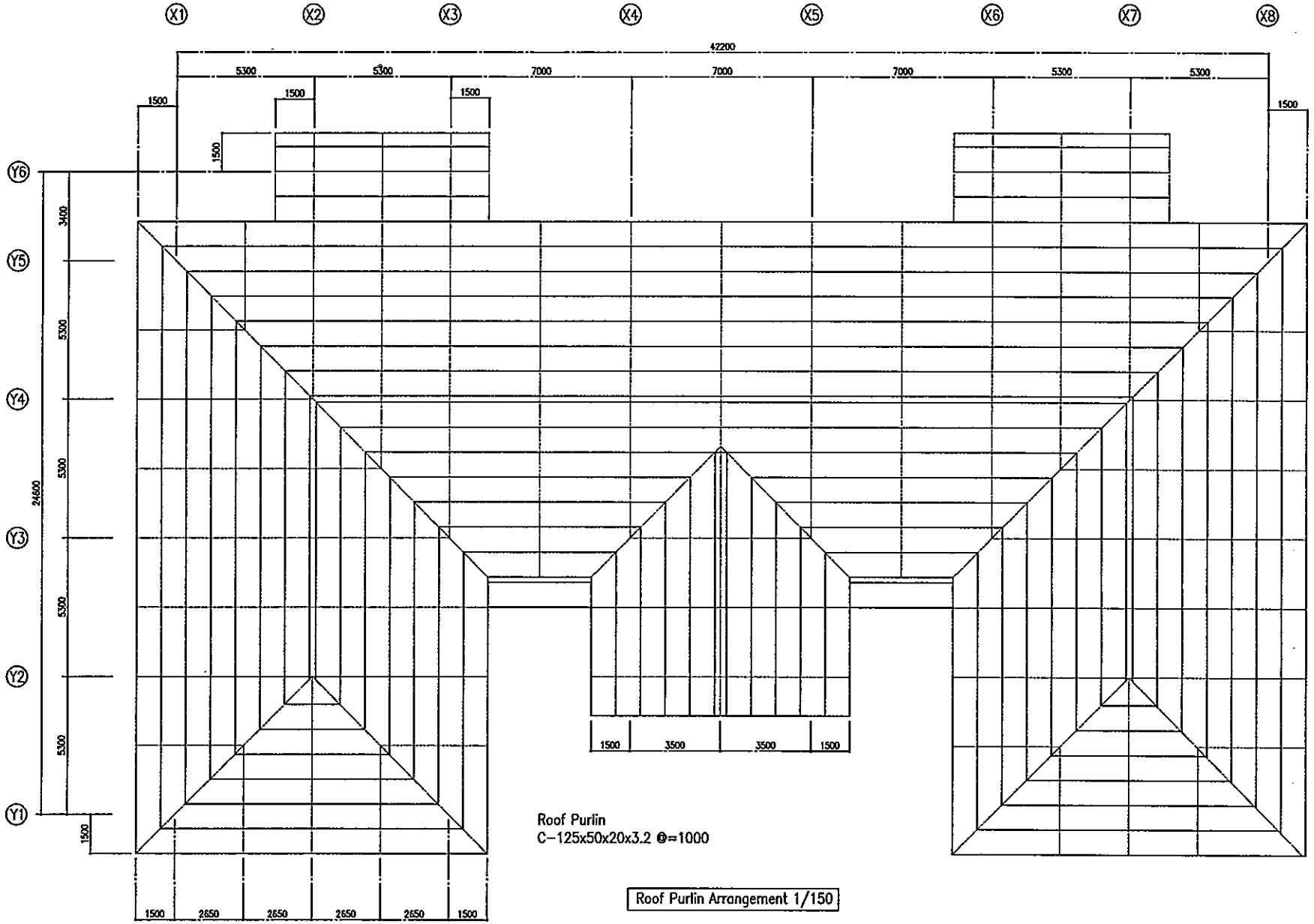
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Roof Truss Arrangement PLan

SCALE	SHEET NO.	REV. NO.
1 : 150	S-13	



Roof Purlin Arrangement 1/150

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

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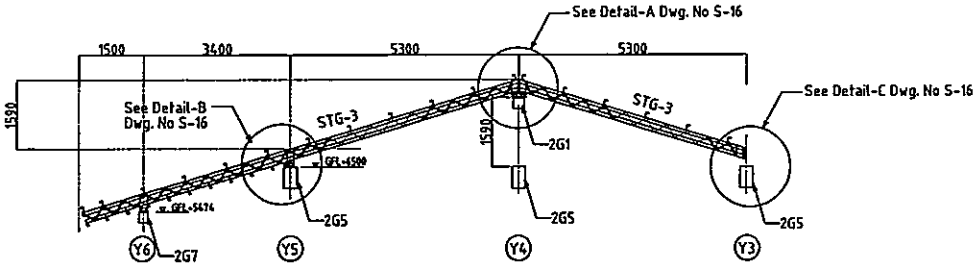
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

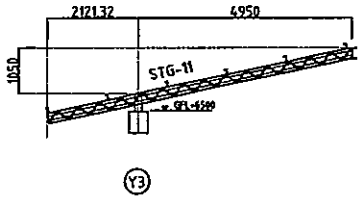
	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Roof Purlin PLan

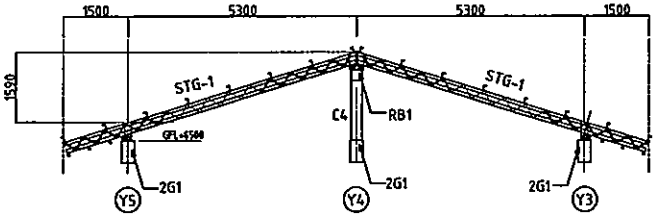
SCALE	SHEET NO.	REV. NO.
1 : 150	S-14	



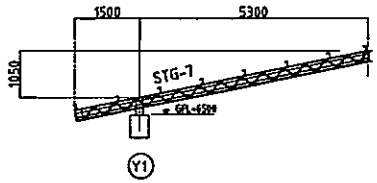
STG-3 SECTION



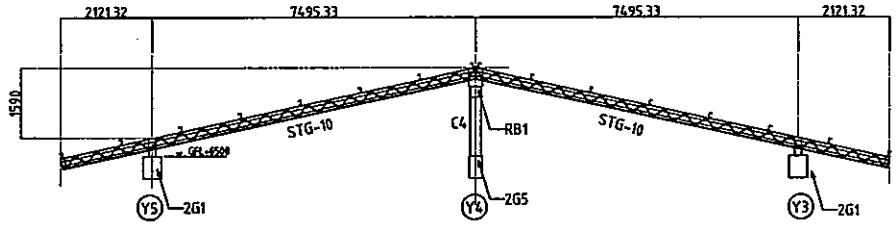
STG-11 SECTION



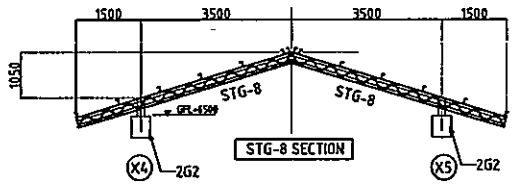
STG-1 SECTION



STG-7 SECTION



STG-10 SECTION



STG-8 SECTION

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Installation of supporting base for solar cell panel on the roof is required. Location and number is instructed by solar system documents.

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

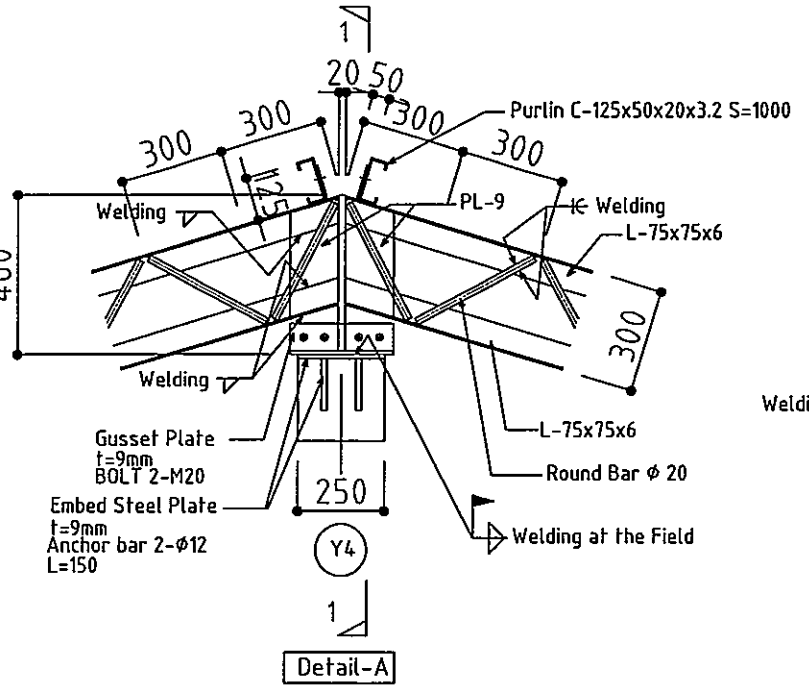
YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

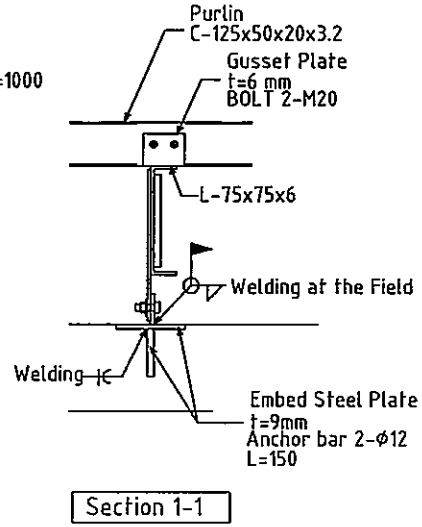
DRAWING TITLE

Multi Purpose Building
(Thundi, Gan Island, Laamu Atoll)
Roof Truss Section Detail

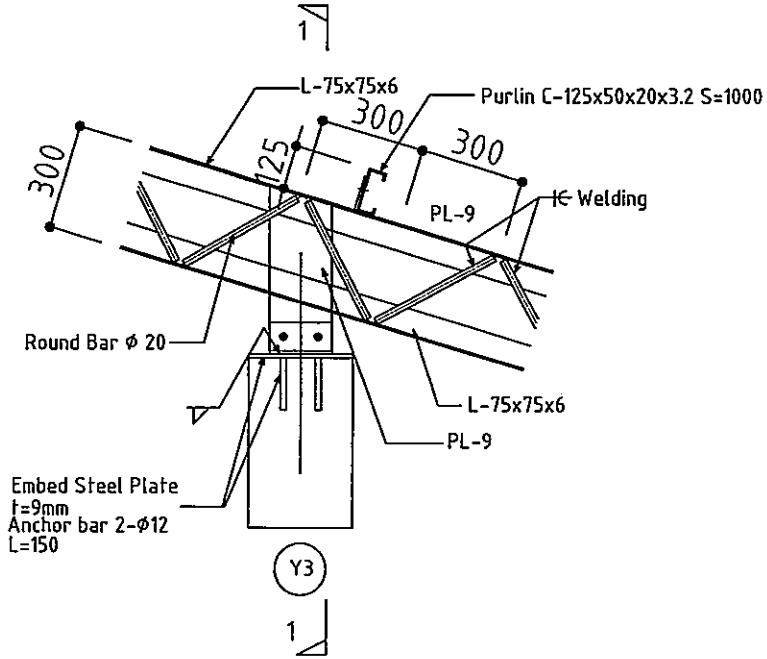
SCALE	SHEET NO.	REV. NO.
1 : 60	S-15	



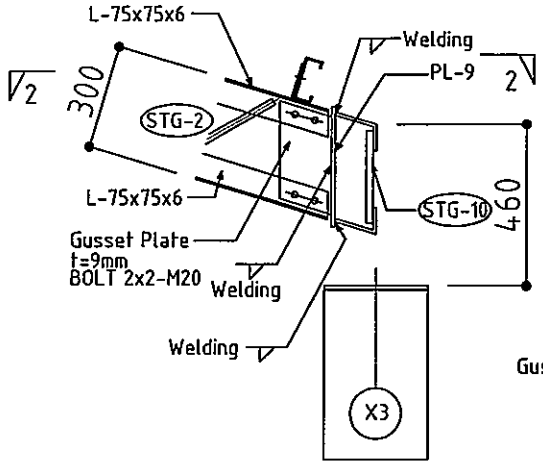
Detail-A



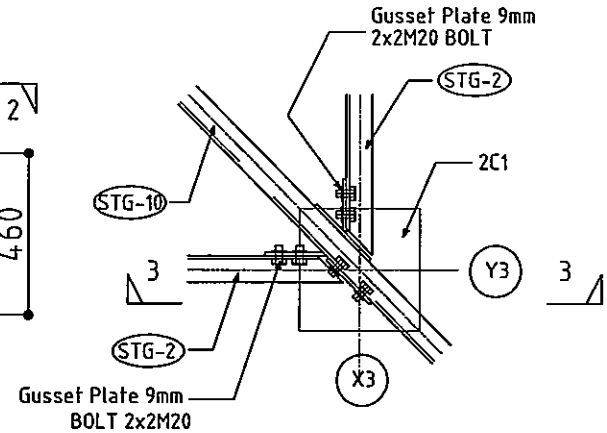
Section 1-1



Detail-B



Detail-C (Section 3-3)



Detail-D (Section 2-2)

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

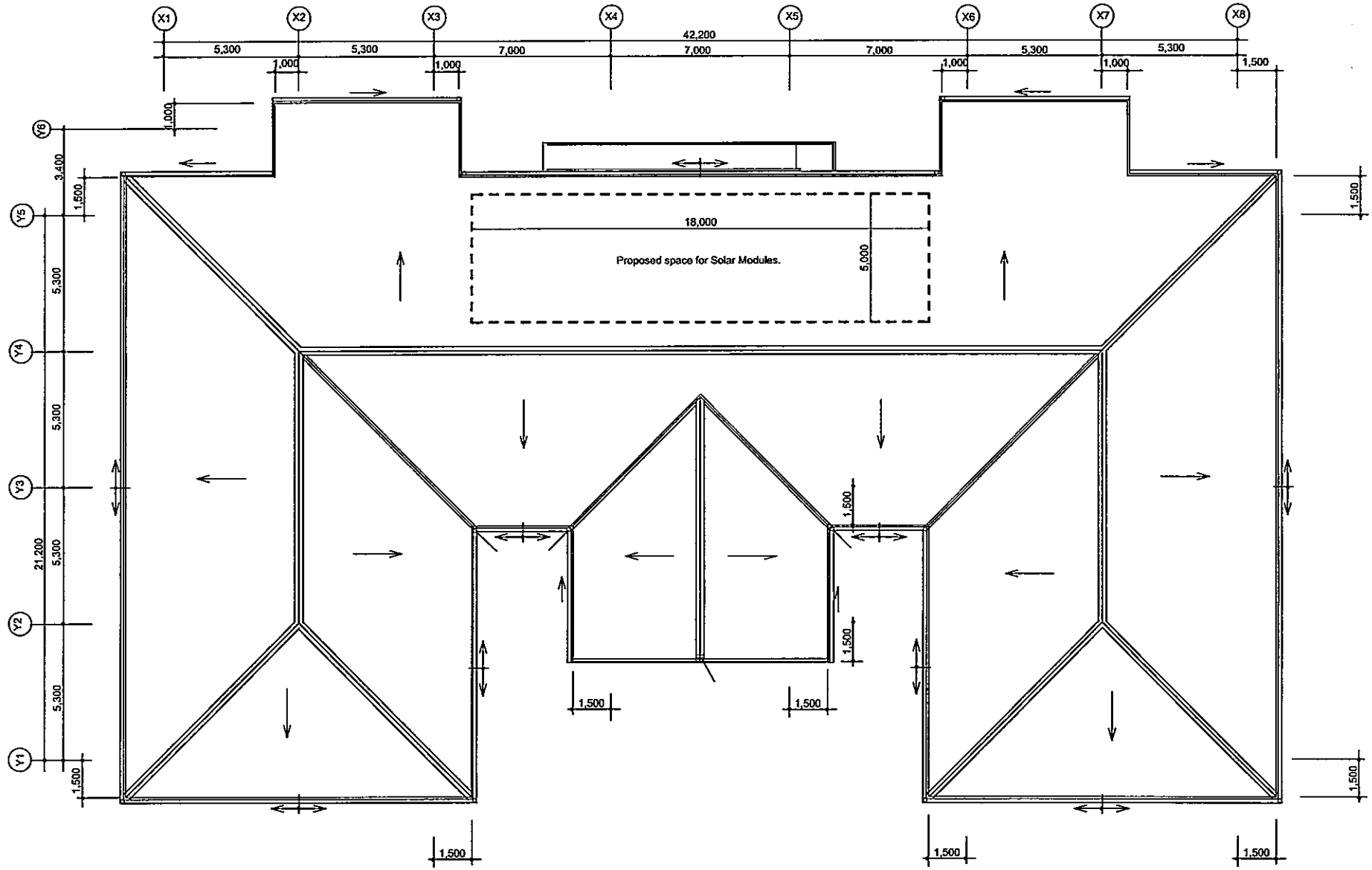
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	K. Seki	A. Morioka	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi Purpose Buiding
(Thundi, Gan Island, Laamu Atoll)
Roof Truss Joint Detail

SCALE	SHEET NO.	REV. NO.
1 : 60	S-16	



JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

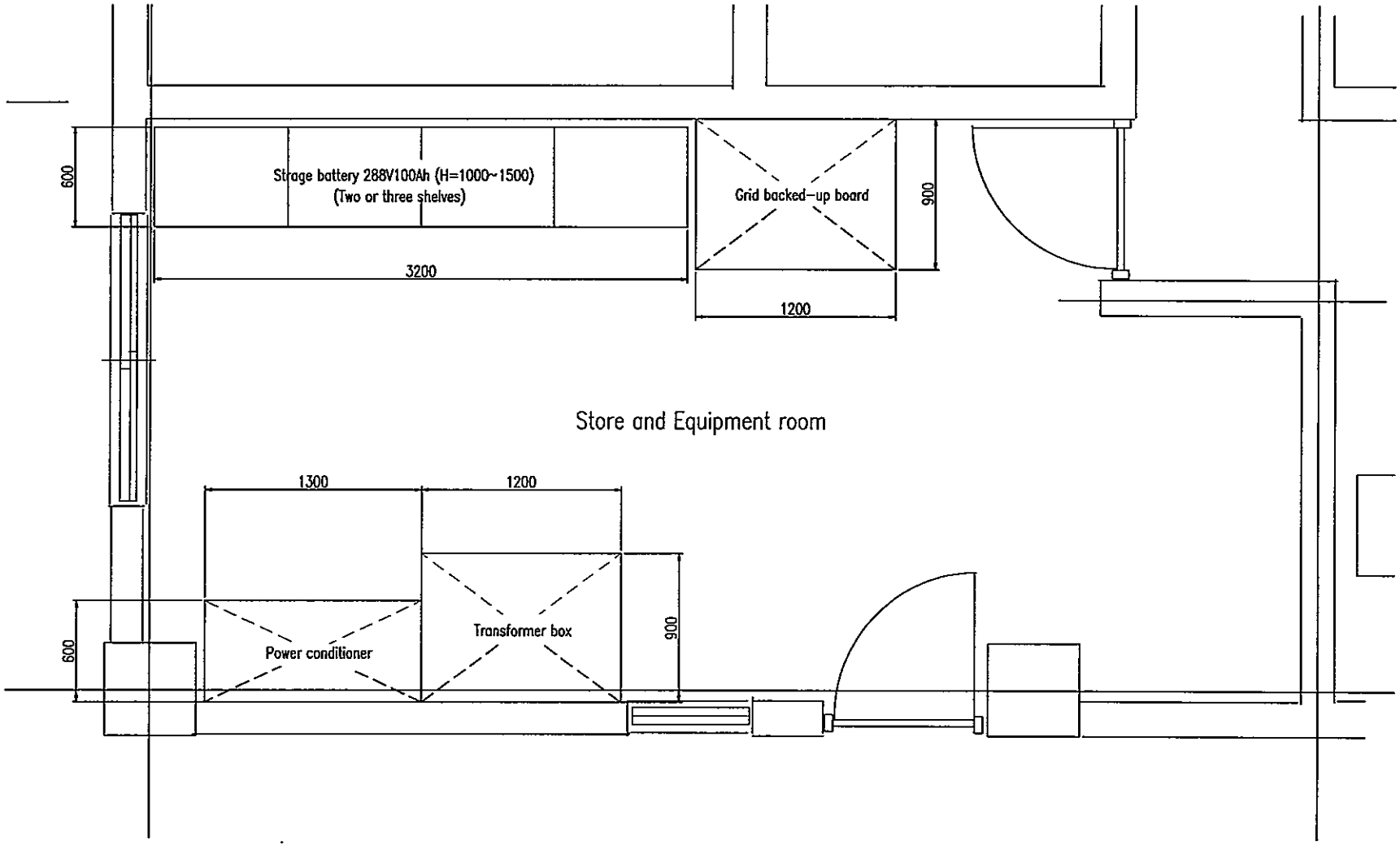
YACHIYO ENGINEERING CO, LTD.
NIPPON KOEI CO, LTD.

	DESIGNED BY	CHECKED BY	APPROVED BY
NAME	T.Ogawa	T.Kobayashi	M.Kamiya
SIGNATURE			
DATE	22-05-05	22-05-05	22-05-05

DRAWING TITLE

MULTI PURPOSE BUILDING
Solar Modules Arrangement Plan

SCALE	SHEET NO.	REV. NO.
1:150	MB-PV-01	



JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

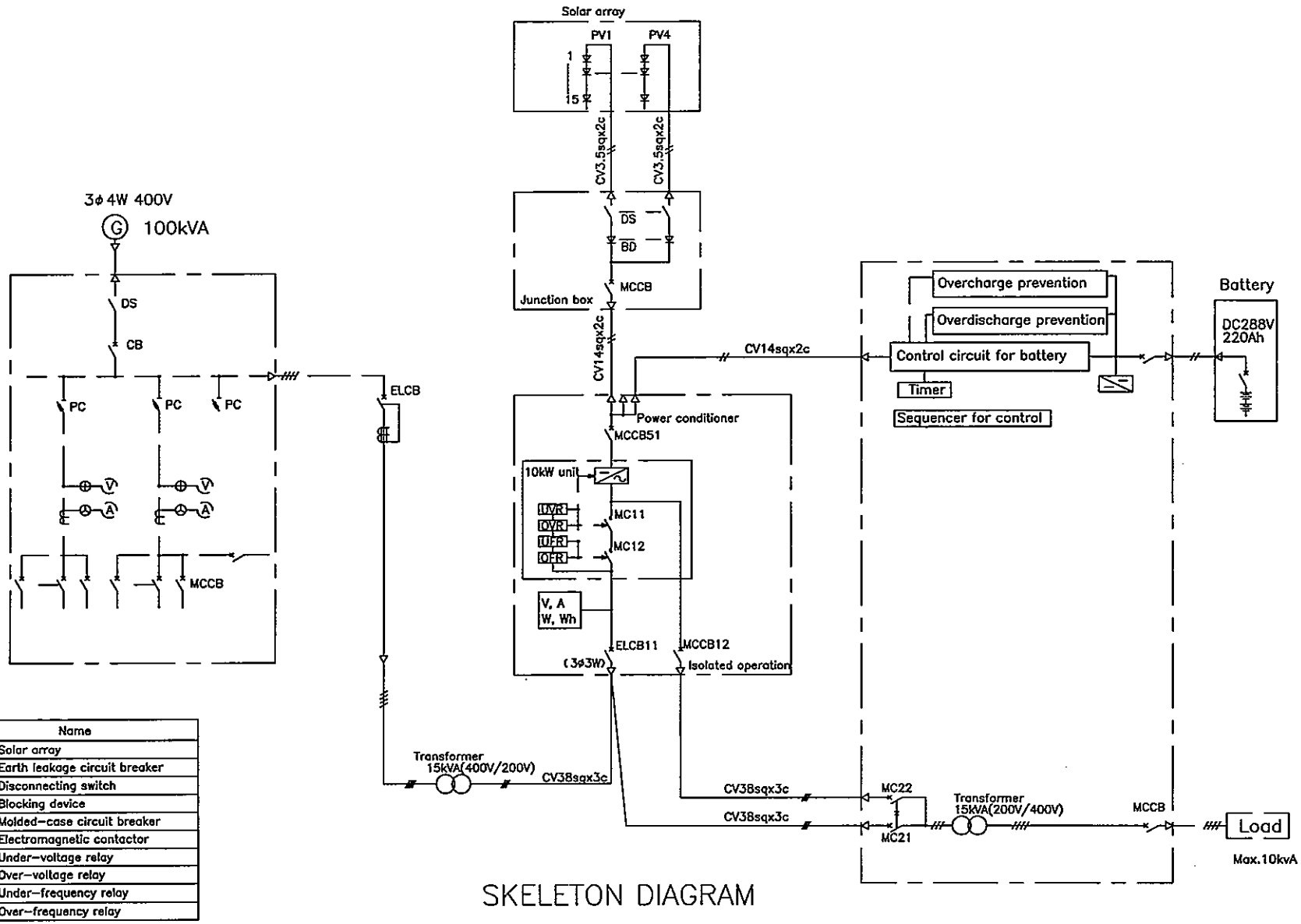
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO, LTD.
NIPPON KOEI CO, LTD.

	DESIGNED BY	CHECKED BY	APPROVED BY
NAME	T.Ogawa	T.Kobayashi	M.Kamiya
SIGNATURE			
DATE	22-05-05	22-05-05	22-05-05

DRAWING TITLE
MULTI PURPOSE BUILDING
Layout for Solar Power Equipment
(Inside Store and Equipment Room on 1st Floor)

SCALE	SHEET NO.	REV. NO.
1:25	MB-PV-02	



	Name
PV	Solar array
ELCB	Earth leakage circuit breaker
DS	Disconnecting switch
BD	Blocking device
MCCB	Molded-case circuit breaker
MC	Electromagnetic contactor
UVR	Under-voltage relay
OVR	Over-voltage relay
UFR	Under-frequency relay
OFR	Over-frequency relay

SKELETON DIAGRAM

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

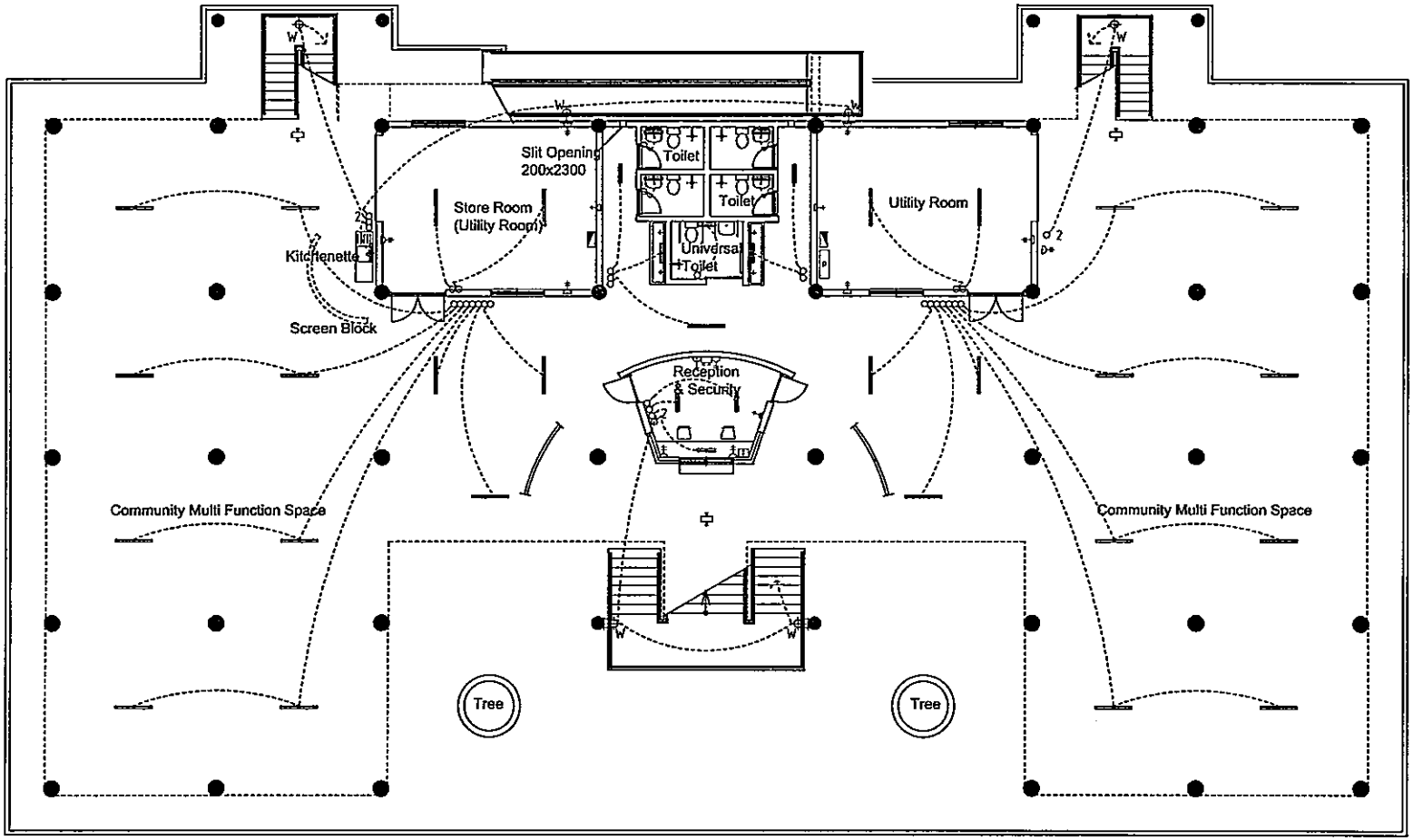
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO, LTD.
NIPPON KOEI CO, LTD.

	DESIGNED BY	CHECKED BY	APPROVED BY
NAME	T.Ogawa	T.Kobayashi	M.Kamiya
SIGNATURE			
DATE	22-05-05	22-05-05	22-05-05

DRAWING TITLE
MULTI PURPOSE BUILDING
Single Line Program

SCALE	SHEET NO.	REV. NO.
1:25	MB-PV-03	



ELECTRICAL LEGEND:

- EMERGENCY LIGHT ONE HOUR NON-MAINTAINED (WALL MOUNT)
- EMERGENCY LIGHT ONE HOUR NON-MAINTAINED (UNDER THE SLAB)
- CEILING FAN
- EXHAUST FAN
- 1x13A SOCKET OUTLET (300/1000 FFL)
- 2x13A SOCKET OUTLET (300 FFL)
- 1x13A SOCKET OUTLET (2500 FFL)
- 1x15A AC SOCKET OUTLET (2500 FFL)
- 1x15A WATER HEATER SOCKET OUTLET (2500 FFL)
- FEEFER OUTLET (TV)
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED WEATHERPROOF
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M)
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M) WEATHERPROOF
- WALL MOUNT LIGHT (2.5M) WEATHERPROOF
- CEILING MOUNTED LIGHT
- ONE WAY SWITCH
- 2-WAY SWITCH
- FAN REGULATOR
- TELEPHONE OUTLET
- PANEL BOARD
- DISTRIBUTION BOARD

GROUND FLOOR ELECTRICAL PLAN

SCALE 1:150

NOTE : ALL ELECTRICAL WIRING SHALL BE INSTALLED IN THE CONDUIT PIPE AND EMBEDDED IN THE SLABS AND WALLS.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

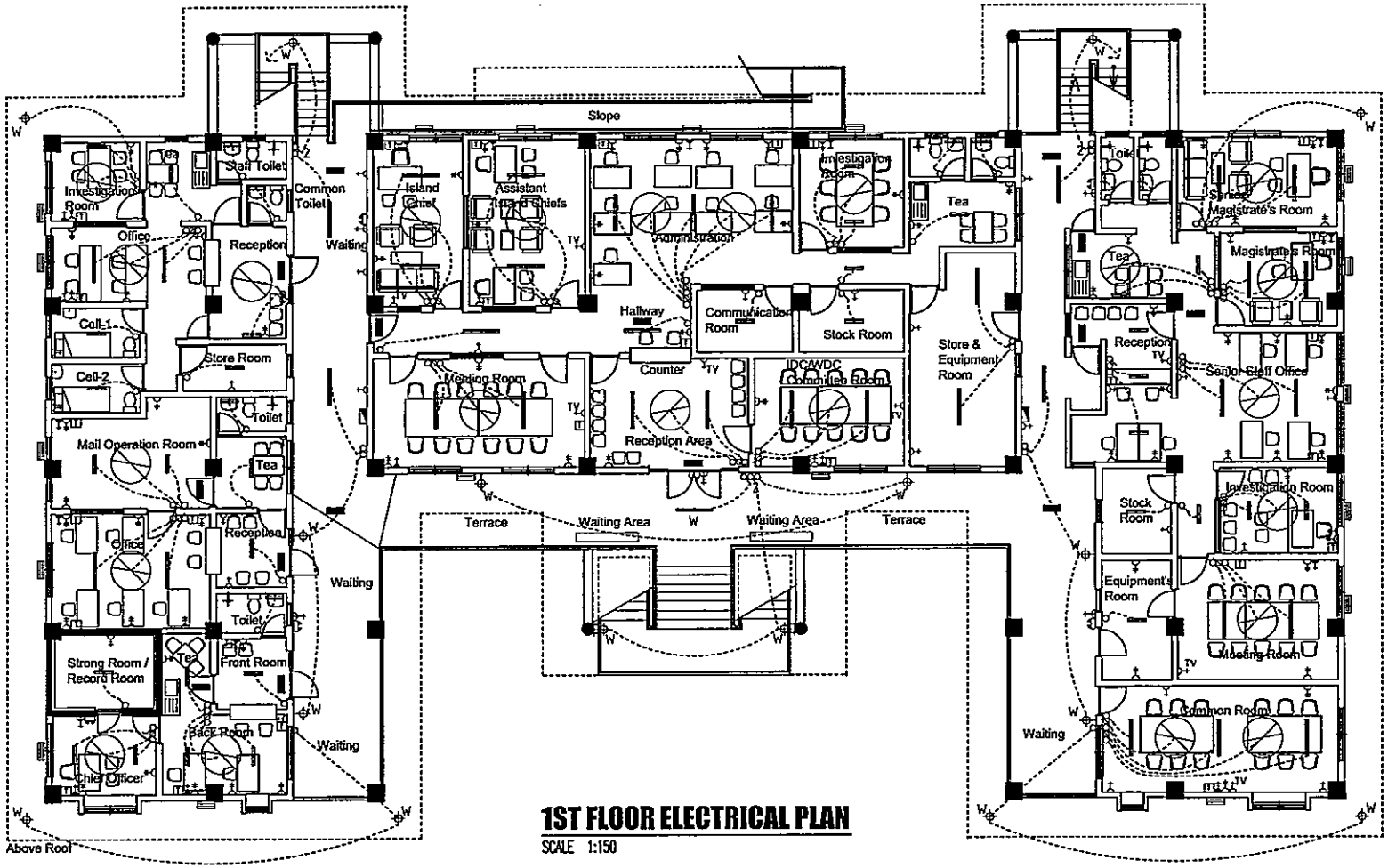
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	T. Ogawa	T. Ogawa	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Ground Floor Electrical Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	E-01	



1ST FLOOR ELECTRICAL PLAN

SCALE 1:150

ELECTRICAL LEGEND:

- EMERGENCY LIGHT ONE HOUR NON-MAINTAINED (WALL MOUNT)
- CEILING FAN
- EXHAUST FAN
- 1x13A SOCKET OUTLET (300/1000 FFL.)
- 2x13A SOCKET OUTLET (300 FFL.)
- 1x13A SOCKET OUTLET (2500 FFL.)
- 1x15A AC SOCKET OUTLET (2500 FFL.)
- 1x15A WATER HEATER SOCKET OUTLET (2500 FFL.)
- FEEFER OUTLET (TV)
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED
- 40 WATTS FLUORESCENT LAMP CEILING MOUNTED WEATHERPROOF
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M)
- 20 WATTS FLUORESCENT LAMP WALL MOUNTED (2.5M) WEATHERPROOF
- WALL MOUNT LIGHT (2.5M) WEATHERPROOF
- CEILING MOUNTED LIGHT
- ONE WAY SWITCH
- 2- WAY SWITCH
- FAN REGULATOR
- TELEPHONE OUTLET
- PANEL BOARD
- DISTRIBUTION BOARD
- AC. OUTDOOR UNIT
- SIGN BOARD FOR EMERGENCY ESCAPE

NOTE : ALL ELECTRICAL WIRING TO BE INSIDE CONDUITS INSIDE THE SLAB AND WALL (STRUCTURE) CONCRETE.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
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MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

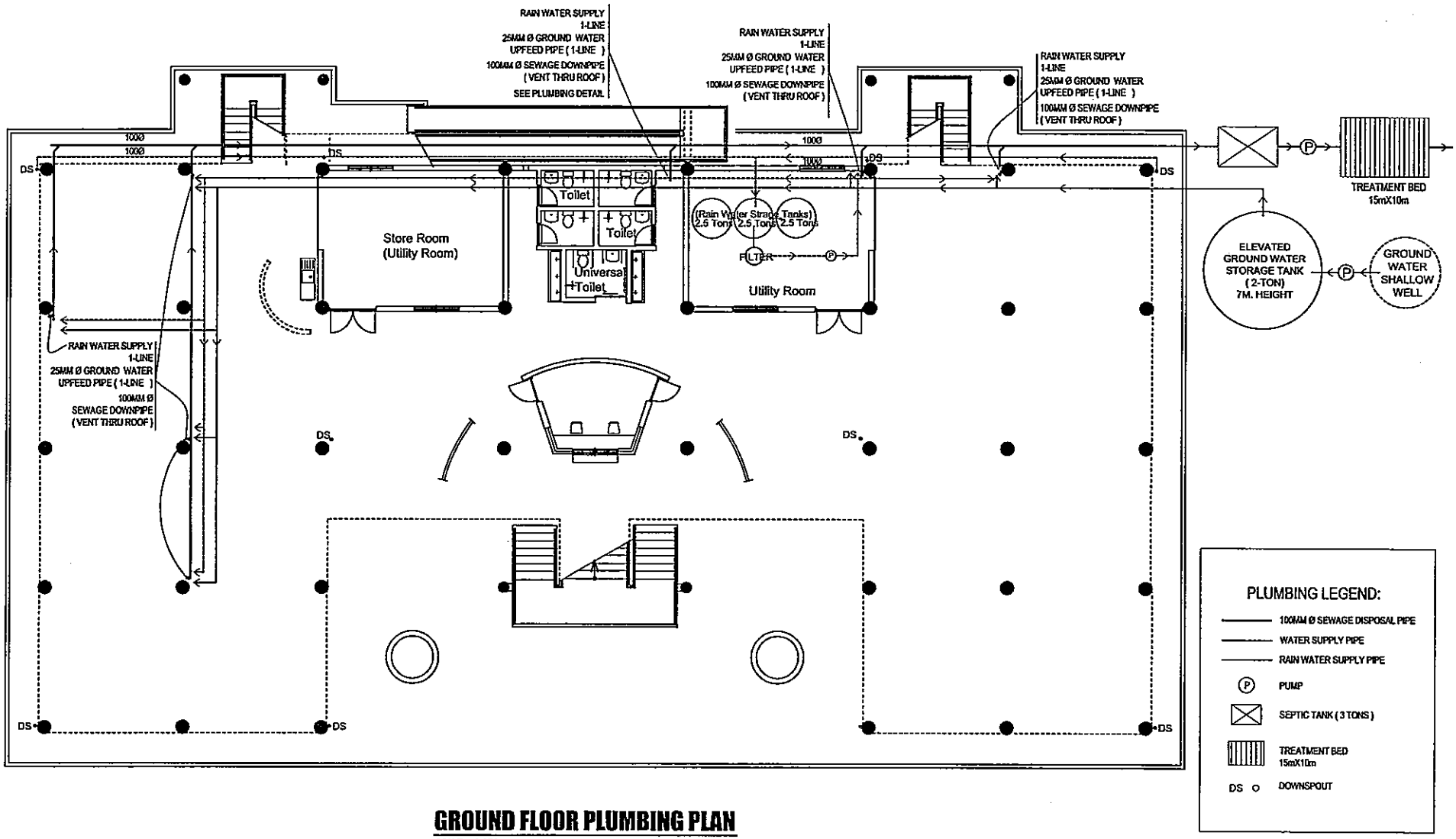
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	T. Ogawa	T. Ogawa	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
1st Floor Electrical Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	E-02	



GROUND FLOOR PLUMBING PLAN

SCALE 1:150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

* Steel stage for Elevated Water Storage Tank shall be designed and constructed, of which design shall be subject to the approval of the Engineer.

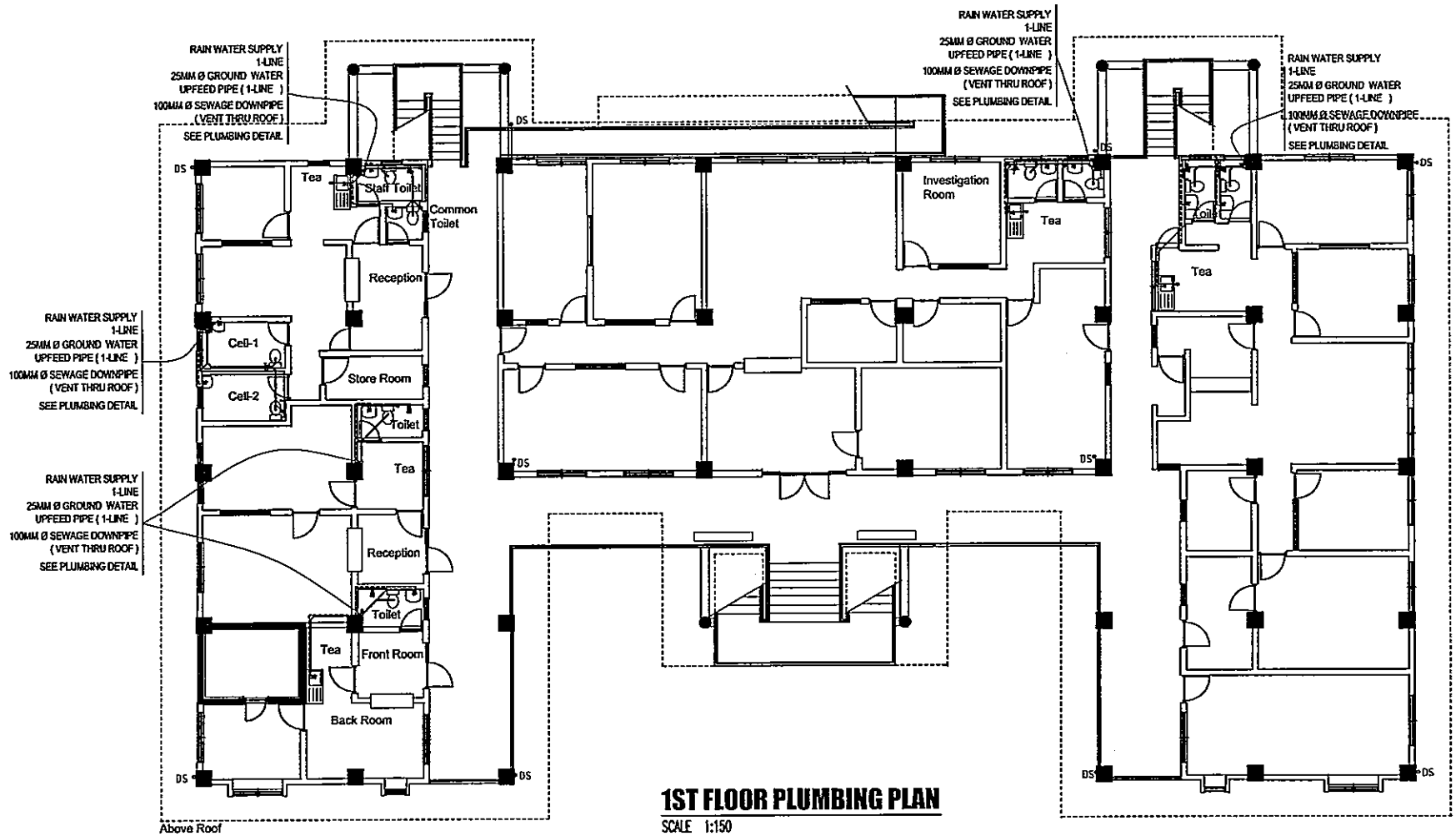
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Ground Floor Plumbing Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	P-01	



1ST FLOOR PLUMBING PLAN

SCALE 1:150

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
MINISTRY OF FOREIGN AFFAIRS
MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

NOTES:

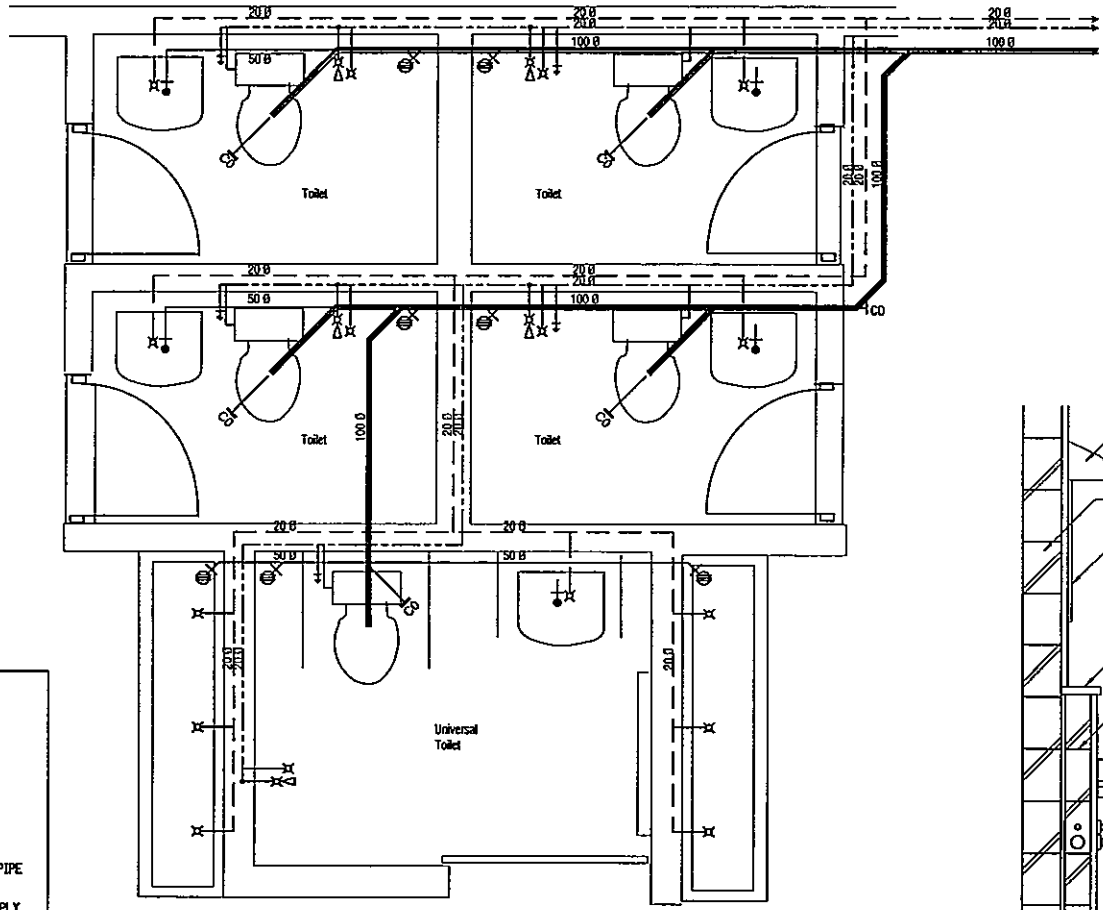
THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YEC YACHIYO ENGINEERING CO.,LTD.
NIPPON KOEI CO.,LTD.

	PREPARED BY	CHECKED BY	APPROVED BY
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
1st Floor Plumbing Plan

SCALE	SHEET NO.	REV. NO.
1 : 150	P-02	



SANITARY WARE:

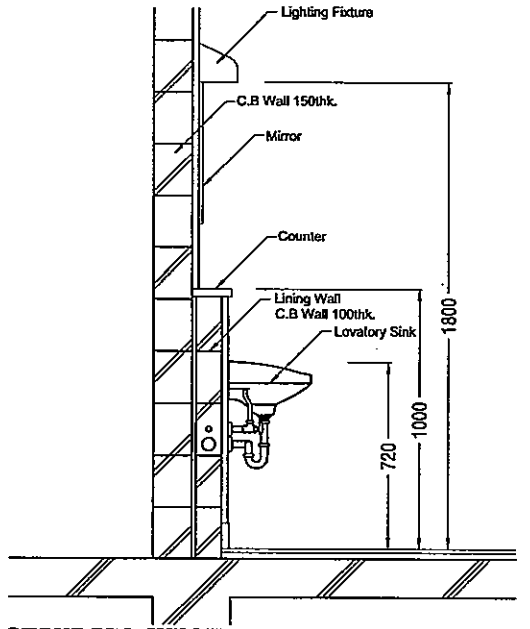
WATER CLOSET	: VITREOUS CHINA LOW TANK, 2 PIECES TOILET WITH SEAT & COVER
WASH BASIN	: VITREOUS CHINA
PAPER HOLDER	: STAINLESS STEEL WALL MOUNTED TYPE
TOWEL BAR	: STAINLESS STEEL, 700MM LONG
SHOWER SET	: STAINLESS STEEL WARE
SHOWER CURTAIN	: STAINLESS STEEL BAR AND VINYL CURTAIN
HIP SHOWER & FAUCET	: STAINLESS STEEL HARDWARE
MIRROR	: 400x500

LEGEND

- FAUCET/TAP
- SHOWER
- HIP SHOWER
- FLOOR DRAIN
- SINK/BASIN DRAIN
- CO CLEAN OUT
- SEWAGE DISPOSAL PIPE
- VASTE PIPE
- GROUND WATER SUPPLY
- RAIN WATER SUPPLY

GROUND FLOOR : COMMON TOILET

SCALE 1:30



STANDARD HEIGHT OF SANITARY FIXTURES

SCALE 1:20

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF MALDIVES
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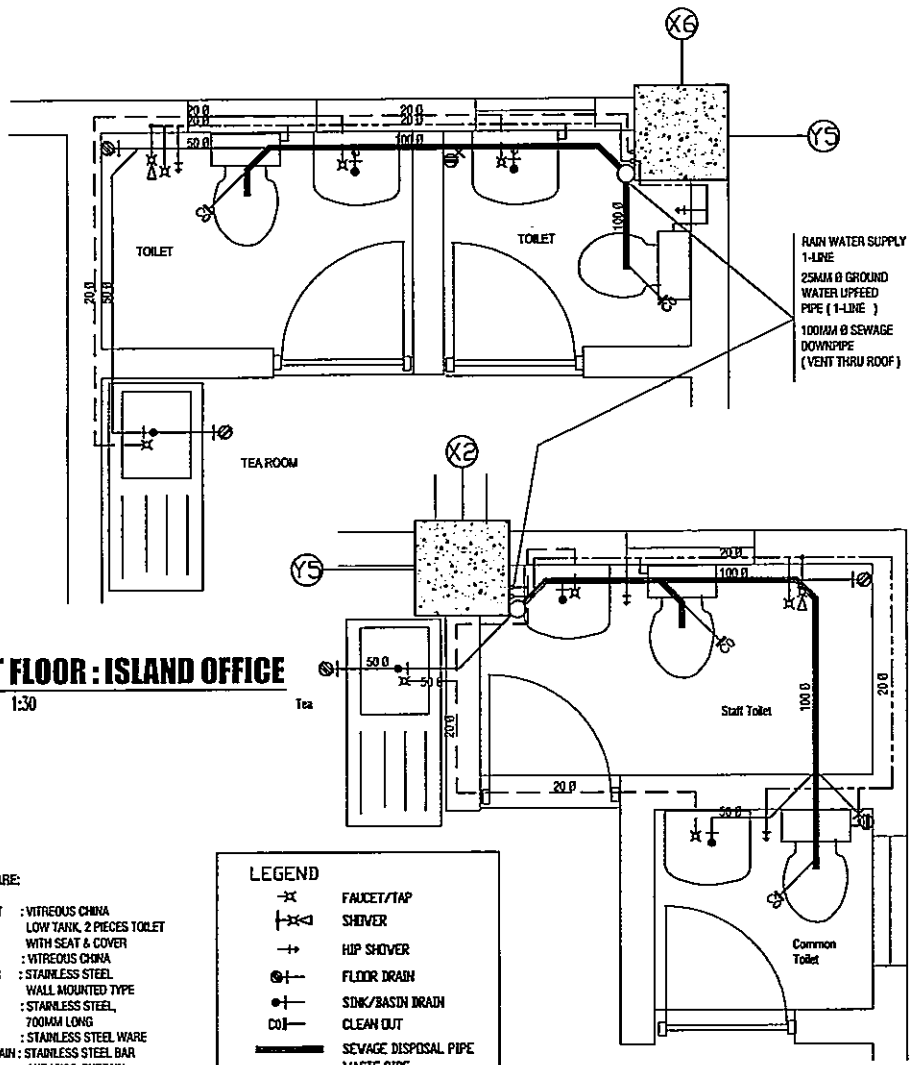
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

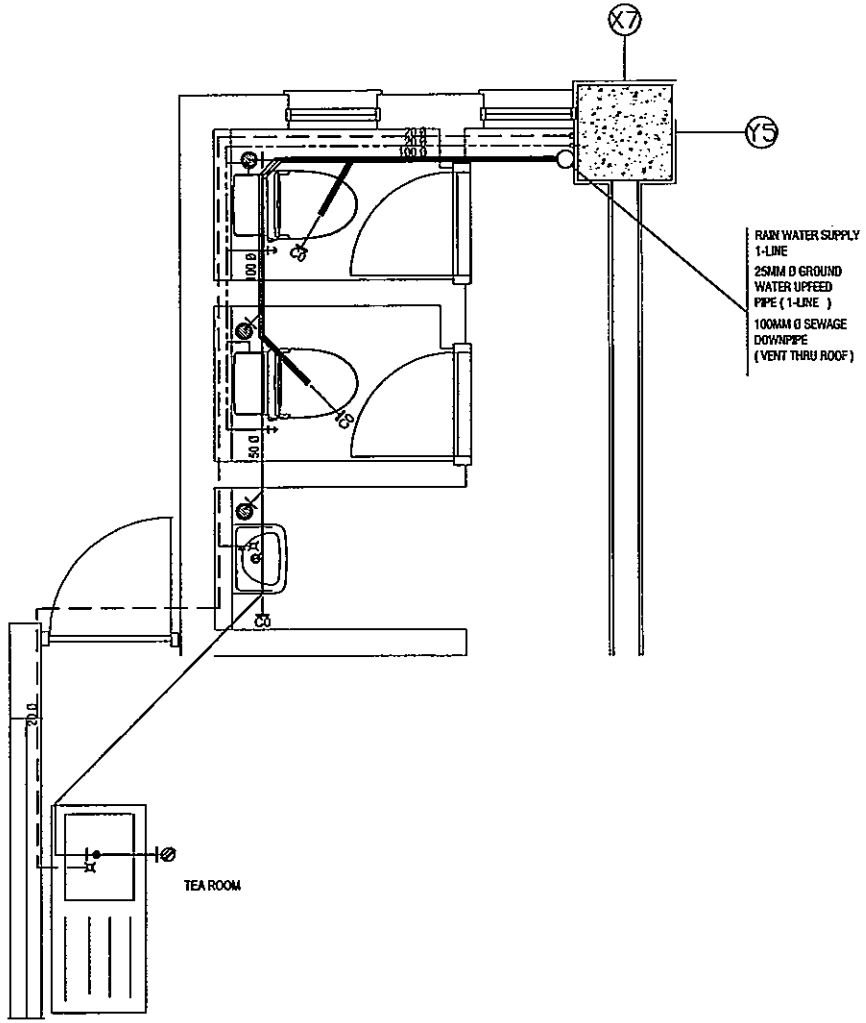
DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Plumbing Details-1

SCALE	SHEET NO.	REV. NO.
1 : 30	P-03	



1ST FLOOR : ISLAND OFFICE

SCALE 1:30



1ST FLOOR : ISLAND COURT

SCALE 1:30

SANITARY WARE:

WATER CLOSET	: VITREOUS CHINA LOW TANK, 2 PIECES TOILET WITH SEAT & COVER
WASH BASIN	: VITREOUS CHINA
PAPER HOLDER	: STAINLESS STEEL WALL MOUNTED TYPE
TOWEL BAR	: STAINLESS STEEL, 700MM LONG
SHOWER SET	: STAINLESS STEEL WARE
SHOWER CURTAIN	: STAINLESS STEEL BAR AND VINYL CURTAIN
HIP SHOWER & FAUCET	: STAINLESS STEEL HARDWARE
MIRROR	: 400x500

LEGEND

- FAUCET/TAP
- SHOWER
- HIP SHOWER
- FLOOR DRAIN
- SINK/BASIN DRAIN
- CO — CLEAN OUT
- SEWAGE DISPOSAL PIPE
- WASTE PIPE
- GROUND WATER SUPPLY
- RAIN WATER SUPPLY

1ST FLOOR : POLICE OFFICE

SCALE 1:30

JICA JAPAN INTERNATIONAL COOPERATION AGENCY

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THE STUDY ON TSUNAMI RECOVERY, REHABILITATION AND DEVELOPMENT OF ISLANDS IN MALDIVES

YACHIYO ENGINEERING CO.,LTD.
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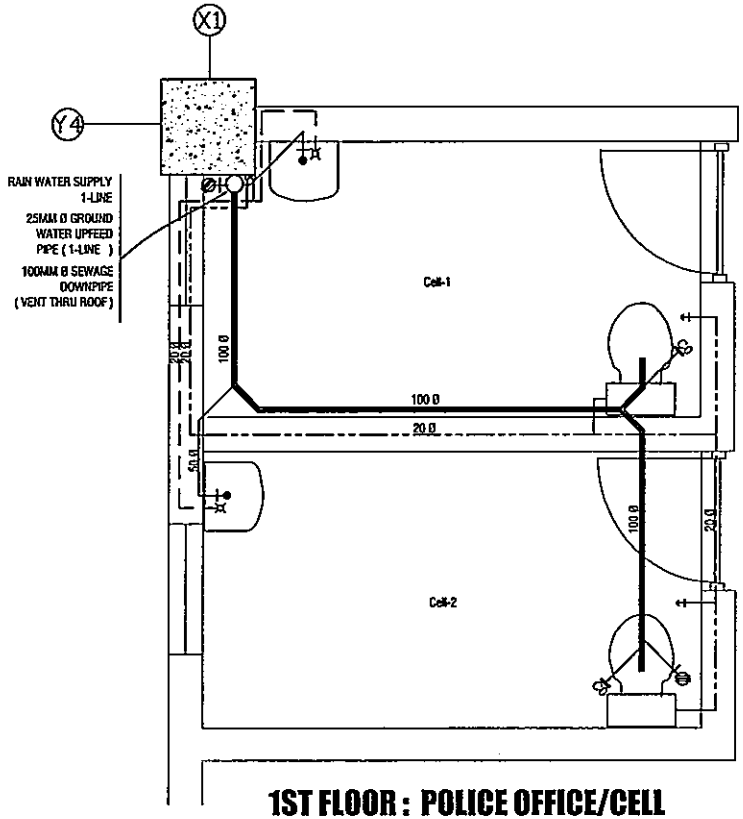
NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

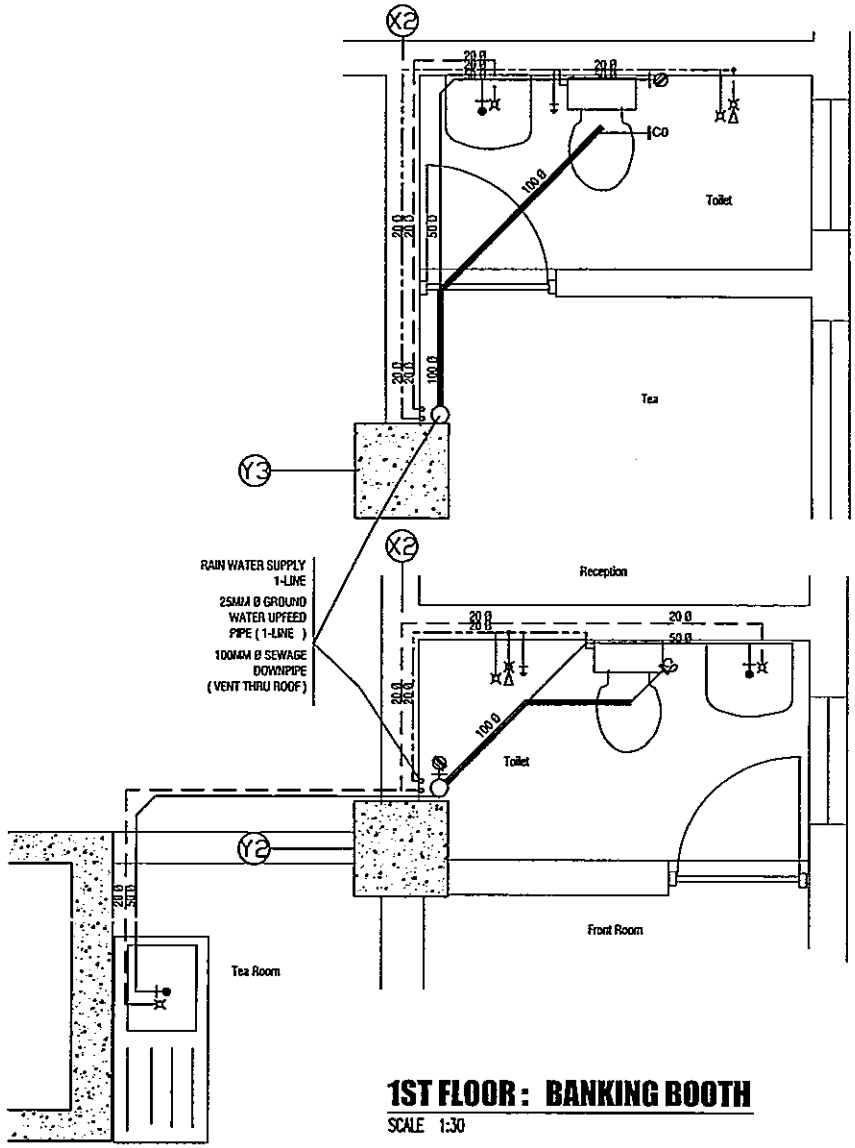
DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Plumbing Details-2

SCALE	SHEET NO.	REV. NO.
1 : 30	P-04	



1ST FLOOR : POLICE OFFICE/CELL

SCALE 1:30



1ST FLOOR : BANKING BOOTH

SCALE 1:30

SANITARY WARE:

WATER CLOSET	: VITREOUS CHINA LOW TANK, 2 PIECES TOILET WITH SEAT & COVER
WASH BASIN	: VITREOUS CHINA
PAPER HOLDER	: STAINLESS STEEL WALL MOUNTED TYPE
TOWEL BAR	: STAINLESS STEEL, 700MM LONG
SHOWER SET	: STAINLESS STEEL WARE
SHOWER CURTAIN	: STAINLESS STEEL BAR AND VINYL CURTAIN
HIP SHOWER & FAUCET	: STAINLESS STEEL HARDWARE
MIRROR	: 400x500

LEGEND

- FAUCET/TAP
- SHOWER
- HIP SHOWER
- FLOOR DRAIN
- SINK/BASIN DRAIN
- CO CLEAN OUT
- SEWAGE DISPOSAL PIPE
- WASTE PIPE
- GROUND WATER SUPPLY
- RAIN WATER SUPPLY

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NOTES:

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NAME	Y. Horigome	H. Yamamoto	M. Komiya
SIGNATURE			
DATE	July 08, 2005	July 08, 2005	July 08, 2005

DRAWING TITLE
Multi-purpose Building
(Thundi, Gan Island, Laamu Atoll)
Plumbing Details-3

SCALE	SHEET NO.	REV. NO.
1 : 30	P-05	