

**The Republic of the Marshall Islands
Ministry of Health and Human Services**

**Follow-up Cooperation Survey Report
on
The Project for Improvement of
the Majuro Hospital
in
The Republic of The Marshall Islands**

April, 2023

**Japan International Cooperation Agency
(JICA)**

Azusa Sekkei Co., Ltd.

PREFACE

Japan International Cooperation Agency (JICA) has decided to conduct the follow-up cooperation survey on the Majuro Hospital Development Project in the Marshall Islands and entrust the survey to Azusa Sekkei Co., Ltd.

The survey team held a series of discussions with the officials concerned of the Government of the Republic of the Marshall Islands and conducted a field investigation from November 2022 to December 2022. As a result of further studies in Japan, the present report was finalized.

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

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Marshall Islands for their close cooperation extended to the survey team.

April 2023

Akihito SANJO

Director

Financial Cooperation Implementation Department

Japan International Cooperation Agency

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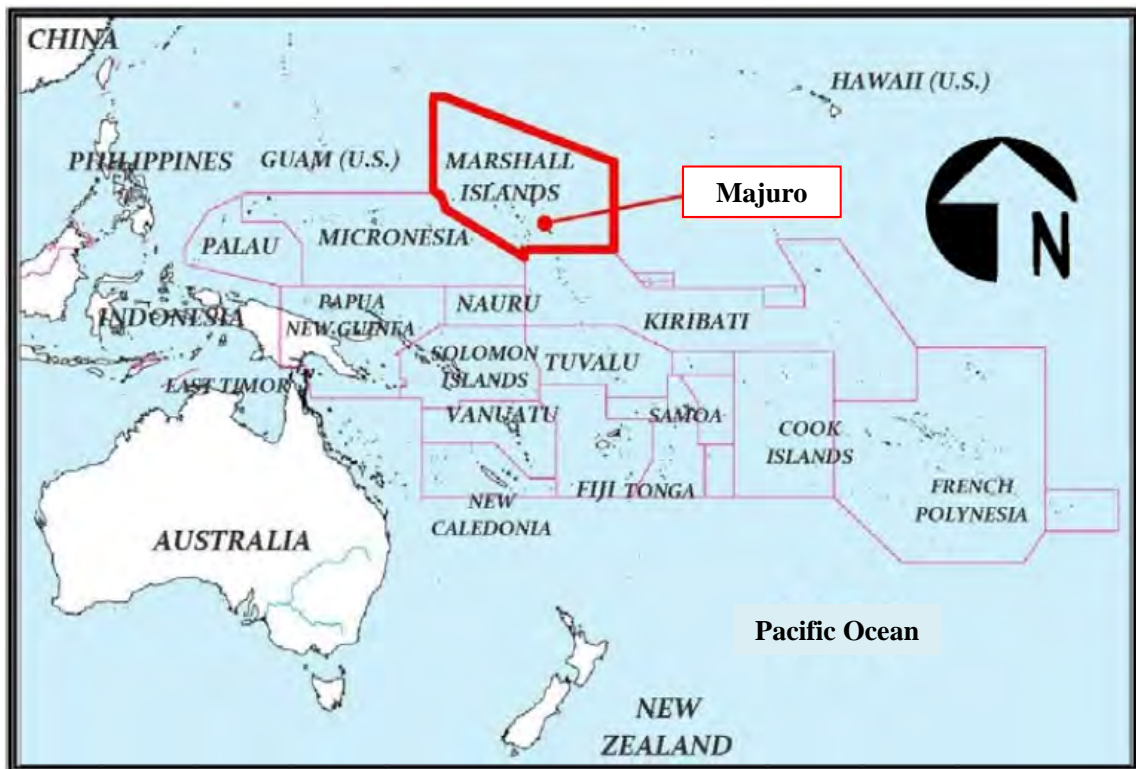
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Project Location Map



Location of The Republic of the Marshall Islands



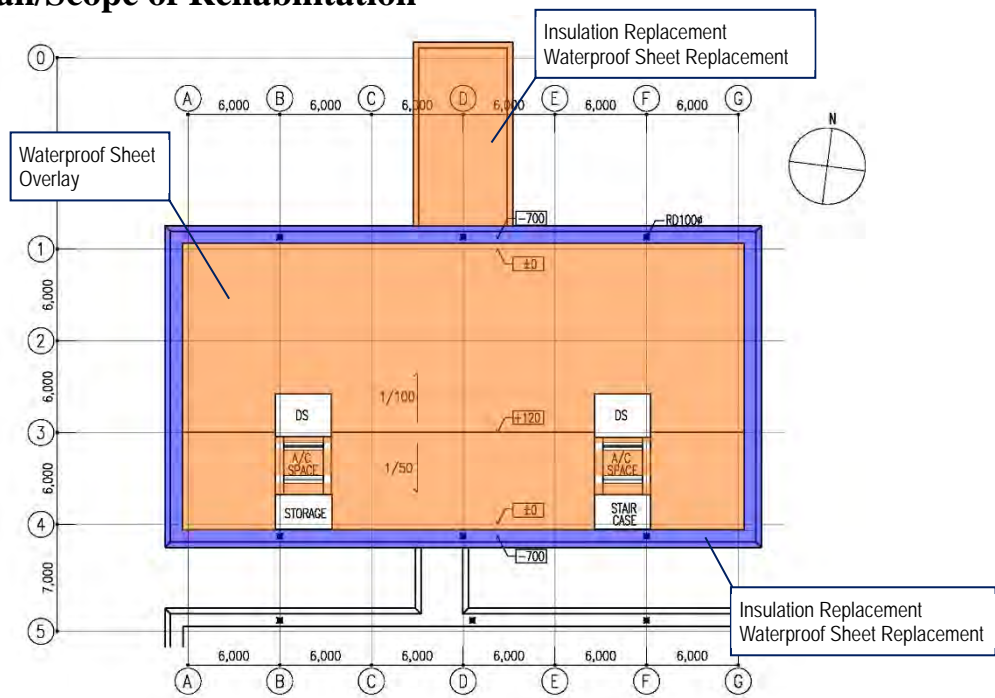
Aerial View Around Majuro Hospital

Layout Drawing/Scope of Survey



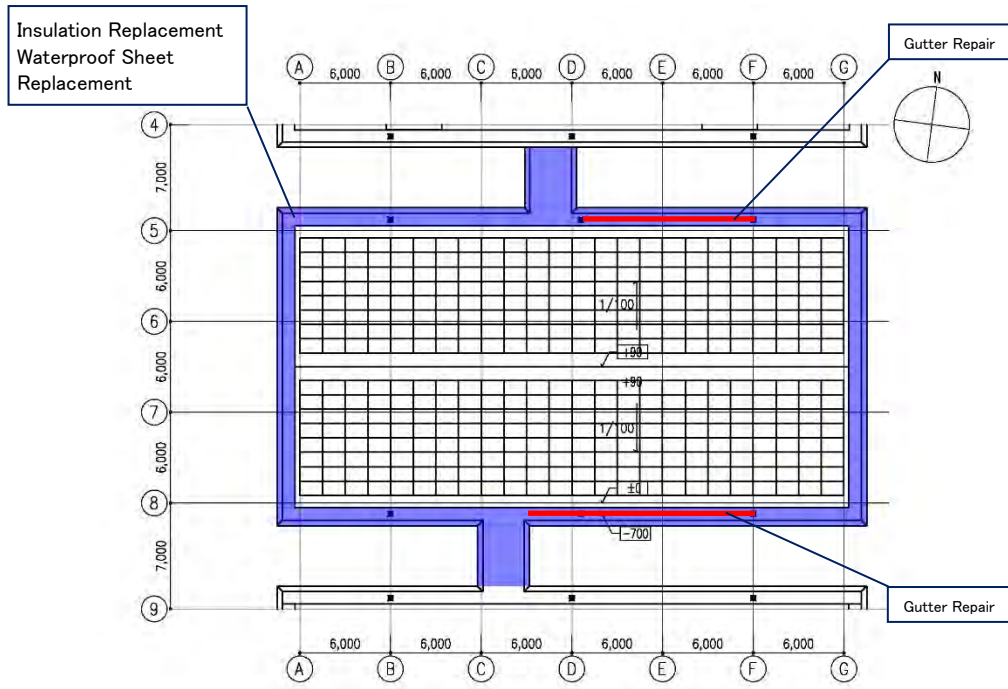
Layout Drawing/Scope of Survey

Roof Floor Plan/Scope of Rehabilitation



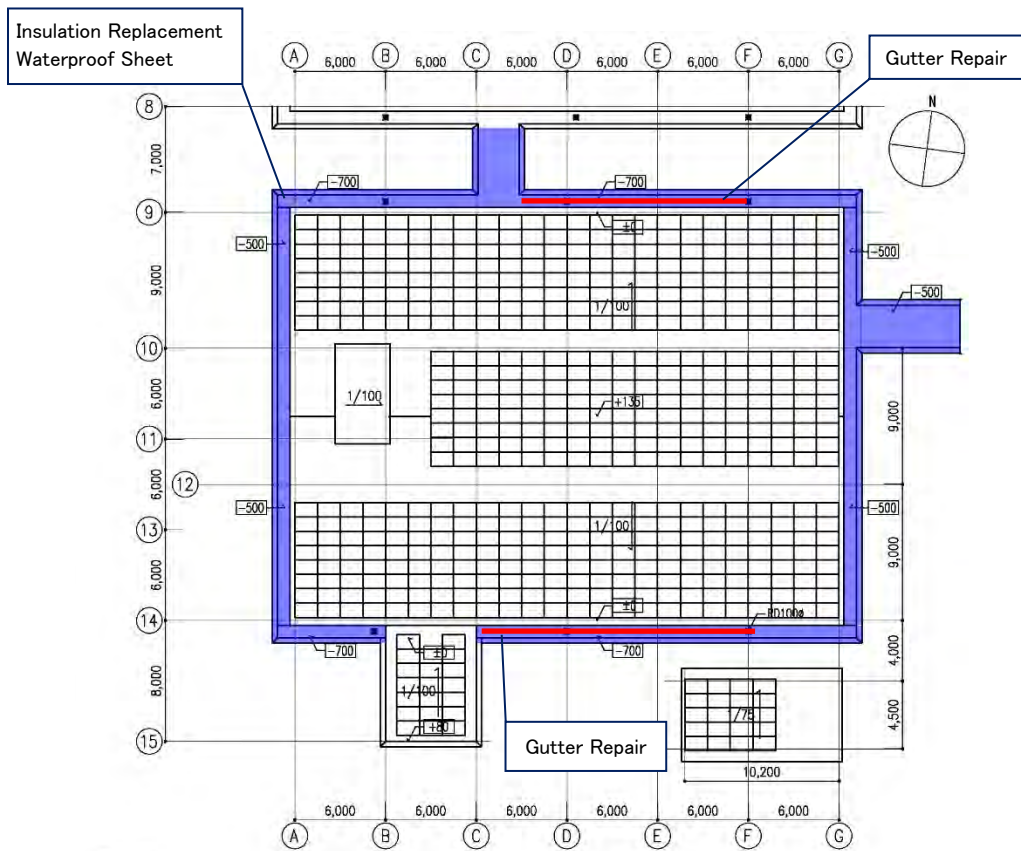
- Flat Area Waterproofing Renovation Scope
- Eaves Rain Gutter Drainage Area, Scope of Waterproofing Renovation

Building 1 Roof Floor Plan/Scope of Renovation



■ Eaves Rain Gutter Drainage Area, Scope of Waterproofing Renovation

Building 2 Roof Floor Plan/Scope of Renovation



■ Eaves Rain Gutter Drainage Area, Scope of Waterproofing Renovation

Building 3 Roof Floor Plan/Scope of Renovation

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Abbreviation Collection

Abbreviation	Language	Generic Term
E/N	English	Exchange of Notes
F/U	English	Follow-up
JICA	English	Japan International Cooperation Agency
MoHHS	English	Ministry of Health and Human Services
MWIU	English	Ministry of Works Infrastructure and Utilities
RMI	English	The Republic of Marshall Islands
S/W	English	Scope of Works

Chapter 1: Outline of Follow-Up Cooperation Surveys

1. Outline of Follow-Up Cooperation Surveys

1.1 Background and Objectives of the Survey

1.1.1 Background of the project

Majuro Hospital is one of the two secondary medical facilities in the health care system of the Republic of the Marshall Islands (herein referred as “RMI”) and is a core hospital that opened in 1986. Due to the deterioration of existing facilities, three buildings (Buildings 1, 2, and 3) including the outpatient department, public health division, and emergency department were expanded and equipment was procured under the Project for Improvement of Majuro Hospital, a grant aid project implemented in two phases (Phase 1 in fiscal 2003, Phase 2 in fiscal 2004) (the buildings and equipment were handed over in December 2005). Additionally, under the Project for Introduction of Clean Energy by Solar Electricity Generation System, Program Grant Aid for Environment and Climate Change underway since 2009, solar power generation systems were installed on two hospital buildings (Buildings 2 and 3). The following is an overview of each project.

(1) Project for Improvement of Majuro Hospital

Phase 1: E/N conclusion: 2003, E/N limit: 614 million yen

Phase 2: E/N conclusion: 2004, E/N limit: 374 million yen

•Work completed: December 2005

•Details of cooperation: Building 1 (reinforced concrete, two stories), Building 2, Building 3, Annex (reinforced concrete, one story) (Total floor area: 2,992 m²)

(2) Project for Introduction of Clean Energy by Solar Electricity Generation System

E/N conclusion: 2009, E/N limit: 530 million yen

•Work completed: September 2012

•Details of cooperation: Installation of 205-kW solar power generation system on Buildings 2 and 3

Although the facilities and equipment provided under the grant aid projects have been utilized since the work was completed, many problems have occurred since then, namely roof leaks, air conditioning system failures, problems maintaining negative pressure in labs, ceiling panel damage, toilet leaks, and problems with keys and door hardware. These problems are hindering efforts to maintain a sanitary environment and operate Majuro Hospital efficiently; there is an urgent need to restore the facilities and equipment to their original functionality. Majuro Hospital has been making self-help efforts to resolve some of these problems, for example by making repairs in some cases, replacing equipment, and investigating the causes of the problems. However, budget constraints, insufficient staff capabilities, and the like have made it difficult for the hospital to independently investigate the causes and make the repairs. Specifically, investigating the causes of roof leaks and repairing them is very difficult and requires technical skills, making it difficult for Majuro Hospital to plan and implement long-term, sustainable repairs and maintenance under its own power. Accordingly, this follow-up (F/U) cooperation was requested.

Majuro Hospital remains a key medical institution used by many patients in the Marshall Islands; therefore, it is considered highly significant and relevant to restore the hospital’s facilities and equipment to their original functionality through F/U cooperation.

1.1.2 Outline of Buildings

(1) Outline of Existing Buildings

Building 1: Reinforced concrete structure, two stories with a rooftop machine room, total floor area of 1,205.65 m², building area of 759.25 m², eave height of 9.07 m

Building 2: Reinforced concrete structure, one-story, total floor area of 700.03 m², building area of 735.75 m², eave height of 5.17 m

Building 3: Reinforced concrete structure, one-story with a rooftop machine room, total floor area of 1,086.77 m², building area of 1,133.54 m², eave height of 5.17 m

(2) Timing of Completion

Building 1: December 2005 (Phase 2 construction)

Buildings 2 and 3: March 2005 (Phase 1 construction)

(3) Post-Completion Rehabilitation History

During the implementation of the Program Grant Aid for Environment and Climate Change in 2012, some of the waterproofing sheets on the rooftop of Building 1 were found to be torn and leaking; consequently, at the request of the hospital, the Contractor of the Program Grant Aid for Environment and Climate Change used surplus sheets to partially repair the damage of Building 1 at no cost. In 2014, a folded-plate roof was installed to cover the rooftop under the self-help efforts of the Republic of the Marshall Islands. Leaks were discovered again in 2019; the (galvanized iron sheet) folded-plate roof is being replaced under self-help efforts.

Additionally, when solar panels were installed on the entire roof surfaces of Buildings 2 and 3 in 2012 under the Program Grant Aid for Environment and Climate Change, given the difficulty of repairing waterproofing after installing the panels, the flat parts of the rooftops were reinforced with an overlay of TPO waterproofing sheets. Additionally, the Marshall Islands side installed metal sheets in some of the rain gutters on Buildings 2 and 3 in 2021 to prevent leaks. The table below shows the history of rooftop waterproofing repairs.

Table 1-1: History of Waterproofing Repairs

Period	Building 1	Building 2	Building 3
2012	Repair (overlay) damaged areas in front of rooftop doors and the like under the Program Grant Aid for Environment and Climate Change	During the Program Grant Aid for Environment and Climate Change, given the difficulty of repairing waterproofing after installing solar panels, the waterproofing layer of the flat parts of the rooftops was overlaid with TPO sheets	
2014	Due to leaks, the hospital installed a folded-plate roof to cover the rooftop as a self-help effort	Nothing	Nothing
2019	After leaks were discovered again, the hospital replaced the folded-plate roof as a self-help effort	Nothing	Nothing
2021	Nothing	Due to leaks, the hospital installed metal sheets in some of the rain gutters as a self-help effort	

1.2 Preliminary Consideration of Action Policies

(1) Roof Leaks

① Rooftop Waterproofing Specifications

As a common specification for Buildings 1, 2, and 3, the roofs are covered with TPO sheet (olefinic thermoplastic elastomer sheet, $t = 1.14$ mm) over deck plates ($t = 1.2$ mm) and insulation material (polyisocyanurate board, $t = 35$ mm). Due to the lack of bearing capacity of the ground at the site, it is necessary to reduce building's weight with the construction of steel deck plates instead of concrete slab. The waterproofing sheets are mechanically fixed with fixed discs and screws at the edges and middles, with the overlapping parts melted and crimped. Additionally, the mechanically fixed parts in the middles of the sheets are covered via crimping with the same material.

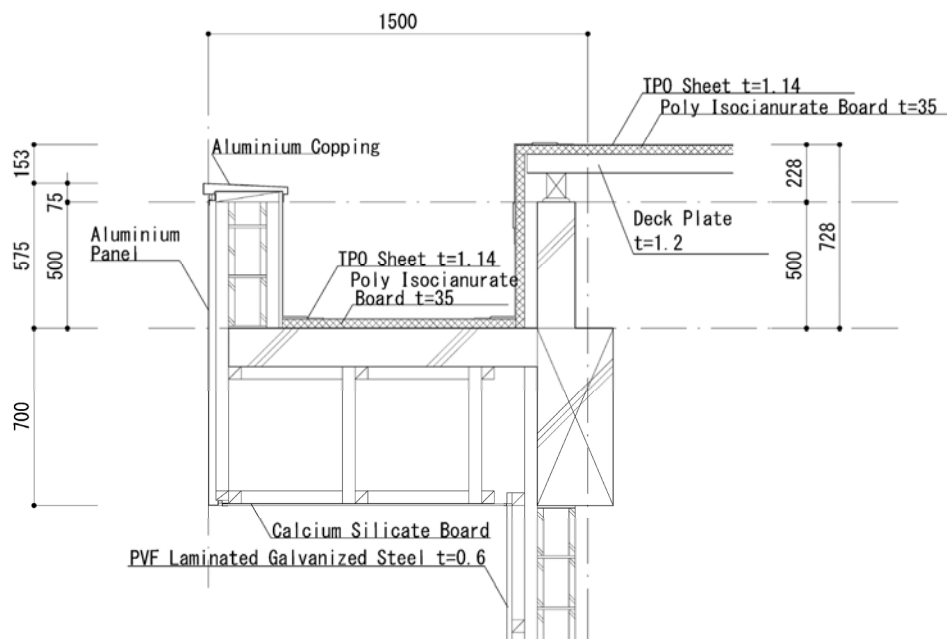


Figure 1-1: Sectional Diagram of a Rain Gutter

The waterproofing sheets installed when the construction was completed and during solar panel installation are olefinic thermoplastic elastomer (TPO) sheets that were fixed mechanically using an exposed-type (non-walking) method. TPO sheets are resistant to degradation from ultraviolet rays and heat, and the joints between sheets are thermally bonded, which prevents them from peeling. Generally, the useful life of waterproofing sheets is 10 to 15 years; however, the hospital asked the solar panel installer to repair the waterproofing sheets of Building 1 during the installation of solar panels in 2011, suggesting that the leakage occurred at least five years after the construction was completed in December 2005. Possible causes of damage to the waterproofing sheets include people walking on sheets that were not designed to be walked on a daily basis. Additionally, given the site's low latitude, the sunlight is always intense; the waterproofing sheets are exposed to high heat and strong ultraviolet rays during the day and may have deteriorated more quickly than in temperate regions.

In light of these conditions, the causes of the leaks will be confirmed visually and through interviews, and the necessary information will be gathered for considering how to make repairs.

② Potential Leaks Outside Flat Areas

The coping, waterproofing risers, and floor drains are potential leakage areas other than flat areas. In these parts, the hardware and sealant that fix the sheet edges and the sheets themselves are often damaged by age, wind, and other factors that often cause the sheets to peel away, allowing water to leak inside. Leaks from the roofs of the corridors connecting the buildings were also reported; these were not renovated after construction was completed, suggesting that the cause is the waterproofing exceeding its service life.

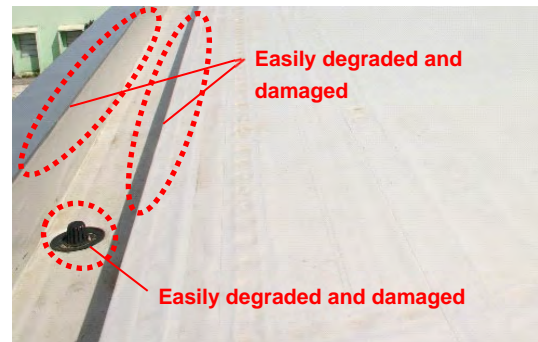


Figure 1-2 : Risk Areas of Leakage

These leaks outside flat areas should be carefully monitored to obtain the information needed to consider how to repair them.

③ Folded-Plate Roof Installation Condition

The trusses of the sloped roof installed by the RMI on Building 1 are wooden, and it is necessary to confirm how they were fixed to the existing flat roof and structure; how the roof edges, overlaps between the building and the folded plates, and the like were waterproofed; and whether there are any leaks. It is also necessary to check the wooden trusses and folded-plate roof for damage caused by nails and other hardware at the time of installation, and to consult with the RMI as to the proper actions to take, for example deciding whether to keep using the roof as is, reinforce it as part of this F/U cooperation, or remove and replace the waterproofing sheets.

④ Solar Panel Penetration

To fix the supports for the solar panel mounts on Buildings 2 and 3 to the reinforced concrete girders of the buildings, holes were drilled through the existing roof deck plates to cut through the waterproofing layer, which was later waterproofed again. The waterproofing layer has been cut; therefore, if gaps form between the materials due to aging or other factors, rainwater could have seeped in and developed into leaks. Specifically, because the roofs of the existing buildings are the dry method, they are softer than concrete, and when openings are made, stress is concentrated and distortion is likely to occur.

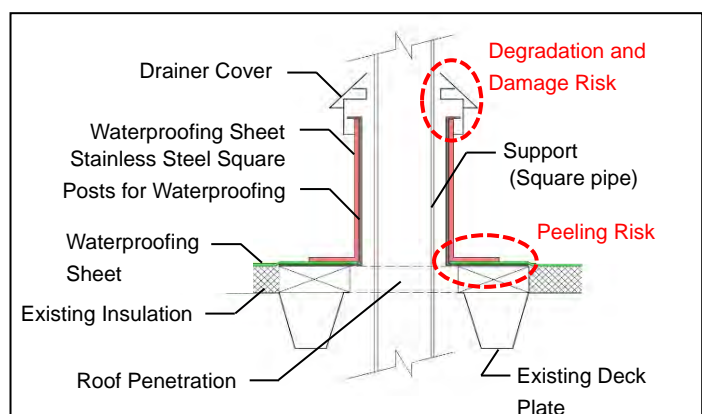


Figure 1-3 : Cross Section of Pillar

The waterproofing method for the supports involved covering the supports with stainless steel tubes where they penetrate through the roof, wrapping them in waterproofing sheets, using stainless steel plates to fix the upper edges of the sheet risers, and installing stainless steel drain covers and applying sealant on the top. This is considered to be a sufficient measure for preventing leaks. However, as years pass after the construction, the penetrations should be checked because the waterproofing sheets may crack, or peel away due to deterioration of the adhesive, or the sealant on the top covers of the sheet risers may have deteriorated over time.



Figure 1-4: Photo of Pillar Construction

The solar panel support frames on Buildings 2 and 3 will interfere with the work of fully or partially repairing the waterproofing sheets. Specifically, it is necessary to ensure clearance under the frames for the heat sealing machinery used to repair the edges of the sheets. The amount of space beneath the frames will be checked and possible installation methods will be considered to determine whether it is necessary to temporarily remove and then restore the solar panels and the frames.

⑤ Solar Panel Frames

The solar panel support frames on Buildings 2 and 3 will interfere with the work of fully or partially repairing the waterproofing sheets. Specifically, it is necessary to ensure clearance under the frames for the heat sealing machinery used to repair the edges of the sheets. The amount of space beneath the frames will be checked and possible installation methods will be considered to determine whether it is necessary to temporarily remove and then restore the solar panels and the frames.

(2) Air Conditioning System Failures

When the buildings were completed (December 2005), large packages with integrated indoor-outdoor units were installed outdoors around the building, and cold air was blown through ducts to cool the rooms. However, the equipment failed due to corrosion caused by chloride damage, and the connecting ducts also became corroded. The equipment was replaced in due order around eight years after the construction was completed. In some areas, the large package-based central system has been replaced by individual room air conditioning. All of the equipment is severely corroded by chloride damage, but the degree of corrosion appears to vary widely depending on level of exposure to sea breezes. Due to the shortened useful life of the equipment, some has already been replaced twice, and regular updates will continue to be necessary. The survey will confirm whether the problems with the air conditioning systems reported currently have caused problems in the provision of medical care, and whether their functionality can be maintained through self-help efforts (including equipment updates).

(3) Problems Maintaining Negative Pressure in Labs

Pressure in the labs is controlled by air conditioners and exhaust fans installed in each exhaust system; with some exceptions, negative-pressure rooms are controlled by exhaust from a single exhaust fan.

The RMI has indicated that negative pressure is not ensured in labs; however, it is necessary to sort out the

given conditions, for example which labs require negative pressure. The plan calls for confirmation of whether the ventilation fans in the areas of interest are working properly, and updates or repairs in response to any defects.

(4) Ceiling Panel Damage

Most of the ceilings in the hospital are the type in which ceiling panels (rock wool sound-absorbing panels) are placed on a grid-like frame suspended by metal hardware from the rooftop frame or other structural elements; others in common areas and the like are the type in which rock wool sound-absorbing panels are attached to the base material of the ceiling. The ceiling panels contain visible stains—possibly caused by water droplets from leaks, condensation on air conditioning ducts, or the like—and some ceiling panels have fallen off or their finishes are peeling. The cause is presumed to be that the moisture-sensitive rock wool sound-absorbing panels were damaged by water and peeled away from or fell off of the frames. During the field survey, the panels will be visually inspected, and some will be taken off to check the ceiling interiors for damage and corrosion of the supporting hardware and base materials.

(5) Toilet Leaks

The probable causes of toilet leaks include clogged pipes due to foreign objects being flushed down the toilets, damage to the pipes themselves or their connections to fixtures, and incorrect connections when they were repaired. At the site, damage, clogging, and other problems with fixtures and pipes will be investigated, and the hospital will be interviewed to learn about the repairs it has made and how the toilets are used and maintained on a daily basis.

(6) Problems with Keys and Door hardware

Security is important in hospitals and other facilities frequented by many people; therefore, keys are used to lock and unlock doors many times. Keys and Door hardware must function smoothly at all times and be resistant to breaking, and locks must be unlockable with a master key during emergencies. Cylinder locks, keys and Door hardware manufactured by Miwa Lock are used in this hospital.

Because it is reported that there are no problems with most of the locks installed on the doors, it is presumed that the cause of the problems is the keys—for example, they become worn and unusable over many years of use, or become lost. During the field survey, all damaged or deteriorated door hardware will be examined and proposed repairs will be considered. Additionally, because keys made in Japan may be difficult to duplicate locally, the survey will confirm whether keys can be duplicated, and if not, replacement of the cylinder locks and keys will be considered.

1.3 Field Survey Plan

The following conditions will be confirmed during the field survey based on the aforementioned action policies.

Table 1-2: Field Survey Items

	Survey Item	Matters to Survey	Methods of Confirmation
1	Roof Leaks	<ul style="list-style-type: none"> ● Identify the causes of the leaks Check waterproofing sheets (tears/damage of waterproofing layers, peeling at edges and joints, curling at corners of risers, surface deterioration, blistering) Check rooftop hardware (deterioration, peeling, deteriorated joint sealant) Other (peeling of exterior wall panels, drain surroundings) ● Identify the route of the leakage water 	Visual inspections, interviews
2	Air Conditioning System Failures	<ul style="list-style-type: none"> ● Confirm the number of rooms and locations with air conditioning failures in Buildings 1, 2, and 3, determine how to repair them ● Confirm the consideration of possible repairs/updates of central air conditioning equipment and the like (e.g. models, replacement methods, power supply) 	Operation Checks
3	Problems Maintaining Negative Pressure in Labs	<ul style="list-style-type: none"> ● Check the operation of the ceiling fans in the labs in Building 3 ● Check whether fan replacement will necessitate ceiling work and other procedures 	Operation Checks
4	Ceiling Panel Damage	<ul style="list-style-type: none"> ● Check damaged areas and the condition of base materials ● Determine how to repair panels (including procurement of materials and equipment) 	Visual Inspections
5	Toilet Leaks	<ul style="list-style-type: none"> ● Check the state of repaired leaks by flushing the second-floor toilets in Building 1 ● Confirmation of the quantity of materials and equipment for ceiling repair in the first-floor toilets in Building 1 	Visual Inspections Consultation on Repair Areas
6	Problems with Keys and Door hardware	<ul style="list-style-type: none"> ● Confirm the need to replace key cylinders and other accessories ● Check spare keys (whether copies can be made locally, owner's consent to not make master keys) 	Visual Inspections Operation Checks

Although the following details are outside the scope of the survey, they were also requested from the RMI at the time of the survey, and thus will be surveyed. Notably, these additional items are assumed as out-of-scope of this F/U cooperation.

Table 1-3: Field Survey Items (Additional Items)

	Survey Item	Matters to Survey	Methods of Confirmation
7	Falling Aluminum Parapet Wall Panels and Soffits	<ul style="list-style-type: none"> ● Condition of damage and detachment (e.g. reusability, repair methods) ● Causes of damage and detachment (e.g. rusted mountings, deterioration of base material) ● Check base materials (e.g. scope and methods of replacement, anti-termite treatment) ● Confirm reinstallation methods 	Visual Inspections
8	Deterioration of Exterior Metal Siding	<ul style="list-style-type: none"> ● Deterioration of siding (e.g. reusability, repair methods) ● Causes of siding damage (e.g. rusted mountings, deterioration of base material) ● Check siding base materials (e.g. scope and methods of replacement, anti-termite treatment) ● Confirm siding reinstallation methods 	Visual Inspections
9	Deterioration of Wooden Window Frames (Termite Damage)	<ul style="list-style-type: none"> ● Check damage caused by termites ● Confirm repair methods 	Visual Inspections, Hammering Tests

1.4 Survey Period, Survey Team, and Itinerary of the Team

(1) Field Survey Period

November 20 to December 7, 2022

(2) Survey Team

[JICA Members]

	Full Name	Responsibility	Affiliation/Title
1	Yoshiro KURASHINA	Team Leader	JICA Financial Cooperation Implementation Department, Grant Aid Project Management Division 2
2	Shuichi HIRAYAMA	Technical Advisor	Senior Advisor

[Consultant member]

	Full Name	Responsibility	Affiliation/Title
1	Mikihiro MATSUYAMA	Chief Consultant / Architectural Planning	Azusa Sekkei Co., Ltd.
2	Ryo TANADA	Mechanical and Equipment Planning	Azusa Sekkei Co., Ltd.
3	Tetsuya SUZUKI	Architectural Design/Cost Estimation	Azusa Sekkei Co., Ltd.

(3) Itinerary of the Team

			JICA Members	Chief Consultant / Architectural Planning	Mechanical and Equipment Planning	Architectural Design/Cost Estimation
				Mikihiro MATSUYAMA	Ryo TANADA	Tetsuya SUZUKI
			11 Days	18 Days	11 Days	18 Days
1	11/20	Sunday		NRT → GUM		NRT → GUM
2	11/21	Monday		GUM → MAJ		GUM → MAJ
3	11/22	Tuesday		11:00 C.C. to MoHHS 13:00 Interviewing Hospital		11:00 C.C. to MoHHS 13:00 Interviewing Hospital
4	11/23	Wednesday		Site Survey 16:30 C.C. to JICA Branch Office		Site Survey 16:30 C.C. to JICA Branch Office
5	11/24	Thursday		Site Survey		Site Survey
6	11/25	Friday		Site Survey		Site Survey
7	11/26	Saturday		Site Survey		Site Survey
8	11/27	Sunday	11:00NRT →15:55 GUM	Survey Analysis Team Meeting	11:00NRT →15:55 GUM	Survey Analysis Team Meeting
9	11/28	Monday	8:20GUM →19:20 MAJ	Site Survey	8:20GUM →19:20 MAJ	Unit Cost Survey

10	11/29	Tuesday	9:00 C.C. to JICA Branch Office 10:00 Site Survey	Accompanied by JICA members	Site Survey	Accompanied by JICA members Ministry of Public Works Information Gathering
11	11/30	Wednesday	8:30 Consultation with the Vice Minister of MoHHS 10:00 Site Survey	Accompanied by JICA members Site Survey	Accompanied by JICA members Site Survey	Accompanied by JICA members Procurement Survey
12	12/1	Thursday	9:00 Site Survey 15:00 Discussion on M/D with MoHHS and Majuro Hospital	Site Survey Accompanied by JICA members	Site Survey Accompanied by JICA members	Construction, Procurement and Unit Price Survey Accompanied by JICA members
13	12/2	Friday	Survey Analysis Team Meeting	Survey Analysis Team Meeting	Survey Analysis Team Meeting	Construction, Procurement and Unit Price Survey Survey Analysis, Team Meeting
14	12/3	Saturday	Site Survey Survey Analysis	Site Survey Survey Analysis	Site Survey Survey Analysis	Site Survey Survey Analysis
15	12/4	Sunday	Document Sorting	Document Sorting	Document Sorting	Document Sorting
16	12/5	Monday	9:00 Discussion and Signing on M/D with MoHHS and Majuro Hospital 13:00 Report to EOJ 15:00 Report to the JICA Branch 16:00 Report to the Ministry of Foreign Affairs 16:30 Interview from local journalist	Accompanied by JICA members	Accompanied by JICA members (Except interview from local journalist)	Accompanied by JICA members (Except interview from local journalist)
17	12/6	Tuesday	11:20MAJ →18:00 GUM	11:20MAJ →18:00 GUM	11:20MAJ →18:00 GUM	11:20MAJ →18:00 GUM
18	12/7	Wednesday	12:55GUM→15:55NRT	12:55GUM→15:55NRT	12:55GUM→15:55NRT	12:55GUM→15:55NRT

Abbreviation NRT: Narita, GUM:Guam, MAJ Majuro

Chapter 2: Site Survey Results

2. Site Survey Results

2.1 Confirmation of Basic Information

2.1.1 Project Implementation System

(1) Basic Information about the Hospital

Departments: Internal medicine, surgery, orthopedics, obstetrics and gynecology, pediatrics, ophthalmology, otorhinolaryngology, urology, clinical pathology, outpatient, emergency, trauma, anesthesiology, diagnostic imaging, rehabilitation, dentistry, laboratory, pharmacy

Number of beds: 110

Number of medical staff members: 50 (3 internists, 3 surgeons, 1 orthopedist, 3 obstetricians/gynecologists, 2 pediatricians, 1 ophthalmologist, 1 otolaryngologist, 1 psychiatrist, 2 anesthesiologists, 1 radiologist, 11 general physicians, 5 emergency physicians, 3 public health physicians, 11 nurses, 2 interns)

Annual outpatients: Roughly 38,000

(2) Operation System

Majuro Hospital is operated and managed by the Bureau of Majuro Hospital Services of the Ministry of Health and Human Services (MoHHS). MoHHS is located adjacent to Majuro Hospital, and its undersecretary of health routinely visits the hospital in person and frequently exchanges opinions with the director of the Bureau of Majuro Hospital Services. Although not their jurisdiction, the undersecretary of health has a firm understanding of the hospital's inner workings and has been attention to problems in the hospital's management.

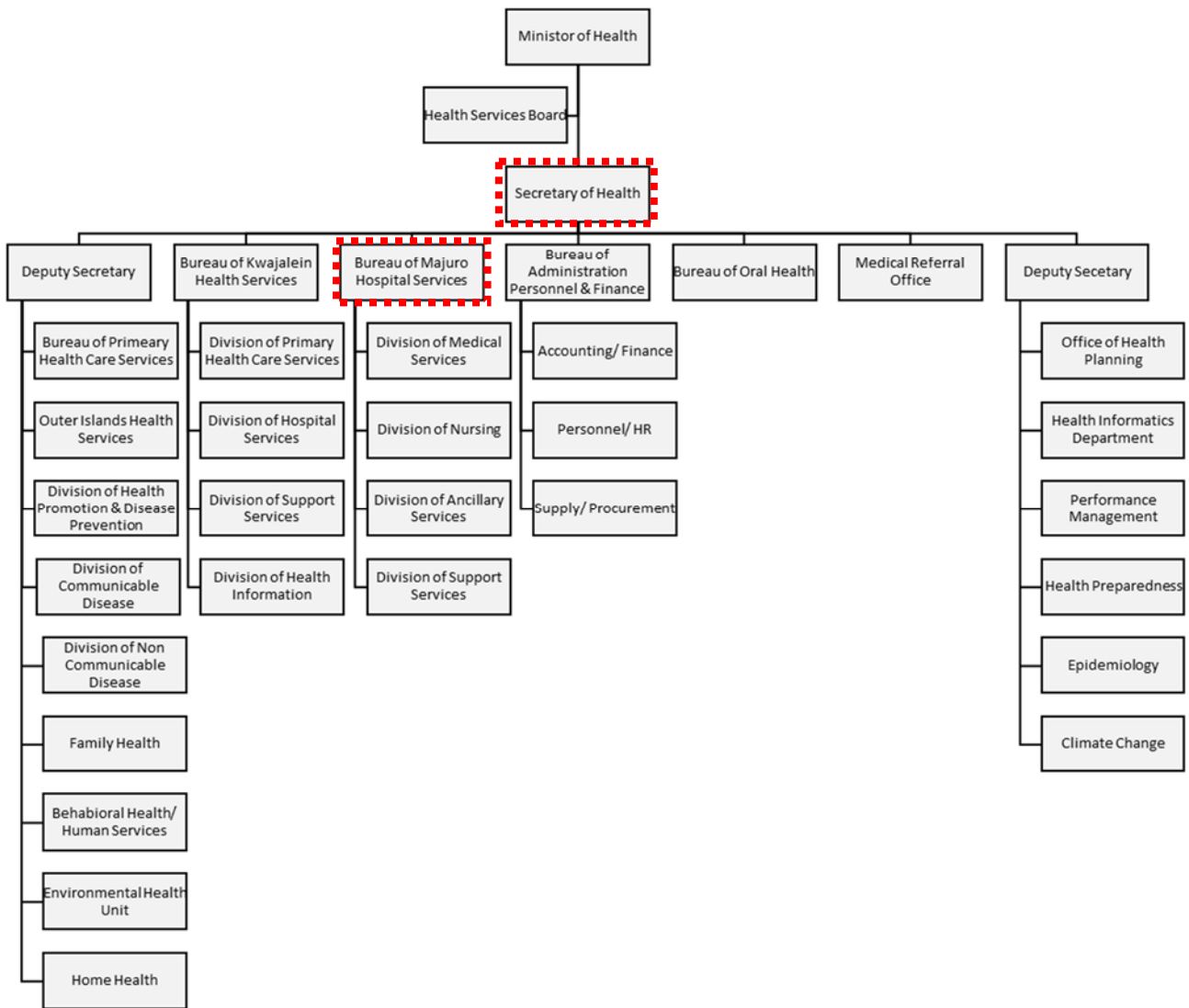


Figure 2-1: MOHHS Organization Chart

(3) Scope of Maintenance and Repair Work

MoHHS is responsible for maintenance and repair work with a total construction cost of 25,000 USD or less, while the Ministry of Works Infrastructure and Utilities (MWIU) is responsible for maintenance and repair works with a total construction cost exceeding 25,000 USD. MWIU installed the folded-plate roof on Building 1 in 2019.

(4) Maintenance System

Majuro Hospital has a Maintenance Unit staffed by five full-time employees. All of them graduated from high school, but only one of them—the unit manager—has knowledge of engineering. Although the unit manager is aware of the status of the maintenance performed to date, they do not keep a ledger or other records to make them accessible; the hospital relies on the unit manager’s memory. The Maintenance Unit maintains the entire hospital with an annual budget of 10,000 USD.

There is also no manual for maintenance to share information.

2.1.2 Actual Utilization of Target Facilities

Majuro Hospital, as the core hospital of the Marshall Islands, receives approximately 38,000 patients annually and provides medical services, and the facilities are fully utilized. The facility is located on an atoll and is constantly exposed to sea breezes. This harsh environment accelerates deterioration of the facilities. However, maintenance and repairs that can be carried out through self-help efforts, such as repairs to eaves and ceilings, and replacement of air conditioning units, are being carried out. In addition, although approximately 17 years have passed since the completion and delivery of the buildings, the doors and windows are in relatively good condition and the buildings are cleaned, so the facility is being used with care.



Outpatient waiting area

2.1.3 Impact of Facility Failure on Medical Care Activities

A room on the second floor of Building 1 (Public Health Clinician Room) is unusable due to leaks, and rainwater leaks into rooms from the roof and runs down the walls in rooms on the perimeters of Buildings 2 and 3, requiring medical staff members to use buckets and the like to catch and dispose of the leakage and clean up frequently. Mold is growing on the ceilings, which are damp from leaks and other moisture; conditions are unsanitary.

2.2 Natural Conditions

The Marshall Islands have a maritime tropical climate with only minor temperature differences throughout the year; the mean temperature is around 27°C. Annual precipitation is heavy at roughly 3,200 mm, and monthly mean humidity is high at roughly 80%. Rain falls throughout the year, especially during the rainy season from July to November. The latitude of Majuro—the location of the target hospital—is 7 degrees north, and the city receives ample solar radiation. Additionally, Majuro Hospital is located about 100 meters west of the sea and thus is constantly exposed to sea breezes.

Table 2-1: Weather conditions in Majuro

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Maximum Recorded Temperature ° C	28.43	28.26	28.35	28.45	28.75	28.76	28.85	28.99	29.16	28.94	28.86	28.65	29.16
Monthly Average Maximum Temperature (° C)	27.94	27.76	27.9	28.11	28.43	28.57	28.68	28.83	28.96	28.86	28.74	28.32	28.42
Monthly Average Temperature (° C)	27.71	27.5	27.66	27.89	28.17	28.29	28.39	28.55	28.65	28.58	28.48	28.1	28.16
Monthly Average Minimum Temperature (° C)	27.12	26.93	27.09	27.33	27.64	27.68	27.78	27.92	28	27.93	27.72	27.42	27.55
Minimum Recorded Temperature (° C)	26.46	26.23	26.35	26.71	27.23	27.5	27.65	27.76	27.82	27.75	27.47	26.99	26.23
Average Precipitation (mm)	185.49	180.34	214.4	229.53	292.35	308.52	343.86	337.26	359.74	367.22	336.16	222.38	281.44
Average Number of Precipitation Days (day) (≥)	15.62	15.64	19.02	18.22	21.57	23.66	26	26.12	25.44	26.17	24.59	19.68	21.81
Monthly Average Humidity (%)	78.1	77.91	78.61	78.75	79.33	78.56	76.97	75.26	74.59	74.86	76.91	77.84	77.31
Average Sunshine Hours (hour)	9.9	10.08	10	10.22	10.24	10.6	10.63	10.78	10.7	10.56	10.48	10.21	10.37

Source: Weather and Climate – The Global Historical Weather and Climate Data

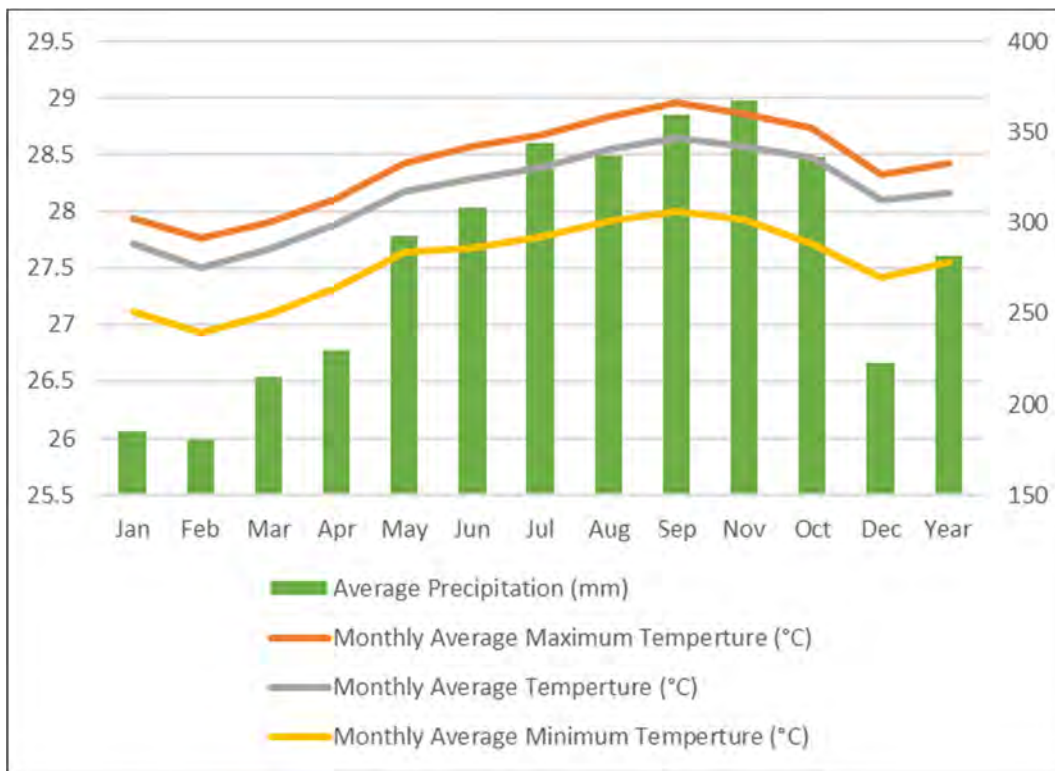


Figure 2-2: Weather conditions in Majuro

2.3 Current Status of Problem Areas

2.3.1. Roof Leaks

(1) Building 1

In Building 1, leaks were reported mainly from the perimeter of the second floor, and also from the center of the building on part of that floor. There was no evidence of leaks on the first floor.

Visual inspections of the waterproofing of the roof and rain gutters revealed especially severe deterioration

of the waterproofing layer on the rain gutters on the perimeter; rainwater is seeping inside between the girders and riser walls that abut the rain gutters.

Leakage was also found at the joints of the folded-plate roof installed by the RMI, confirming that it is not completely watertight. Additionally, although vinyl sheets have been installed on top of the existing waterproofing sheets under the wooden supports on the folded-plate roof, the waterproofing layer is somewhat deficient because the mounts are bolted (nailed in some places) to the deck slabs, and the bolts (nails) penetrate the waterproofing layer.

A thin layer of white rust has formed on the surfaces of the deck plates, but it is due to zinc oxides in the plating layer and does not compromise the structural resistance. Localized red rust was observed in some areas, but only in a limited number of places. The copings are well fixed and the joint sealant is in good shape, and although some of the sealant of the screw heads on the top of the coping has deteriorated, no major problems were found at this time.

	
<p style="text-align: center;">Building 1 Folded-Plate Roof</p> <p>Folded-plate roof installed by the RMI. Jointed in the center, and rainwater was entering the joints.</p>	<p style="text-align: center;">Building 1 Eave Rainwater Drainage Trench Area</p> <p>The waterproofing sheet is noticeably degraded. Dirt was accumulating in the drain.</p>
	
<p style="text-align: center;">Building 1 Joint of Girder</p> <p>There were traces of rainwater intrusion between the girder and the rising wall at several locations.</p>	<p style="text-align: center;">Building 1 Method of Roof Truss Installation</p> <p>For the installation of the roof truss, bolts were used in the waterproof layer.</p>

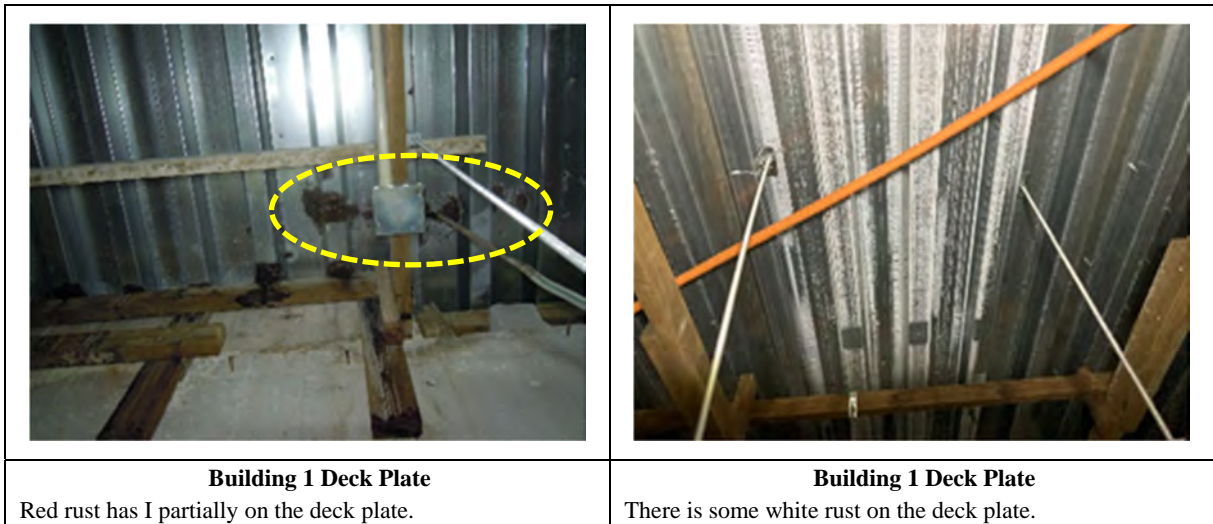


Figure 2-3: Building 1, Photographs concern with Roof Leaks

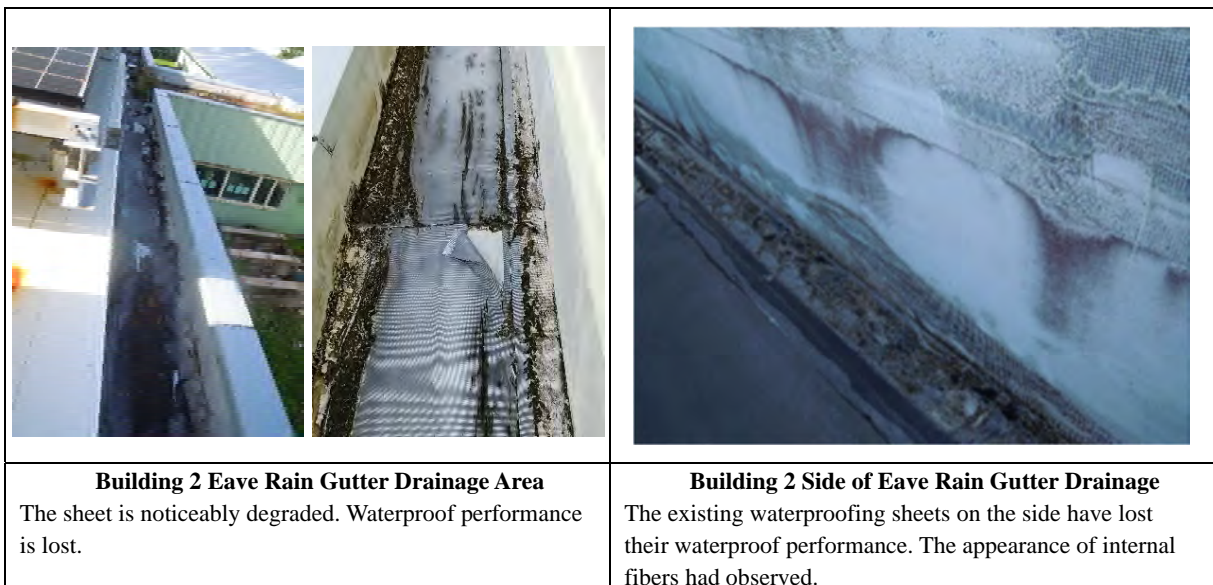
(2) Buildings 2 and 3

Leaks on Buildings 2 and 3 are occurred on the outer perimeters of the buildings. Similar to Building 1, deterioration was especially severe on the waterproofing layer on the rain gutters on the perimeter, and rainwater is seeping inside between the girders and riser walls that abut the rain gutters. Although the RMI has repaired some of the rain gutters with metal sheets, the seams of the sheets are not perfectly treated, suggesting that rain is seeping in from the edges.

The waterproofing layers of the flat areas of the roofs are in good condition where the solar panels block direct sunlight, and despite visible water stains and algae-like matter, no peeling was observed. On the parts exposed to direct sunlight, although the surface is degrading due to ultraviolet rays, it has not degraded to the point where the sheets cannot fulfill their function; the waterproofing function is intact.

The supports for the solar panel mounts were installed such that they penetrate the deck plates, and the hardware was fixed with screws and waterproofed; the hardware is sturdily in place and the waterproofing sheets are free of peeling, supporting the finding that there are no problems.

The deck plates showed extensive white rust, but no red rust.



	
<p style="text-align: center;">Building 2 Joint of Girders</p> <p>Like Building 1, there are traces of rainwater intrusion between the girders and the rising wall at several locations.</p>	<p style="text-align: center;">Building 3 Joint of Girders</p> <p>Same as the example on the left, rainwater intrusion traces were observed in the ceiling between the concrete standing wall and the girders.</p>
 <p>Current Situation↑</p> <p style="text-align: right;">At completion of construction</p>	
<p style="text-align: center;">Building 2 Solar Panel Pedestal</p> <p>The waterproofing sheets on the support columns and flat areas that support the solar panel mounts are dirty but still functional.</p>	<p style="text-align: center;">Building 3 Distant View of Rooftop</p> <p>The waterproofing sheets in the areas shaded by the panels were in sound condition with slow degradation.</p>

Figure 2-4: Building 2 and Building 3, Photographs concern with Roof Leaks

(3) Corridor Roofs

The deterioration of waterproofing on the roofs of the corridors between Buildings 1 and 2, Buildings 2 and 3, and Building 3 and an existing building (outside the scope of the Project) was checked, and evidence of leaks were found at the joints between the corridors and each building. The drainage system is designed so that rain drains from the corridor roofs to the roof drains via the rain gutters; however, the metal sheets installed by the hospital to repair leaks in the rain gutters interrupt the waterproofing sheets on the corridor roofs, resulting in rainwater flowing under the sheets.



Figure 2-5: Corridors, Photographs concern with Roof Leaks

(4) Building 1 Carriage Porch Roof

The waterproofing sheets on the carriage porch roof of Building 1 are nearly all peeling away and must be repaired. The sheets are hanging down over the main entrance where the carriage porch is located.

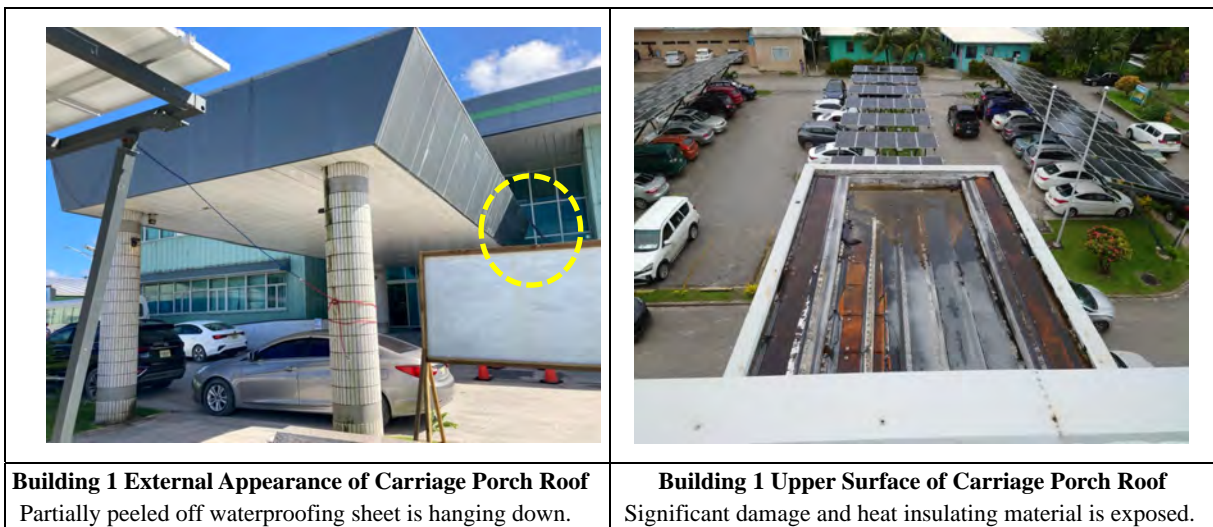


Figure 2-6: Building 1 Carriage Porch, Photographs concern with Roof Leaks

2.3.2. Air Conditioning System Failures

The air conditioning system when the construction was completed comprised 12 large package units with integrated indoor-outdoor units that blow cold air through ducts to cool the rooms. This equipment failed due to corrosion, and the hospital replaced it. At that time, the air conditioning system was changed by installing individual air conditioners for some rooms or unifying ducts, etc. The replacement equipment has begun to fail due to corrosion, and some has been replaced a second time.

(1) Building 1

When the construction was completed, Building 1 was air conditioned with five large package units; now, the air conditioning system comprises two large package units and fifteen individual air conditioners. All existing equipment was installed by the hospital. The large package units are deteriorating rapidly due to corrosion and could break down at any time.



(2) Building 2

When the construction was completed, Building 2 was air conditioned with two large package units. Both units were replaced by the hospital at least once, but are now out of order with nothing done to fix or replace them. Presently, the building is air conditioned with thirteen individual air conditioners which are installed by the hospital; however, some of the units are corroded.

(3) Building 3

When the construction was completed, Building 3 was air conditioned with five large package units. Now, the building is air conditioned with four large package units and nine individual air conditioners. Three of the four large package units were replaced by the hospital in early 2022, but corrosion has set in even though less than one year has passed since their installation. Additionally, the one remaining original large package unit is operating despite severe corrosion, and thus could break down at any time.

Although some of the equipment is operating in a severely dilapidated state, the overall condition of the hospital is such that the air conditioning is at a level that is generally acceptable for the provision of medical care.

	
<p>Building 1 Large Package Building 1 has two large packages (second generation) installed for first floor air conditioning, but they are quite corroded.</p>	<p>Building 1 Large Package Removal Site At the time of the repair request, two large packages (second generation) for the second floor were installed on the roof of Building 1, but they have now been removed.</p>



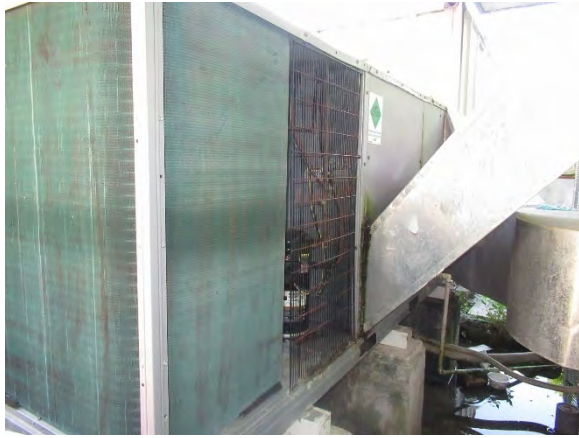
Building 2 Large Package

There are three second-generation large packages for Building 2 and Building 3, but they are broken and abandoned. These areas are air-conditioned by room air conditioners installed by the hospital.



Building 3 Large Package

Building 3 has four large packages, three of which are being upgraded by the hospital in early 2022. This equipment is the third generation.



Building 3 Corrosion of Large Package

Even though the new large package has been installed for less than one year, corrosion is already visible on the heat exchange fins, protective guards, and caulking areas.



Building 3 Second-Generation Large Package

The remaining one for Building 3 is a large package for an operating room and is the second generation of equipment. It is almost externally dilapidated, but it is somehow operational.



Outdoor Unit of Newly Installed Room Air Conditioner
Many of the small rooms have room air conditioners installed by the hospital.



Indoor Unit of Newly Installed Room Air Conditioner
Condition of indoor unit of room air conditioner.

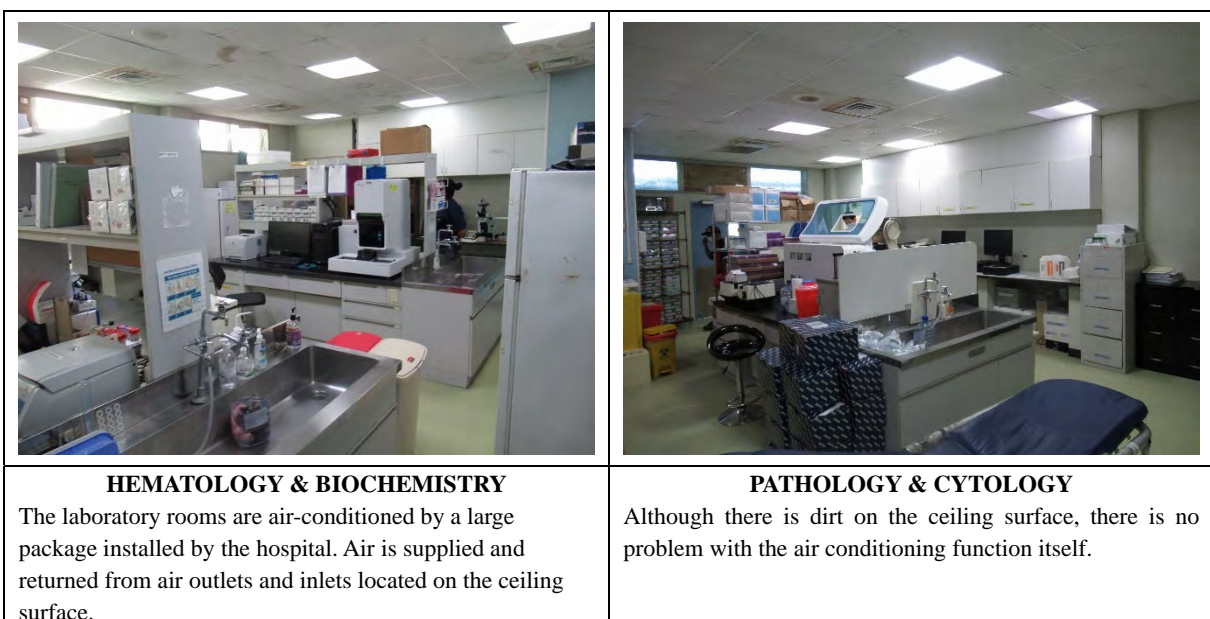


Figure 2-7: Photographs concern with Air Conditioning Equipment

2.3.3. Problems Maintaining Negative Pressure in Labs

The RMI requested an investigation into problems maintaining negative pressure in labs, and the survey confirmed that ceiling fans were operating and negative pressure was secured in rooms with safety cabinets that require negative pressure. Additionally, original design did not account for negative pressure in the labs (Hematology & Biochemistry, Pathology & Cytology, Microbiology), and negative pressure is not considered necessary for the current operations. Staff members were interviewed, and none mentioned any problems with negative pressure.

It is highly likely that the air conditioning was out of order when the request for this F/U cooperation was submitted in 2019; this may be the reason for the request to investigate problems maintaining negative pressure. However, the hospital repaired the air conditioning in early 2022, and the air conditioning in the labs is operating smoothly now; therefore, the problem is considered to have been resolved.



	
<p style="text-align: center;">MICROBIOLOGY</p> <p>Although this room also has many stains on the ceiling, there is no problem with the air conditioning function itself.</p>	<p style="text-align: center;">Safety Cabinet</p> <p>Safety cabinet is located in a dedicated room. Although the equipment is circulation type, there is no problem with the equipment itself.</p>
	
<p style="text-align: center;">Ventilation of the room where the safety cabinet is installed</p> <p>The safety cabinet is located in a dedicated room, but a ventilation fan on the ceiling is installed and its operation is confirmed. The negative pressure in the room is considered to be secured.</p>	<p style="text-align: center;">Laboratory Air Conditioning Outlet</p> <p>The main reason for the dirty ceilings in the laboratory rooms is thought to be the spread of condensation water from the air conditioning outlets onto the ceiling material, which in turn causes mold growth and other problems.</p>

Figure 2-8: Photographs concern with Air Conditioning and Ventilation System in Laboratory

2.3.4. Ceiling Panel Damage

The ceiling backing structure is a wooden frame (38 x 90, 900-mm pitch) with an integrated ceiling (T-bar grid, 600-mm pitch) and C-channel (38 x 12 x 1.6, 900-mm pitch) suspended with threaded rod (M6 bolts, 1,200-mm pitch) in some parts, and rock-wool sound-absorbing panels (t = 14 mm) as the finishing material.

Damaged areas of the ceiling panels are clustered around the perimeters of the buildings and near air conditioner exhaust vents and ducts.

The damage near the perimeters of the building is caused by the aforementioned leaks from the rain gutters; if panels are to be replaced or taken down, the leaks—the cause of the problem—must first be repaired.

As for the damage near air conditioner exhaust vents and ducts, rust, water stains, and other marks were observed spreading out from places where condensation drips onto the rock wool sound-absorbing panels on the ceiling. The climate of the Marshall Islands is warm and wet; condensation is quite common due to the high humidity. The air can only hold so much water vapor; the lower the temperature, the lower the amount. The higher the humidity and the greater the temperature difference between indoors and outdoors, the more

likely condensation is to occur. The hospital's air conditioning equipment operates at low temperature settings (18°C–21°C on the air conditioner displays); when the outdoor temperature exceeds 30°C for days on end, ducts and exhaust vents that are in contact with outside air are susceptible to condensation.

Therefore, room temperatures should not be set too low.





	
<p style="text-align: center;">Ceiling Condition</p> <p>Many areas of the ceiling panels are stained at the location of the air conditioner exhaust outlets and ducts.</p>	<p style="text-align: center;">Stained Ceiling Near Building Perimeter</p> <p>The ceiling is damaged in some areas due to roof leaks.</p>
	
<p style="text-align: center;">Condition of the Exhaust Vent Inside the Ceiling</p> <p>The ceiling panel was confirmed to be stained by condensation water from the exhaust port, etc., and water drops were observed dripping from the duct. The ceiling backing structure is not damaged much.</p>	<p style="text-align: center;">Condition of the Inside of the Ceiling</p> <p>The ceiling backing structure is not damaged much and can be used as is.</p>
	
<p style="text-align: center;">Ceiling of Room with Low Air Circulation (Building 2)</p> <p>Between A and C grid line in Building 2, the panels are often blackened.</p>	<p style="text-align: center;">Condition of the Ceiling in Large Space (Building 2)</p> <p>Large space has better ventilation and there is less staining of the ceiling panels.</p>

Figure 2-9: Photographs concern with Ceilings

2.3.5. Toilet Leaks

Leaks from the second-floor toilets in Building 1 were investigated, but no leaks or evidence thereof were found in that area. The hospital indicated during interviews that no repairs have been made, making it highly likely that the report of toilet leaks was made in error.

In the interviews conducted during the field survey, the hospital indicated that the problem was with the water supply, not the drainage. An investigation on this point revealed that water for flushing is not being supplied to most of the toilets, not only those in Building 1. However, water flows out of the faucets in the hand-washing sinks, service sinks, and stainless steel sinks without any problems. There are two systems: one that supplies clean water to faucets, and another that supplies seawater for toilet flushing. The low water pressure of the seawater system is the reason most of the toilets lack water. Both clean water and seawater are directly supplied from the public water supply system; however, while the clean water system has sufficient water pressure, the seawater system has very weak water pressure, resulting in water outages.

When the construction was completed, both clean water and seawater were supplied through a receiving tank and pressure pump; however, because the pumps have failed, the tanks and pumps have been bypassed and replaced with direct lines to the water system. Although the change to the water supply system is one reason for the water outages, as long as clean water is supplied, it can be drawn with buckets and poured down the toilets; therefore, the toilets at the site are operating without problems.



Building 1 In the ceiling under the lavatory on the 2nd floor (1)

Lower drainage piping for second floor lavatory. At the time of the survey, there was no water leakage at all and no trace of leakage could be found.



Building 1 In the ceiling under the lavatory on the 2nd floor (2)

Lower water and seawater piping for 2nd floor lavatory. There is no water leakage at all here either, and no trace of leakage.



Building 1 In the lavatory on the 2nd floor (1)
Men's lavatory. The washbasin provides water, but the urinal has the water supply connection removed and is unavailable.



Building 1 In the lavatory on the 2nd floor (2)
There is no water at all in the low tank of the closet bowl, and it can be assumed that the water has been cut off for some time.



Water Supply Pressurized Water Pump
The water supply pressurized water pump is failed and the motor section has been left disassembled. Currently, the system has been converted to a direct water supply system, instead of using a receiver tank and pressurized pump.



Water Supply Receiving Tank
The water supply receiver tank has rust on the frame externally, but appears to have no problem with water storage performance. However the water supply pump has failed and is not in use.



Seawater Pressurized Feed Pump
The hospital reported that a seawater pressurized water supply pump installed by the hospital is located in this shed, but it has failed and is not in use.



Seawater Receiver Tank
The pump has failed, so the receiver tank is not in use, and the water is being supplied to the building via a direct connection to the water supply pipe, but the water is cut off due to a lack of water pressure.

Figure 2-10: Photographs concern with Problems with Toilets

2.3.6. Problems with Keys and Door hardware

(1) Lost Keys

Most of the keys delivered when the construction was completed have been lost by users. Because there is no established method of procuring spare keys, padlocks are installed above lever handles to lock doors to which keys have been lost.

The cylinder locks on the doors are U9 cylinders from Miwa Lock. Duplicate keys can be made for these cylinders. Therefore, if blank keys and machinery or technical services for making keys can be procured, then it is possible to make spare keys.

There is a Japanese trading company in the Marshall Islands in which the hardware for doors (including keys) was procured when Majuro Hospital was constructed. During the field survey, discussions with the trading company confirmed that they can procure blank U9 keys from Miwa Lock.

Additionally, Miwa Lock keys were taken to several hardware stores in the Marshall Islands to check whether they had blank keys in stock and whether they could be cut; although they did not have blank keys in stock, they indicated that they can make spare keys with the grinding machines in their possession. Therefore, the necessary conditions for making spare keys are in place.

Notably, two master keys were extant at the hospital.

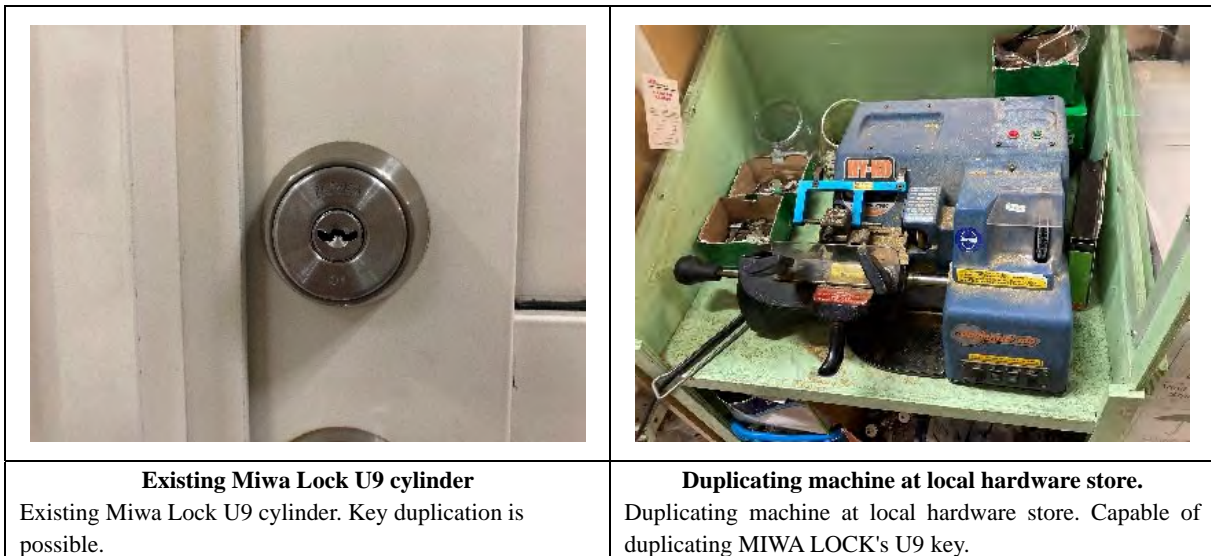


Figure 2-11: Photographs concern with Problems with Keys and Door hardware

(2) Damage to Door Hardware

All 190 doors in Buildings 1, 2, and 3 were visually inspected and their operation was checked, and they were sorted into those with handles, locksets, key cylinders, hinges, door closers, and the like that are damaged and require replacement, and those that have no problems. The table below shows the results.

Table 2-2: Condition of Door Hardware

	Items	No Problem	Adjustment Required	Replacement Required	Total
1	Lever Handle	162	5	23	190
2	Key Cylinder/Thumb turn	167	5	18	190
3	Lock case	169	3	18	190
4	Hinge/Floor Hinge	174	10	6	190
5	Door Closer	95	22	29	146
6	Flush Bolt	9	0	10	19
7	Door Stopper	111	39	16	166

2.3.7. Other

Although outside the scope of this F/U cooperation survey, following items requested by the RMI at the time of the survey was conducted. Notably, these additional items are assumed as out-of-scope of this F/U cooperation.

(1) Deterioration of Exterior Metal Siding, Falling Aluminum Parapet Wall Panels and Soffits

1) Exterior Metal Siding

The exterior walls consist of concrete block walls, wooden base material and fluororesin film-laminated steel sheets. Due to the building’s constant exposure to easterly sea breezes, the metal siding is rusting (especially on the east side), with rust developing throughout the surfaces, and the edges of drains, windows, and the like rotting away.

2) Aluminum Parapet Wall Panels and Soffits

Collapsed aluminum parapet wall panels and damage to the panel-mounting base materials were observed in many places, especially on the east side of Building 2.

As for Building 3, although no aluminum parapet wall panels have collapsed, numerous soffit boards (especially on the north side of the east wall) are damaged or have fallen off. The hospital repaired the soffits on the south side of the east wall, and the finish is in good shape. The parapet walls comprise concrete block walls with wooden base materials on top of which bent aluminum panels are fixed with screws as the exterior finish. The soffits are made of roof boards (calcium silicate boards) nailed to a wooden support and coated with paint.

Horizontal drainpipes (VP pipe, 100-mm diameter) are installed in the soffits to drain water from the roof drains. Horizontal drainpipes are fixed by suspension bands supported by hanging bolts from the concrete slabs.

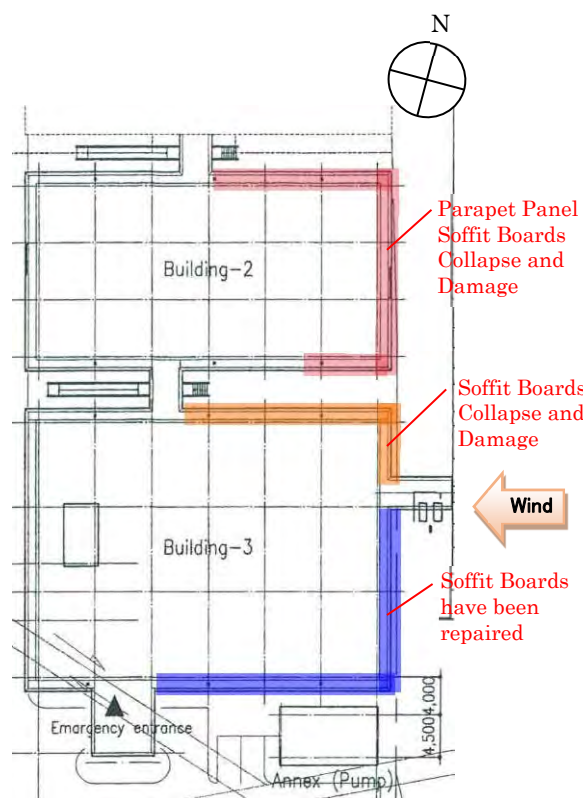


Figure 2-12: Extent of Damage to Parapet and Eaves

The aluminum parapet wall panels and soffits may have collapsed in the following process.

- ① Fixture hardware of drainpipes rusted and deteriorated due to easterly sea breezes
- ② Drainpipes fell away from roof drains due to lack of support by the fixture and leaked in the eaves
- ③ Wooden base materials were damaged by termites nesting and feeding in the eaves, which were damp due to leakage and the like. Then aluminum parapet wall panels and soffits are collapsed.

Notably, The collapse of the aluminum parapet wall panels is not a direct reason of rain seeping inside the building..

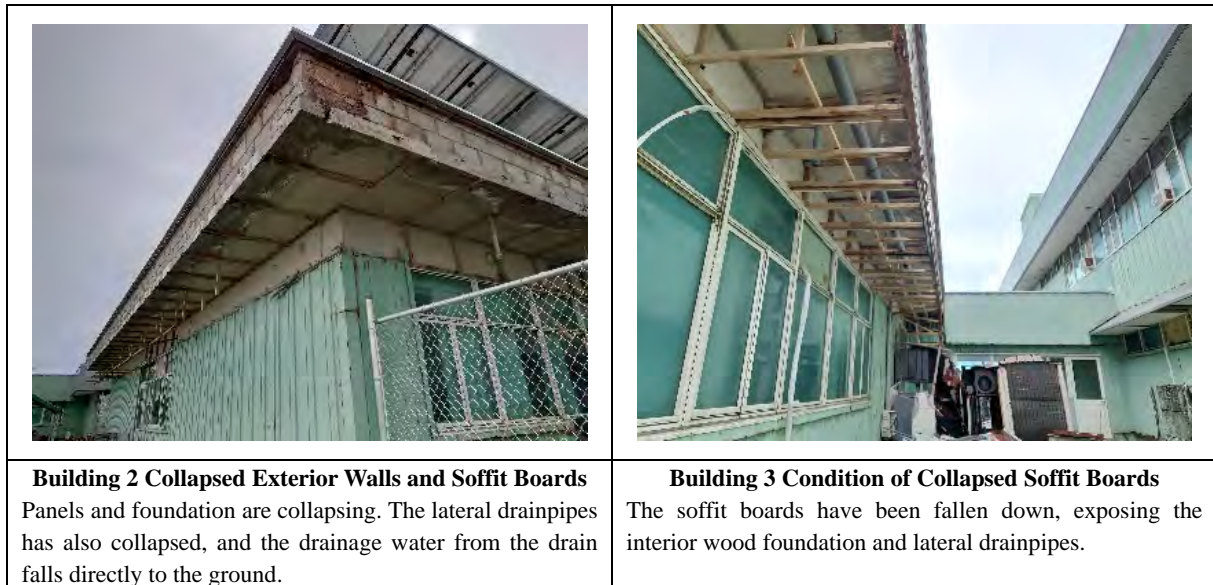


Figure 2-13: Photographs of Exterior Wall Panels and Soffits Deteriorating and Falling Off

(2) Termite Damage on Window Frames

Termite damage was observed on window frames in Buildings 2 and 3 and in the corridors. It is presumed that the termites came to feed on the wooden window frames, which were made moist by leaks and high humidity.



Figure 2-14: Photographs of Termite Damage

Chapter 3: Project Description

3. Contents of Follow-up Cooperation

3.1. Basic Concept of Follow-up Cooperation

3.1.1. Basic Policy for Establishing the Scope of Cooperation

For this F/U cooperation, the policy is to prioritize (1) matters that are difficult to resolve through the RMI's self-help efforts (i.e. repair work requiring Japanese technology, materials, and equipment) and (2) matters involving maintaining facility functions (i.e. the minimum required work for maintaining hospital functions) in pursuit of sustainability of the effects of the assistance.

3.1.2. Selection of the Scope of Rehabilitation

(1) Priority of Countermeasures for Each Problem

Each of following items show the priority of countermeasures for these problems. Priority A matters are those that should be addressed during this F/U cooperation. Priority B matters can be repaired by the RMI, but should be implemented by the Japanese side if possible. Priority C matters will not be addressed during this F/U cooperation.

① Roof leaks: Priority A

Repairing roof waterproofing is extremely difficult given the need to plan appropriate waterproofing methods, execute the work at a high level of precision, properly understand the construction methods, and examine the fit of the edges of waterproofing materials in detail. Additionally, given the difficulty the local contractor faces in ordering waterproofing materials that satisfy the required performance from Japanese or third-country manufacturers, the local contractor are not assumed to conduct the Works without technical support, which is why the RMI requested this F/U cooperation. Therefore, support and guidance from engineers in Japan or third countries who are familiar with the waterproofing methods and materials is needed, and the work shall be implemented in the context of F/U cooperation. Additionally, because leaks are interfering with medical care activities, repairing them is essential and urgent to maintain facility functions; thus, repairing leaks is a high-priority matter.

② Rehabilitation to address Central Air Conditioning Equipment Failures: Priority B

At present, the hospital has the level of air conditioning required for operation. The air conditioning equipment installed when the construction was completed is no longer there; all equipment currently in operation has been replaced or newly installed by the hospital.

Although some of the operating equipment appears to be quite old, it is operating at the minimum required level for air conditioning functions. Equipment must continue to be replaced periodically as existing equipment breaks down due to age; however, the hospital should be able to make the replacements as it has in the past. Accordingly, this is a low-priority matter for the F/U cooperation.

③ **Rehabilitation to Address Problems Maintaining Negative Pressure in Labs: Priority C**

No problems with negative pressure have occurred around the labs in their present state. The air conditioning equipment replaced by the hospital is operating smoothly, and the rooms are ventilated without any problems.

At this time, no problems maintaining negative pressure in labs were observed; therefore, no rehabilitation is required during the Project.

④ **Rehabilitation for Fallen/Damaged Ceiling Panels: Priority B**

Although coordination with medical care activity schedules is required for this rehabilitation work, replacing ceiling panels and other work related to this matter is not very difficult. Additionally, the survey confirmed that local hardware stores sell the materials; therefore, there will be no problems procuring materials. The hospital has taken the initiative to replace ceiling panels in the past; the hospital is quite capable to conduct rehabilitation.

⑤ **Repairing Toilet Leaks: Priority C**

Presently, no leaks are occurring around the toilets; therefore, no repairs are required during this F/U cooperation. Problems observed with the seawater supply system are due to the low water pressure of the public water supply system.

⑥ **Replacing Keys and Door hardware: Priority A**

The locks and keys of the hospital are from Miwa Lock , a Japanese manufacturer. Miwa Lock only works with existing customers and distributors; neither the hospital nor the local contractor can place orders directly with Miwa Lock. Additionally, because cylinder locks and other components are installed differently by different manufacturers, the local contractor does not know how to replace door hardware from Miwa Lock and other Japanese manufacturers that do not distribute their products locally; these repairs require instruction by skilled workers from Japan. Given these circumstances, it is essential to address this issue during this F/U cooperation; replacing keys and door hardware is a high-priority matter.

(2) Selection of the Scope of Follow-Up Cooperation

① **List of Rehabilitation Items**

Table 3-1: Survey items, causes, proposed countermeasures, and priority levels

	Survey Items	Causes	Proposed Countermeasures	Priority Level
1	Roof Leaks	<p>Building 1</p> <ul style="list-style-type: none"> ● Tears or holes due to deterioration of waterproofing sheets ● Deterioration of waterproofing layers of rain gutters <p>Buildings 2 and 3</p> <ul style="list-style-type: none"> ● Deterioration of waterproofing layers of rain gutters <p>Corridors/Carriage Porch</p> <ul style="list-style-type: none"> ● Deterioration of waterproofing layers 	<p>Building 1</p> <ul style="list-style-type: none"> ● Replace waterproofing sheets ● Adjust slope of rain gutters, replace waterproofing sheets and insulation boards <p>Buildings 2 and 3</p> <ul style="list-style-type: none"> ● Adjust slope of rain gutters, replace waterproofing sheets and insulation boards ● Repair rain gutters 	A

			Corridors/Carriage Porch ● Replace waterproofing sheets and insulation boards	
2	Air Conditioning System	<ul style="list-style-type: none"> ● The 12 central air conditioning units installed when the construction was completed have all been removed or deactivated over the past 17 years, and the hospital is replacing the equipment while continuing to operate the system. ● Central air conditioning equipment has deteriorated. 	Replace air conditioning equipment (can be procured locally) *The hospital has taken the initiative to replace air conditioning equipment to date	B
3	Maintaining negative pressure in labs	<ul style="list-style-type: none"> ● The air conditioning system, which was shut down when the request was made, was updated by the hospital in early 2022. ● The operation of the ceiling fans in the labs in Building 3 was checked, and there are no problems 	No need for rehabilitation	C
4	Ceiling panels	<ul style="list-style-type: none"> ● Some panels are damaged, some ceiling backing structure require replacement 	Replace some ceiling backing structure, restore panels (materials can be procured locally) *The hospital has taken the initiative to replace ceiling panels to date	B
5	Toilet Leaks	<ul style="list-style-type: none"> ● No leaks in second-floor toilets in Building 1 	No need for rehabilitation	C
6	Keys and Door hardware	<ul style="list-style-type: none"> ● Many keys have been lost ● Necessary to replace key cylinders and other accessories 	Establish local methods for duplicating keys Replace some door hardware, adjust doors, procure spare keys, and key blanks to replace missing keys (keys can be made locally)	A

② **Priority Level**

The priority levels of the six requests made by the RMI were considered between (1) matters that are difficult to resolve through the RMI’s self-help efforts (i.e. repair work requiring Japanese technology, materials and equipment) and (2) matters involving maintaining facility functions (i.e. the minimum required work for maintaining hospital functions) in pursuit of sustainability of the effects of the assistance. The priority levels are as follows. Notably, two requests—to Address “3. problems maintaining negative pressure in labs” and “5. toilet leaks”—were excluded because repairs are not required.

Table 3-2: Matters to address and priority levels

Priority Level	Matters to address
Priority A	1. Measures to address roof leaks 6. Measures to address problems with keys and door hardware
Priority B	2. Measures to address air conditioning system failures 4. Measures to address ceiling panel damage

The rough estimation revealed that the budget will be exceeded for the Priority A matters alone; therefore, the decision was made to address only “1. roof leaks” and “6. problems with keys and door hardware” during this F/U cooperation. The decision had explained to the Recipient, and they agreed.

(3) Options for Measures to Address Roof Leaks

① Rehabilitation for Waterproofing Sheets of Flat Areas

For Building 1, it is considered essential to repair the waterproofing sheets because the existing waterproofing layer is deficient given how the folded-plate roof installed by the hospital is fixed to the trusses. Rehabilitation is also needed on the corridors and carriage porch of Building 1 due to significant deterioration of the waterproofing layers.

For Buildings 2 and 3, the waterproofing layers of the flat areas are outside the scope of this F/U cooperation because their functionality is intact.

② Replace Existing Insulation in Flat Areas

As for Building 1, the existing insulation boards were found to be intact and dry; there are no problems. Therefore, replacement of insulation is not considered necessary. If the overlay method is to be used without removing the waterproofing layer, the insulation—which is under the waterproofing layer—will not be replaced. However, the waterproofing layers in some areas of the corridors and carriage porch of Building 1 are peeling down to the insulation, and must be replaced.

③ Replace Waterproofing Sheets and Insulation in the Rain Gutters

The waterproofing sheets on the rain gutters of Buildings 1, 2, and 3 all show substantial deterioration, and rainwater has been observed seeping inside the buildings from these areas. The underlying insulation has deteriorated due to the persistent moisture and requires replacement.

④ Remove and Reinstall Coping

The top of parapet is covered by an aluminum coping. The rain gutters' waterproofing sheet is inserted under the coping. To renovate the waterproofing of the rain gutters and the corridors mentioned previously, the aluminum coping must be removed to install waterproofing sheets and then reinstalled.

⑤ Repair Drainpipes

Among areas where the exterior panels and eave boards of Buildings 2 and 3 have collapsed are areas where the horizontal drainpipes have also collapsed. These areas—including the corroded supporting hardware—require repairs to prevent water from dripping downward from the drains.

⑥ Apply Silicon Coating to the Waterproofing Layers

Applying a silicon coating to the waterproofing sheets has the effect of delaying the deterioration of the waterproofing layers. The coating can be applied to TPO sheets or modified asphalt sheets. It has a useful life of roughly 20 years, is easy to apply, and can be applied to intricate surfaces such as areas with solar panel mounts. Although not essential, the coating should be applied to both flat areas and rain gutters if there is space in the budget.

⑦ Insert Overflow Pipes

Buildings 1, 2, and 3 have six roof drains each, but no overflow pipes. If the rain gutters are not properly cleaned as part of the hospital’s maintenance work, rainwater may overflow from the parapet walls and collect in the drains, accelerating deterioration of the waterproofing layers. Cost-effectiveness and other aspects were considered, including the fact that having pipes installed is beneficial when roof drains are clogged and in terms of improving durability.

The time it would take for rainwater to accumulate to the top of the parapet walls if the maximum daily rainfall over the past 50 years (roughly 180 mm) were to fall in one hour was calculated by comparing the rainfall to the drainage capacity of different combinations of clogged gutters. The results of this calculation show that in the worst-case scenario—five of Building 3’s six drains are completely blocked—rainwater will overflow from the rain gutters if rain falls continuously at a rate of roughly 180 mm per hour for 20 to 30 minutes.

Table 3-3: Necessity Consideration for Overflow Pipes

Number of Effective Gutter	Number of Clogged Gutter	Time until the eaves drain of building 1 is full	Time until the eaves drain of building 1 is full	Time until the eaves drain of building 1 is full
6	0	No Problem	No Problem	No Problem
5	1	No Problem	No Problem	No Problem
4	2	No Problem	No Problem	2.33(hour)
3	3	5.14(hour)	12.19(hour)	0.75(hour)
2	4	0.91(hour)	0.94(hour)	0.45(hour)
1	5	0.50(hour)	0.49(hour)	0.32(hour)

If the roof drains are cleaned, it should be possible to avoid having them all clog at once; also, it is unlikely that the maximum daily rainfall over the past 50 years will fall in one hour or continuously over a defined period of time. Additionally, during the field survey, rooftops that had not been cleaned in many years were checked, and although vegetation (algae- and moss-like growths) and other matter growing from deteriorating waterproofing sheet fibers are entangled in the strainer caps of the roof drains, the drains themselves are not completely clogged. Therefore, installation of overflow pipes is not considered necessary.



Condition of Existing Roof Drain

If overflow pipes were to be installed, it would be necessary to ensure waterproofing around the pipes, meaning that flanged pipes must be procured from Japan or a third country and that the flanges must be covered with waterproofing sheets. It would also be necessary to drill holes for the pipes in the concrete blocks and aluminum panels of the existing parapet walls, necessitating the installation of scaffolding for the removal, drilling, and replacement of the aluminum panels where the pipes are to pass through.

⑧ Apply Rust-Proof Coating Under Deck Plates

As for Building 1, white rust has appeared in some areas under the deck plates and red rust was noted in some screw holes. As for Buildings 2 and 3, extensive white rust was noted under the deck plates, but no overall corrosion or deterioration that would compromise the deck plate’s bearing capacity was observed. (See Figure 2-3) It is desirable—but not necessary—to apply a rust-proof coating under the deck plates to improve their durability. The spaces under the roofs are a tangle of piping, ceiling hanging bolts, and electrical wiring; applying rust-proof coating will be quite labor intensive.

The following is a list of “Required” and “Optional” waterproofing work items.

Table 3-4: Selection Items in Waterproofing

Items	Building 1	Building 2	Building 3	Connecting Corridor, etc.
Laying Waterproofing Sheets on Flat Areas	Required	Not Required	Not Required	Required
Replacement of Existing Insulation in Flat Areas	Optional	Not Required	Not Required	Required
Replacing Waterproofing/Insulating Materials for Rainwater Drains at the Eaves	Required	Required	Required	Not Required
Parapet Caps Removal and Reinstallation, etc.	Required	Required	Required	Required
Repair of Drainpipes	Not Required	Required	Required	Not Required
Application of Silicon Coating Material to Waterproof Layer Execution is possible without removing the solar power generation equipment of Building 2 and Building 3	Optional	Optional	Optional	Optional
Insertion of Overflow Pipe	Optional	Optional	Optional	Not Required
Rust-Proof Coating on the Back of Deck Plate	Optional	Optional	Optional	Optional

The rough estimation revealed that the budget will be exceeded for the required items alone; therefore, the decision was made to address only the required items during this F/U cooperation.

3.2. Rehabilitation Plan

3.2.1. Rehabilitation to address Roof Leaks

(1) Rehabilitation for Waterproofing Sheets of Flat Areas

① Method

Roof slabs consist of insulation and waterproofing sheets laid on steel deck plates; this method of waterproofing is difficult to replace with a different method (e.g. asphalt waterproofing, waterproof coating, waterproof film). Therefore, the repairs must be carried out using the sheet waterproofing method, the same as the current method.

Majuro Hospital—the target of the cooperation—is located not only in an area where materials suffer severe deterioration due to strong sunlight and ultraviolet rays, but also only 100 m or so away from the ocean; the sea breezes accelerate the deterioration of the materials. The field survey also revealed extreme deterioration of the exterior finish on the east sides of the buildings, which are exposed to sea breezes. Therefore, it is

necessary to ensure that exterior materials have sufficient weather resistance. Asphalt sheet waterproofing, which is highly weather resistant, is the method of choice for the waterproofing repair work to be carried out during this F/U cooperation.

Removing the existing waterproofing layers could cause damage to the interiors whenever rain falls; therefore, the existing waterproofing layers should not be removed if at all possible. Also, in light of the capabilities of the local contractor, the construction method should be as low in difficulty as possible. Considering the difficulty of construction and procurement of materials and equipment, the method of choice is the overlay method using cold-mix asphalt sheet waterproofing that does not require thermal bonding. Under this method, the base material is mechanically fixed, and asphalt sheets with an adhesive layer are placed over the base material.


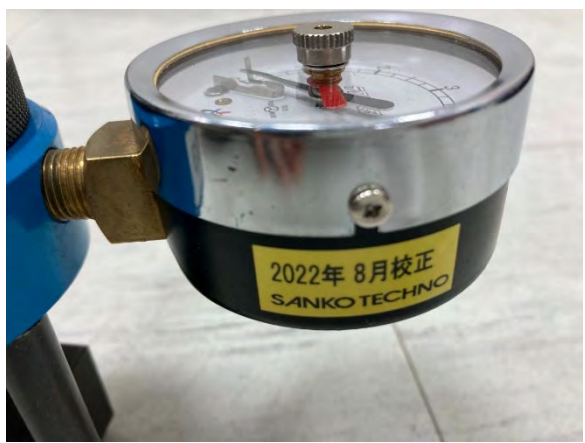
Notably, the folded-plate roof and wooden trusses of Building 1 will be removed at the expense of the RMI. Nails and bolts were driven through the deck plates when the trusses were installed by the hospital; therefore, the nails and bolts must be completely removed and the holes properly filled with sealant or the like.

② Pullout Resistance of Deck Plates

When laying the waterproofing sheets, the base materials will be fixed to the deck plates with screws through discs. Thus, the existing deck plates must have sufficient strength for the fixing. Therefore, pullout tests were conducted in two locations on the lower part of the folded-plate roof of Building 1 to check the strength of the existing deck plates.

Equipment: Techno Tester KT-6 by Sanko Techno (calibrated in August 2022)

4-mm holes were drilled in the deck plates, 5-mm screws were inserted, and the testing equipment was used to check the pullout resistance of the deck plates.

	
<p>Equipment Used (Techno Tester KT-6)</p>	<p>Date of Calibration of Equipment Used</p>

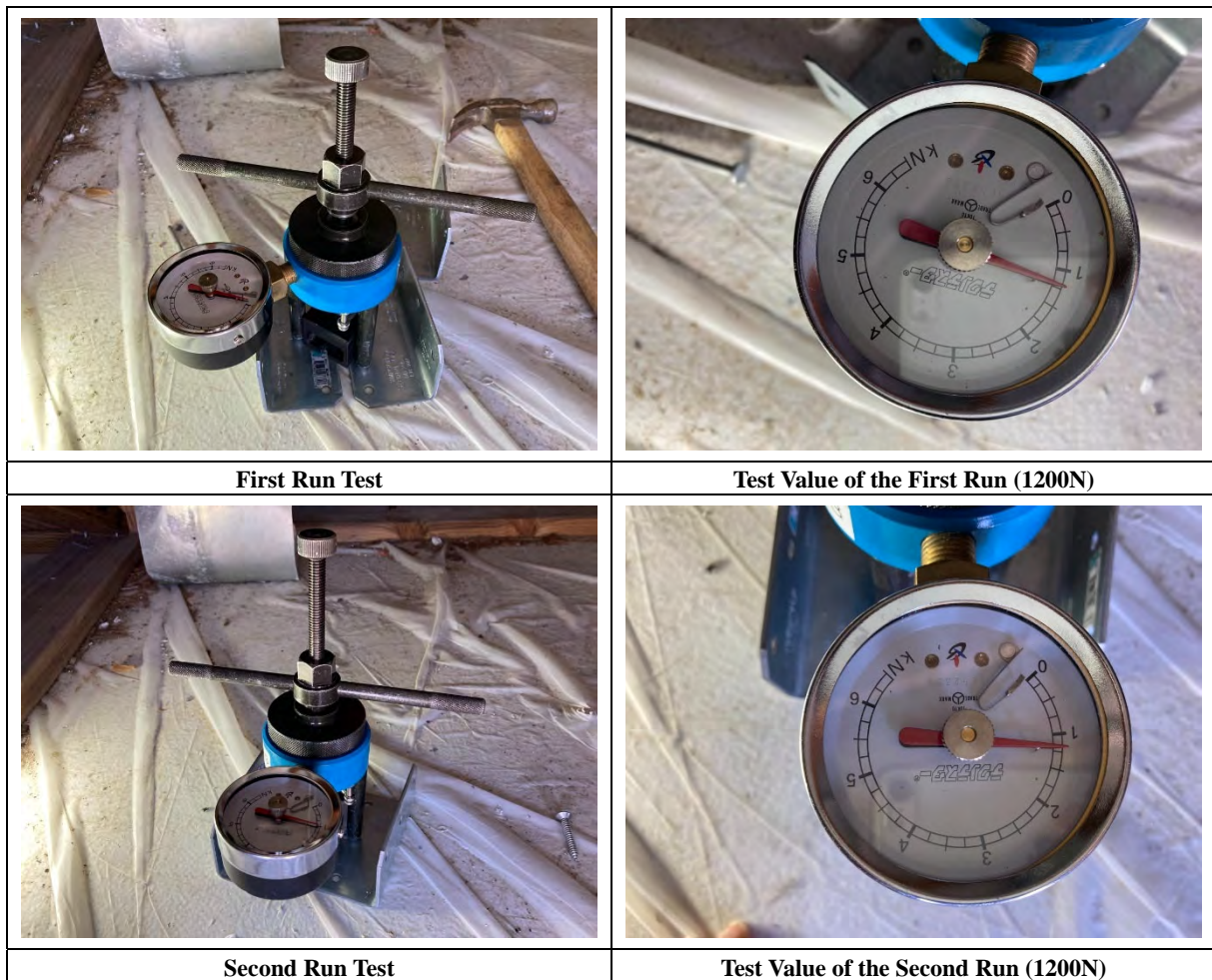


Figure 3-1: Photographs of Deck Plate Pullout Tests

The design pullout resistance per sheet under the presumed waterproofing sheet method is estimated as 600 N; therefore, tests were conducted to double that level (1,200 N), at which point the loads were removed and the tests concluded. The test results confirmed that the pullout resistance of the deck plates is sufficient.

(2) Replace Existing Insulation in Flat Areas

Insulation will be replaced on the roofs of the corridors and the carriage porch of Building 1. The existing insulation will be removed, and hardened urethane foam insulation of equivalent thickness (35 mm) will be laid.

(3) Replace Waterproofing Sheets/Insulation at Rain Gutters

The waterproofing layers and insulation will be removed, and new insulation and waterproofing layers of equivalent thickness ($t = 35$ mm) will be laid. In Building 2 and Building 3, the thickness of the insulation shall be 25 mm in consideration of the fit with the existing waterproof layer. The existing insulation is laid on both the wall sides and the bottoms; however, in pursuit of reduced costs, the new insulation will be installed only on the wall sides and not on the bottoms.

The bottoms will be treated with lightweight concrete at a slope to improve drainage.

Similar to the aforementioned flat areas, cold-mix asphalt sheet waterproofing will be laid over the

lightweight concrete on the bottoms and the insulation on the walls. The insulation material will be the same material used in the flat areas.

Notably, additional waterproofing sheets will be laid under the waterproofing layers where the walls and bottoms form corners.

(4) Remove and Reinstall Coping

The waterproofing sheets on the rain gutters are inserted to inside the coping; therefore, the coping must be temporarily removed. The policy is to minimize damage to the coping and to continue using the existing coping. Sealant will be used to make the heads of the screws that fix the coping watertight. Additionally, in Buildings 2 and 3, such as aluminum flashing will be installed where the existing waterproofing layers of the flat areas meet the repaired rain gutters to prevent leaks from the joints.

(5) Rehabilitation of Drainpipes

Some horizontal pipes connecting to the roof drains of Buildings 2 and 3 are damaged; they will be replaced. Replacing the horizontal pipes requires the installation of post-construction anchors under the eaves. In pursuit of weather resistance, the supporting hardware of the pipes will be stainless steel like the hanging bolts and suspension hardware. The downspouts that connect the horizontal pipes are also damaged and will be replaced. During this work, scaffolding will be erected where drainpipes are to be replaced to ensure workability and safety.

Additionally, the strainer caps of the roof drains of each building have not been cleaned, causing water to collect in the rain gutters. The drains will be cleaned to allow water to flow, and their deteriorated surfaces will be coated with an epoxy coating.

3.2.2. Rehabilitation to address Problems with Keys and Door hardware

The lost keys will be ordered to Miwa Lock to re-produce the keys with using the key numbers recorded in the completion documents of original construction, and three (3) keys for each will be delivered under the F/U cooperation.

To minimize the risk of losing keys in the future, a key box for storing one copy of each key shall be procured in the F/U cooperation. 100 key blanks for making spare keys will be also delivered in F/U cooperation.

Damaged cylinders, handles, thumb turn locks, locksets, hinges, flush bolts, and door stoppers discovered during the field survey will be replaced with new items. Other adjustments to doors will be made as needed.

3.3. Procurement Plan

3.3.1. Labor Procurement Plan

(1) Local Workers

Basically, the engineers and workers of the local contractor shall be procured to conduct F/U cooperation.

(2) Dispatch of Skilled Workers

① Waterproofing Work

The work of sheet waterproofing requires the guidance of technically skilled engineers; the local contractor's engineers and local skilled workers will have extremely difficulty working the sheet waterproofing on their own.

The correct installation procedure must be followed and precision must be achieved for the finished work to deliver the expected waterproofing performance. To ensure the quality of the waterproofing work, skilled workers from Japan shall be dispatched at the beginning of the waterproofing work to provide instructions and implement quality control for each process. Additionally, the skilled workers shall be dispatched again before completion of the work to check the condition of the work.

② Door hardware Work

The door hardware to be repaired during this F/U cooperation is not commonly distributed in the Marshall Islands, and the installation methods vary by manufacturer, making it difficult for the local contractor to install it on their own. Therefore, a Japanese skilled worker shall be dispatched at the beginning of the door hardware work to provide instructions.

3.3.2. Material Procurement Plan

The Marshall Islands rely on imports for most of their construction materials.

The waterproofing materials, door hardware, and other materials in the plan for this F/U cooperation are not available in the local market; they will be procured in Japan.

3.3.3. Construction Machinery Procurement Plan

The local contractor has the necessary hoisting equipment and vehicles for this rehabilitation work, including a 25-ton rafter crane and trucks.

3.3.4. Tax Exemption Procedures

In the Marshall Islands, materials procured through grant aid projects are treated as duty-free. Tax exemptions are approved and granted by the Ministry of Finance through the following process.

- (1) Before the materials are transported, the RMI (consignee) submits a tax exemption request letter to the Ministry of Foreign Affairs of the RMI
- (2) The Ministry of Foreign Affairs of the RMI submits a tax exemption request letter to the Ministry of Finance
- (3) The Minister of Finance of the RMI approves and grants tax exemptions
- (4) After the Minister of Finance of the RMI approves and grants tax exemptions, a tax exemption request letter with a bill of lading and an invoice is submitted to the customs office

3.4. Planning Policy for Bidding

3.4.1. Local Construction Situation and Contractors

Effectively, only one company is capable of making the planned waterproofing rehabilitations of this F/U cooperation. This company employs Filipino skilled workers and has established a system in which the construction work is performed under the management and guidance of the Filipino skilled workers. There are seven smaller construction companies aside from this company, but they specialize mainly in seawall construction and small-scale projects such as housing; they are not suitable for this F/U cooperation.

While it is possible to procure local skilled workers for general construction work, the planned waterproofing and door hardware rehabilitations of this F/U cooperation require guidance by Japanese engineers who are familiar with the materials to be used. In this F/U cooperation, the plan is to utilize the local contractor and dispatch skilled workers from Japan.

Additionally, it is assumed that the waterproofing sheets, door hardware, and the like will be procured from Japan. Since the local contractor cannot directly place orders with Japanese manufacturers, the presumed system will be such that a Japanese trading company procures materials from Japan under the supervision of the local contractor in the Marshall Islands.

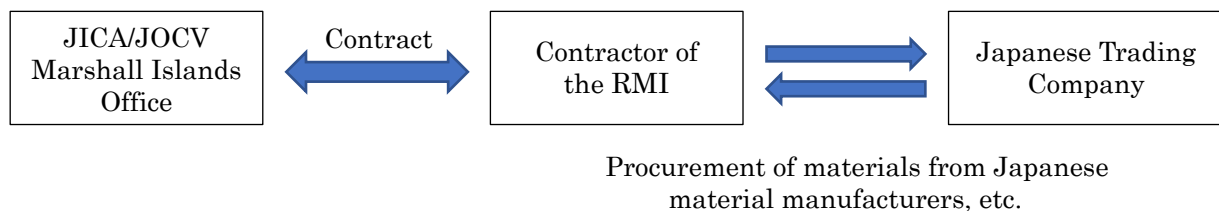


Figure 3-2: Contracting structure envisioned for this project

3.4.2. Tender Method

Tender will be conducted through a price-competitive bidding process, utilizing JICA's local firm utilization method. The period from the public announcement to the bidding will be 45 days, the minimum number of days for grant aid projects. The small-scale repair work of this F/U cooperation has a small budget; therefore, no prequalification (P/Q) for bidding will be conducted.

3.4.3. Construction Permits

No building permits or other applications are required for the F/U cooperation.

3.5. Implementation Schedule

The assumed implementation schedule is as follows:

Table 3-5: Implementation Schedule (Draft)

Year	2023								2024						2025	
Month	5	6	7	8	9	10	11	12	1	2	3	4	5	6	5	6
Tender, etc.	▼ Conclusion of Scope of Works	▼ Distribution of Bidding Documents	▼ Bidding	■ Bidding Evaluation of	▼ Construction Contract											
Project Implementation					Waterproofing Materials Procurement				Demolition of Existing Roof (Conducted by the RMI)							
				Waterproofing Work (Building 1)				Waterproofing Work (Building 2)								
			Waterproofing Work (Building 3)				Waterproofing Work (Connecting Corridor)									
							Door Hardware Work			Inspection (including rework, repair, and removal)			▼ Handing Over			
Defect Inspection																Defect Inspection

- Scope of Works conclusion: May 2023
- Distribution of Bidding Documents: Mid-June 2023
- Bidding (45 days from distribution) and construction contract: Late July 2023 or early August 2023
- F/U work: September 2023–May 2024 (9 months)
- Defect inspection: June 2025

The material procurement period will last from September to November, when it is quite rainy, and the repair work will start in December, when the rainy season ends. Specifically, the demolition of the roofs by the RMI and waterproofing work requires the construction period to be set outside of the rainy season. The time set aside for the rehabilitation work will be six months starting at the end of the rainy season. The Marshall Islands are presently experiencing a construction boom because previously suspended work has resumed due to the easing of Covid-19 infection control measures, making it easier for engineers to travel to the country. Shortening the construction schedule is difficult due to limited labor for on-site construction work.

3.6. Construction Work to be Performed by the RMI

(1) Removal of the folded-plate roof and base structure from Building 1

As construction work to be performed by the RMI, MoHHS and MWIU will remove the folded-plate roof and roof trusses from Building 1. This removal work is part of the critical path of this F/U work; therefore, it must be carried out without delay. If the amount of the repair work is less than 25,000 USD, MoHHS will carry out the work; if the amount exceeds 25,000 USD, MWIU will carry out the work. In the estimation, the direct cost is roughly 25,000 USD; if the indirect costs of construction are included, the removal work will be under the jurisdiction of MWIU. However, the details will be coordinated between the two organizations.

(2) Refurbishment and installation of parapet aluminum panels and eave boards

As indicated in 2.3.7, some of the aluminum panels and eave boards of the parapet are collapsed. Although this is not a direct reason of leakage, it is desirable to reinstall the aluminum panels and eave boards that have collapsed at the earliest possible stage, as it may reduce the durability of the wooden base of the shade trees and the blocks and other components of the parapet. In the estimation, the direct cost is about 83,000USD, which is assumed to be under the jurisdiction of the Ministry of Public Works because it exceeds 25,000USD.

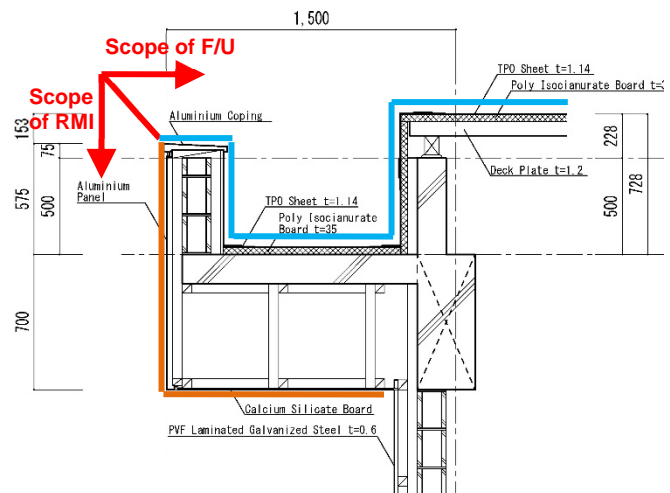


Figure 3-3: Scope of F/U around parapet

3.7. Maintenance Plan

(1) Maintenance System

The Maintenance Unit of Majuro Hospital will continue to be responsible for the maintenance of the hospital.

(2) Maintenance Plan

1) Waterproofing

① Rooftop waterproofing layers

Presumably, the waterproofing layers will not be walked on; therefore, they should not be walked on a daily basis, nor should heavy objects be placed on them. Specifically, Building 1 has a stairway that leads to the rooftop floor, making it easily accessible and necessitating locks and other controls. Additionally, when the waterproofing layers absolutely must be walked on for maintenance or other reasons, people must walk on them as carefully as possible to avoid damaging them.

The useful life of these waterproofing layers is generally 10 to 15 years; therefore, the deterioration of the waterproofing layers should be checked at least once every six months, and partial repairs with overlays or coating materials should be made as needed.

Silicon coating is a potential method for these partial repairs. It is done with rollers or brushes and does not require skilled workers.

② Drains and their surroundings

Drains and their surroundings should be cleaned regularly to prevent clogging. Once a month, and especially before the rainy season, dirt around drains should be removed and the conditions of the drains checked.

2) Keys and Door hardware

① Keys

At least one copy of each key must be kept in the key box and returned after each use. It is also effective to prepare a key ledger containing the names and telephone numbers of the people who borrow the keys, and to periodically check the key box to ensure that there are no missing keys.

When a frequently used key is lost, a spare key will be made instead of using the key stored in the key box on a regular basis. Keys can be duplicated by taking key blanks—either from the 100 key blanks provided during this F/U cooperation or key blanks procured from a local trading company that works with Miwa Lock and the copies of the lost keys from the key box to a local hardware store. During the field survey, it was confirmed that duplicates can be made at two stores in Majuro.

② Door hardware

To carry out the work involving door hardware from Japan in this F/U cooperation, skilled workers from Japan will provide the local contractor with technical guidance and technology transfer. This should facilitate repairs if problems occur after the F/U cooperation is completed because the hospital will be able to contact the contractor who received the guidance and technology transfer.

The operation of doors will be checked roughly once a year, and adjustments and repairs will be made as needed.

(3) Maintenance After Completion of This Follow-Up

The F/U cooperation for Majuro Hospital will end with this Project; therefore, maintenance, repairs, and other work after the handover must be carried out by the Marshall Islands through self-help efforts.

[Appendix]

- 1. List of Interviewees**
- 2. Minutes of Discussion (M/D)**
- 3. Other Materials and Information**

1. List of Interviewees

Organization	Position	Name
Ministry of Health and Human Services(MOHHS)		
MoHHS	Secretary of Health & Human Services	Mr. Jack Niedenthal
MoHHS	Deputy Secretary	Ms. Mailyynn Lang
MoHHS	Deputy Secretary	Ms. Francyne Wase-Jacklick
Majuro Hospital	Medical Director/Chief of Medical Staff, Hospital Clinical Services	Dr. Robert Maddison
Majuro Hospital	Director to Maintenance	Mr. Roland Calvin
Majuro Hospital	Hospital Administrator	Ms. Darlene Korok
Majuro Hospital	Building Maintenance Staff	Mr. Clan
Majuro Hospital	Building Maintenance Staff	Mr. Tony
Ministry of Works, Infrastructure and Utilities(MWIU)		
MWIU	Project Inspector	Mr. Lobaj Kaminaga
MWIU	Draftsman	Mr. Jekta Gideon
MWIU	QA/QC Engineer	Mr. Rodrigo Hernandez
Ministry of Foreign Affairs and Trade (MoFAT)		
MoFAT	Secretary	Ms. Anjanette Kattil,
Journalist		
The Marshall Islands Journal	Editor	Mr. Giff Johnson,
Construction Company		
Pacific International Inc	Vice president, Lower, Consultant	Mr. Bobby Muller
Pacific International Inc	Engineer	Mr. Villand (Billy)
Pacific International Inc	Cost estimation Engineer	Mr. Arnel
GMA Construction	Civil Engineer	Mr. Lexus Gibson
Hardware Shop		
Majuro Ace Hardware	General Manager	Mr. Yuichi Yamaguchi
Trading company		
Marshalls Japan Construction Company	General Manager	Mr. Kosuke Sato
Embassy of Japan in the Republic of the Marshall Islands (EoJ RMI)		
EoJ RMI	Councillor	Ms. Hitomi Obata
EoJ RMI	First Secretary	Mr. Noriyuki Nakamura
EoJ RMI	Senior Specialist	Mr. Yuji Ito
JICA/JOCV Marshall Islands Office (JICA MI)		
JICA MI	Resident Representative	Mr. Hiroyuki Ukai
JICA MI	Project Formulation Advisor	Mr. Takuzo Komabashiri
JICA MI	Project Formulation Advisor	Mr. Yoshiki Narita

2. Minutes of Discussion (M/D)

The minutes of discussion (M/D) are attached from the next page.

**MINUTES OF DISCUSSIONS
ON THE FOLLOW-UP STUDY
ON**

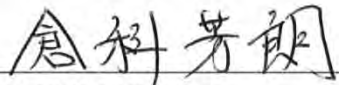
“THE PROJECT FOR IMPROVEMENT OF THE MAJURO HOSPITAL”

In response to a request from the Government of the Marshall Islands, the Japan International Cooperation Agency (hereinafter referred to as “JICA”) decided to conduct a Follow-up Study (hereinafter referred to as “the Study”) on “the Project for Improvement of the Majuro Hospital”, which has been completed in 2005 (hereinafter referred to as the “the Original Project”) to survey the possibility of the Follow-up Cooperation Project (hereinafter referred to as the “the Follow-up Project”).

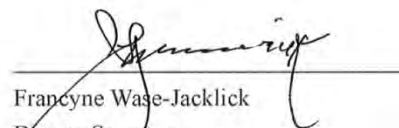
JICA sent the Team to the Marshall Islands, which is headed by Mr. KURASHINA Yoshiro, Team Leader, Follow-up Study Team of JICA, to conduct the Study, and was scheduled to stay in the country from November 21st to December 6th, 2022.

The Team held discussions with the officials concerned of the Government of Marshall Islands and conducted a site survey at the study area. During the discussions and site survey, both parties confirmed the main items described on the attached sheets.

Majuro, 5th December 2022



KURASHINA Yoshiro
Team Leader
Follow-up Study Team
Japan International Cooperation Agency
(JICA)



Francynne Wase-Jacklick
Deputy Secretary
Ministry of Health and Human Services
Marshall Islands

ATTACHMENT

1. JICA's Follow-up Cooperation

- 1-1. The Follow-up Cooperation aims to recover the functionality of equipment and facilities up to the condition of completion of the Original Project. Therefore, the Project limits its scope within the equipment and facility procured and constructed by the Original Project.
- 1-2. The Follow-up Cooperation limits its input within small scale since the scheme aims to assist maintenance effort by the recipient country.
- 1-3. The Follow-up Cooperation can be applied only once, after the Original Project has been completed.
- 1-4. The Marshall Islands side understands JICA's Follow-up Cooperation as explained by the Team.
- 1-5. The Marshall Islands side will take the necessary measures, as described in Article 7, for the smooth implementation of the Project, as a condition for JICA's Follow-up Cooperation to be implemented.

2. Objectives of the Study and the Project

- 2-1. The Study aim is, through the site survey and the meetings with officials concerned, reviewing the current situation of the Majuro Hospital, clarifying the request by the Marshall Islands side, and collecting necessary information.
- 2-2. The objective of the Project is to assist to repair the building 1, 2 and 3 of Majuro Hospital, which was constructed through the Original Project.
- 2-3. The final decision of the implementation of the Project will be determined after further studies are made in Japan. Such decisions may also be subject to budgetary allocations on the Japanese side.

3. Responsible and Implementing Agencies

- 3-1. Both sides confirmed that the responsible agency is the Ministry of Health and Human Services, and the implementing agency is the Majuro Hospital.
- 3-2. Both sides agreed that the responsible agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and the undertakings are taken by relevant agencies properly and on time.

4. Findings of the Study

- 4-1. The Team surveyed the situation and damage of existing Majuro Hospital, and both



sides confirmed that the rain leaking has been found on the building No. 1, 2 and 3 of Majuro Hospital since 20XX, and the Marshall Islands side requested JICA to assist to repair the damages of Majuro Hospital.

- 4-2. The team explained that JICA will conduct the detailed analysis of data and estimate the necessary cost for repair works soon after the Study. Then, in case of getting approval of implementation of the Project, JICA will implement the work as described schedule in Article 6.
- 4-3. The Marshall Islands side agreed to be responsible for proper operation and maintenance of the Hospital equipment and facilities. The Marshall Islands side also confirmed to allocate staff and budget for the proper use of the equipment and facilities.

5. Scope of the Project

- 5-1. Based on the results of the Study and discussions, both sides confirmed the priority of the Project components as described in Annex 1.
- 5-2. The final scope of the Project will be decided after further examination and analysis by JICA in Japan.

6. Schedule of notification for the Project

- 6-1. In case of getting approval of implementation of the Project, the final report of the Study will be submitted by the Consultant to JICA Headquarters around April 2023.
- 6-2. Also, Scope of Works (S/W) of the Project will be agreed by both the Japanese and Marshall Islands sides around May 2023 and then the procurement process of the Project will be commenced.

7. Undertakings by Both sides

- 7-1. The Marshall Islands side assured to take necessary measures, as described in Annex 2 for smooth implementation of the Project, such as tax exemption on the work, and to maintain and use properly and effectively the equipment and facility.
- 7-2. As for the exemption of VAT on repair works, JICA will have a contract with a contractor for the Project on net amount. The Marshall Islands side shall cover VAT amount for said contract under counterpart contribution.

Annex 1. The Scope of the Follow-up Project for Improvement of the Majuro Hospital

Annex 2. Major Undertakings to be taken by Each Government

Annex 3. Tentative Implementation Schedule of the Follow-up Project for Improvement of the Majuro Hospital

The Scope of the Follow-up Project for Improvement of the Majuro Hospital

Items	Point/Place	Contents	Priority	Remarks
Roof leakage	Building1	Repair of waterproof of roof and gutter, and drainpipes	A	Removal of existing metal roof with roof structure by Marshall side
	Building2	Repair of waterproof of gutter, and drainpipes	A	
	Building3	Repair of waterproof of gutter, and drainpipes	A	
	Connection Corridor 1-2	Repair of waterproof of roof	A	
	Connection Corridor 2-3	Repair of waterproof of roof	A	
	Main Entrance Canopy	Repair of waterproof of roof, and drainpipes	A	
	ER Entrance Canopy	Repair of waterproof of roof, and drainpipes	A	
Key, lock, and hardware	Building1 Building2 Building3	Procurement of keys for existing lock system and blank keys for copying in the local market. Replacement of broken thumb turn/cylinder, lock case, handle, and door closer.	A	
Central air conditioning system	Building1 Building2 Building3	Replacement of air conditioning units	B	
Ceiling	Building1 Building2 Building3 Corridor	Replacement of ceiling panels	B	

Priority A: First B: Second

Major Undertakings to be taken by Each Government

NO	Items	To be covered by JICA	To be covered by Marshall side
1	Removal of the existing metal roof and its substructure in Building 1.		●
2	Suspension of medical activities in the area concerned during the construction and vacating the room.		●
3	To construct temporary gates and fences in the site, if necessary.	●	
4	To provide electricity and water supply for repairing works.		●
5	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan or other foreign countries to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
6	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the Scope of Work such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
7	Facilitation of expedited customs clearance and inland transportation procedures for materials and equipment to be imported from Japan or other foreign countries under the Project		●
8	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the Scope of Work		●
9	Issuance of various permits and approvals required for the implementation of this project		●
10	To maintain and use properly and effectively the facilities repaired under the Follow-up Cooperation		●
11	To bear all the expenses, other than those to be borne by the Follow-up Cooperation, necessary for repair of the facilities		●

Tentative Implementation Schedule
of the Follow-up Project for Improvement of the Majuro Hospital

Items	Year Month	2022			2023												2024						2025			
		10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	5	6		
Survey																										
Preparation of the Survey in Japan		█																								
Site Survey in Marshall			█																							
Analysis and Preparation of the Report			█																							
Submission of the Survey Report							▲																			
Project Implementation (Provisional Schedule)																										
S/W							★																			
Tender Notice Tender Contract								▲	▲	▲																
Rehabilitation Works																										
Submission of the Completion Report																										▲
Defect Inspection (Provisional Schedule)																										
Defect Inspection																										█
Submission of the Defect Inspection Report																										▲

3. Other Materials and Information

Appendix 3-1 Hardware survey results for Door

Appendix 3-2 Ceiling survey result

Appendix 3-1 Hardware survey results for Door

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

○ :No abnormality in operation X :Replacement
 ▲ :Respond by repair

No.	Door No.	Door Type	Room Name	Master Key	Handle				Thumb Turn/Cylinder			Lock Case	Hinge		Door Closer		Flush Bolt		Door stopper		Supplementary information
Building-1																					
1st Floor																					
1-1	ACW-1	Double Swing	Entrance Hall (Right)		B	X	B	○	○	○	○	D	X	DC	X	FB	X	DS	—	Floor hinges are broken.	
1-2	ACW-1	Double Swing	Entrance Hall (Left)		B	X	B	○	○	○	○	D	X	DC	X	FB	○	DS	—	Floor hinges work but aged.	
1-3	AD-5	Single Swing	Registration Reception		C	○	C	○	○	○	○	A	△ No some screws	DC	X	-	—	DS	△ No Rubber		
1-4	AD-7	Single Swing	Reception - Helth Inform.		A	○	A	○	○	○	○	A	○	DC	X	-	—	DS	○		
1-5	AD-2	Single Swing	Helth Inform. - Director		A	○	A	○	○	○	○	A	○	DC	△	-	—	DS	○		
1-6	AD-3"	Single Swing	Rest Rm		C	○	C	-	○	○	○	A	△ No some screws	DC	X	-	—	DS	○		
1-7	AD-7	Single Swing	Medical Records		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-8	SD-9	Single Swing			I	○	I	-	—	—	—	A	—	DC	—	-	—	DS	—		
1-9	AD-10	Double Swing	Medical Records		A	○	A	○	○	○	○	A	○	DC	X	FB	—	DS	△ No Rubber		
1-10	SD-7	Single Swing	Stair Case		A	○	A	○	○	○	○	A	○	DC	X	-	—	DS	X	Door scratches the floor.	
1-11	SD-7	Single Swing	EPS		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	—	Door is hard to close.	
1-12	SD-9	Single Swing	PS		I	X	I	-	—	—	—	A	○	DC	—	-	—	DS	—		
1-13	AD-3	Single Swing	Rest Rm (Women)		I	X Changed	I	-	X Changed	X Changed	X Changed	A	○	DC	○	-	—	DS	X		
1-14	LSD-1	Sliding	Rest Rm (Hndicaped)		H	○	H	○	△ No Strike box	○	○	E	○	-	—	-	—		—		
1-15	AD-3	Single Swing	Rest Rm (Men)		I	X Changed	I	-	X	X	X	A	△ No some screws	DC	○	-	—	DS	X		
1-16	AD-11	Double Swing	Connection		B	X No Cap	B	○	○	○	○	A	○	DC	○	FB	○	DS	△ No Rubber		
1-17	AD-10	Double Swing	Drugs Storage		A	○	A	○	○	○	○	A	○	DC	○	FB	○	DS	△ No Rubber		
1-18	AD-7	Single Swing	Compounding Rm		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-19	AD-2	Single Swing	Director of Pharmacy		A	—	A	○	—	—	—	A	—	DC	—	-	—	DS	—	Door is removed.	
1-20	SD-7	Single Swing	Stair Case		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	△ No Rubber	Door doesn't close properly.	
1-21	AD-21	Double Swing	Reception		A	○	A	○	○	○	○	A	○	DC	X	FB	○	DS	△ No Rubber		
1-22	AD-2	Single Swing	Director for Dental Services		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-23	AD-3"	Single Swing	Rest Rm		C	△ Adjustment	C	-	○	○	○	A	○	DC	○	-	—	DS	X		
1-24	AD-7	Single Swing	Dental Laboratory		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	—		
1-25	AD-7	Single Swing	Staff Rm		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-26	SD-6	Single Swing	Panoramic X-ray		A	○	A	○	○	○	○	A	○	DC	X	-	—	DS	—		
1-27	SD-7A	Single Swing	Compressor Rm		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-28	SD-9	Single Swing	DS		I	X	I	-	—	—	—	A	○	DC	—	-	—	DS	—		
2nd Floor																					
1-29	AD-1	Single Swing	Corridor		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-30	AD-8	Single Swing	Program Coordinator		D	○	D	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-31	AD-8	Single Swing	Public Helth Clinician		D	○	D	○	○	○	○	A	○	DC	△ Adjustment	-	—	DS	○		
1-32	AD-7	Single Swing	Communication Rm		A	○	A	○	○	○	○	A	○	DC	○	-	—	DS	○		
1-33	AD-8	Single Swing	Associate Administrators		D	○	D	○	○	○	○	A	○	DC	○	-	—	DS	○		

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Appendix 3-1 Hardware survey results for Door

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

○ :No abnormality in operation X :Replacement
 ▲ :Respond by repair

No.	Door No.	Door Type	Room Name	Master Key	Handle			Thumb Turn/Cylinder			Lock Case	Hinge		Door Closer		Flush Bolt		Door stopper		Supplementary information
					A	○		A	○	○		○		B	○	-	○	-	—	
2-10	AD-2	Single Swing	Examination 3		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-11	AD-7	Single Swing	Examination 3 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	△ No Rubber	
2-12	AD-2	Single Swing	Examination 4		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-13	AD-7	Single Swing	Examination 4 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-14	AD-2	Single Swing	Examination 5		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-15	AD-7	Single Swing	Examination 5 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-16	SD-9	Single Swing	DS		I	○		I	-	—	—	A	○	-	—	-	—	DS	—	
2-17	AD-2	Single Swing	Reception		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-18	AD-7	Single Swing	Rest Rm - Storage		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
2-19	AD-3'	Single Swing	Rest Rm		C	○		C	-	○	○	B	○	DC	○	-	—	DS	○	
2-20	SD-9	Single Swing	DS (Storage)		I	○		I	-	—	—	A	○	-	—	-	—	DS	—	
2-21	AD-2	Single Swing	Triage (Left)		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-22	AD-2	Single Swing	Triage (Right)		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-23	AD-2	Single Swing	Examination 6		A	○		A	○	○	○	B	○	-	○	-	—	-	△ No Rubber	
2-24	AD-7	Single Swing	Examination 6 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-25	AD-2	Single Swing	Examination 7		A	○		A	○	○	○	B	○	-	X	-	—	-	○	
2-26	AD-7	Single Swing	Examination 7 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-27	AD-2	Single Swing	Examination 8		A	○		A	○	○	○	B	○	-	△ Adjustment	-	—	-	○	
2-28	AD-7	Single Swing	Examination 8 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-29	AD-2	Single Swing	Examination 9		A	○		A	○	○	○	B	○	-	X	-	—	-	△ No Rubber	
2-30	AD-7	Single Swing	Examination 9 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-31	AD-2	Single Swing	Examination 5		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-32	AD-7	Single Swing	Examination 5 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	△ Adjustment		—	DS	○	
2-33	AD-2	Single Swing	Examination 4		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-34	AD-7	Single Swing	Examination 4 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	△ Adjustment		—	DS	○	
2-35	AD-2	Single Swing	Examination 3		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-36	AD-7	Single Swing	Examination 3 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-37	AD-2	Single Swing	Examination 2		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-38	AD-7	Single Swing	Examination 2 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○		—	DS	○	
2-39	AD-2	Single Swing	Examination 1		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-40	AD-7	Single Swing	Examination 1 - Exam. Corridor		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
2-41	AD-7	Single Swing	Examination Corridor		A	○		A	○	○	○	B	○	DC	○	-	—	DS	△ No Rubber	
2-42	AD-2	Single Swing	Reception		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
2-43	AD-7	Single Swing	Reception - Nurse Station		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
2-44	AD-2	Single Swing	Nurse Station		A	○		A	○	○	○	B	○	-	○	-	—	-	X	
2-45	AD-5	Single Swing	Storage		A	○		A	○	○	○	B	○	DC	X	-	—	DS	—	
2-46	AD-3'	Single Swing	Toilet		C	○		C	-	○	○	B	○	DC	○	-	—	DS	○	

A-13

Appendix 3-1 Hardware survey results for Door

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

○ :No abnormality in operation X :Replacement
 ▲ :Respond by repair

No.	Door No.	Door Type	Room Name	Master Key	Handle			Thumb Turn/Cylinder			Lock Case		Hinge		Door Closer		Flush Bolt		Door stopper		Supplementary information
					A	○		A	○	○	○	○	B	○	DC	○	-	—	DS	—	
2-47	SD-8	Single Swing	Storage		A	○		A	○	○	○	B	○	DC	○	-	—	DS	—		
2-48	SD-7	Single Swing	EPS		A	○		A	○	○	○	B	○	DC	○	-	—	DS	—		
2-49	AD-11	Double Swing	Connection - Building-3		B	—		B	○	—	—	B	—	DC	—	FB	—	DS	—	Door is removed.	
2-50	AD-2	Single Swing	Treatment Rm		A	○		A	○	○	○	B	○	-	△ Adjustment	-	—	-	○		
2-51	AD-7	Single Swing	Medicine - Ophthalmology		A	—		A	○	—	—	B	—	DC	—	-	—	DS	—	Door is behind a shelf.	
2-52	AD-2	Single Swing	Reception		A	○		A	○	○	○	B	○	-	○	-	—	-	○		
2-53	AD-2	Single Swing	Reception - Ophthalmology		A	○		A	○	○	○	B	○	-	—	-	—	-	○		
2-54	AD-8	Single Swing	Reception - Ophthalmology		D	○		D	○	○	○	B	○	DC	○	-	—	DS	?		
2-55	AD-6	Single Swing	Storage		A	○		A	○	○	○	B	○	DC	○	-	—	DS	?		
2-56	AD-2	Single Swing	Treatment Rm		A	○		A	○	○	○	B	△ No some screws	-	△ No some screws	-	—	-	○		
2-57	AD-6	Single Swing	Treatment Rm - Ophthalmology		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○		
2-58	AD-14	Single Swing	Connection (line-C)		A	X Rusted		A	○	○	○	B	○	DC	○	-	—	DS	X		
2-59	AD-14	Single Swing	Connection (line-D side)		A	X Rusted		A	○	X Rusted	X Rusted	B	X Rusted	DC	X	-	—	DS	X		
2-60	AD-15	Single Swing	Sub Entrance		A	X		A	○	X	X	B	○	DC	○	-	—	DS	△ No Rubber		
2-61	AD-15	Single Swing	Sub Entrance		A	X		A	○	X	X	B	X Rusted	DC	X Rusted	-	—	DS	△ No Rubber		
Building-3																					
3-1	SD-2	Double Swing	Connection - Entrance		F	○		F	-	—	—	F	○	-	—	-	—	-	—		
3-2	AD-3	Single Swing	Rest Rm (Right)		A	○		A	○	○	○	B	△ No some screws	DC	△ No some screws	-	—	DS	△ No Rubber		
3-3	AD-3	Single Swing	Rest Rm (Left)		A	○		A	○	○	○	B	△ No some screws	DC	△ Adjustment	-	—	DS	△ No Rubber		
3-4	AD-10	Double Swing	Reception		A	○		A	○	△ No Strike box	○	B	△ No some screws	DC	X	FB	○	DS	△ No Rubber		
3-5	AD-5	Single Swing	Hematology - Microbiology		A	○		A	○	○	○	B	△ Adjustment	DC	○	-	—	DS	○	Door doesn't close.	
3-6	AD-7	Single Swing	Safety Cabinet		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○		
3-7	AD-5	Single Swing	Autoclave		A	○		A	○	○	○	B	○	DC	○	-	—	DS	△ No Rubber		
3-8	AD-3"	Single Swing	Urine Collecting		C	○		C	-	○	○	B	○	DC	X	-	—	DS	○		
3-9	AD-10	Double Swing	Laboratory - Storage		A	○		A	○	○	○	B	○	DC	△ Adjustment	FB	○	DS	△ No Rubber		
3-10	AD-5	Single Swing	Laboratory - Pathology		A	○		A	○	○	○	B	○	DC	△ No some screws	-	—	DS	△ No Rubber		
3-11	AD-10	Double Swing	Pathology		A	○		A	○	○	○	B	○	DC	○	FB	○	DS	△ No Rubber		
3-12	AD-7'	Single Swing	Tissue Processor		A	○		A	○	○	○	B	○	DC	○	-	—	DS	—		
3-13	AD-2	Single Swing	Reception		A	○		A	○	○	○	B	○	-	○	-	—	-	△ No Rubber		
3-14	AD-7	Single Swing	Reception - Waiting Rm		A	○		A	○	○	○	B	○	DC	○	-	—	DS	△ No Rubber		
3-15	AD-7	Single Swing	Staff Rm		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○		
3-16	AD-1	Single Swing	Nurse Station		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○		
3-17	AD-2	Single Swing	Storage		A	○		A	○	○	○	B	○	-	○	-	—	-	—		
3-18	AD-6	Single Swing	Nurse Station - Storage		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○		
3-19	SD-9	Single Swing	DS		I	○		I	-	—	—	A	○	-	—	-	—	DS	?		

A-14

Appendix 3-1 Hardware survey results for Door

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

○ :No abnormality in operation X :Replacement
 ▲ :Respond by repair

No.	Door No.	Door Type	Room Name	Master Key	Handle			Thumb Turn/Cylinder			Lock Case	Hinge		Door Closer		Flush Bolt		Door stopper		Supplementary information
					A	○		A	○	○		○	○	B	○	-	○	-	—	
3-20	AD-2	Single Swing	RH Director		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
3-21	AD-2	Single Swing	Examination		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
3-22	AD-2	Single Swing	Reproductive Health		A	○		A	○	○	○	B	○	-	○	-	—	-	○	
3-23	AD-3"	Single Swing	Rest room		C	○		C	-	○	○	B	○	DC	X	-	—	DS	X	
3-24	AD-8	Single Swing	Waiting Rm		D	○		D	○	○	X No plate	B	○	DC	X	-	—	DS	—	
3-25	AD-2	Single Swing	Internal Waiting		A	○		A	○	○	○	B	○	-	△ Hard	-	—	-	△ No Rubber	
3-26	AD-3'	Single Swing	Rest room		C	○		C	-	○	○	B	○	DC	X	-	—	DS	○	
3-27	AD-2	Single Swing	Examination		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
3-28	SD-3	Double Swing	Connection		F	—		F	-	—	—	F	X	-	—	-	—	-	—	One door doesn't open.
3-29	SD-6	Single Swing	CT Scan		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
3-30	AD-4	Single Swing	CT Scan		C	○		C	-	○	○	B	○	DC	○	-	—	DS	○	
3-31	SD-4	Double Swing	CT Scan		A	○		A	○	○	○	B	○	DC	○	FB	○	DS	○	
3-32	SD-5	Single Swing	CT Scan - X-ray Corridor		A	○		A	○	○	○	B	○	DC	○	-	—	DS	—	
3-33	AD-6	Single Swing	Dark Rm		A	○		A	○	○	○	B	○	DC	X	-	—	DS	—	
3-34	AD-6'	Single Swing	Storage		A	○		A	○	○	○	B	○	DC	X	-	—	DS	○	
3-35	SD-6	Single Swing	Change Rm		A	○		A	○	○	○	B	○	DC	○	-	—	DS	—	
3-36	AD-4	Single Swing	Change Rm - X-ray		C	○		C	-	○	○	B	○	DC	○	-	—	DS	—	
3-37	SD-4	Double Swing	X-ray		A	△ Adjustment		A	○	○	○	B	○	DC	△ No some screws	FB	X	DS	○	
3-38	AD-4'	Single Swing	Rest Rm (X-ray)		D	○		D	-	○	○	B	○	DC	○	-	—	DS	○	
3-39	SD-5	Single Swing	X-ray - Control Corner		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
3-40	AD-6'	Single Swing	Film Storage		A	○		A	○	○	○	B	○	DC	△ Adjustment	-	—	DS	—	
3-41	SD-6	Single Swing	Change Rm		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
3-42	AD-4	Single Swing	Change Rm - General X-ray		C	○		C	-	○	○	B	○	DC	○	-	—	DS	○	
3-43	SD-5	Single Swing	General X-ray - Control Corner		A	X		A	○	X	X	B	○	DC	○	-	—	DS	○	
3-44	SD-4	Double Swing	General X-ray		A	○		A	○	○	○	B	○	DC	△ No some screws	FB	X	DS	○	
3-45	SD-4	Double Swing	Mammography		A	○		A	○	○	○	B	○	DC	○	FB	X	DS	△ No Rubber	
3-46	SD-5	Single Swing	Mammography - Corridor		A	○		A	○	○	△ Loose	B	○	DC	○	-	—	DS	○	
3-47	AD-7	Single Swing	Radiologist		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
3-48	AD-2	Single Swing	Reception		A	○		A	○	○	○	B	○	-	X	-	—	-	○	
3-49	AD-7	Single Swing	Staff Rm		A	○		A	○	○	○	B	○	DC	○	-	—	DS	○	
3-50	AD-5	Single Swing	Corridor		A	○		A	○	○	○	B	○	DC	X	-	—	DS	△ No Rubber	
3-51	AD-11	Double Swing	Waiting Hall		B	X		B	○	X	X	B	○	DC	△ No some screws	FB	X	DS	X	
3-52	AD-5	Single Swing	Storage		A	○		A	○	○	○	B	○	DC	○ Replaced	-	—	DS	—	
3-53	AD-5	Single Swing	Custodian		A	X Wobble		A	○	○	○	B	○	DC	△ No some screws	-	—	DS	○	
3-54	SD-7	Single Swing	Electrical Rm		A	○		A	○	○	○	B	○	DC	△ No some screws	-	—	DS	—	
3-55	SD-9	Single Swing			I	—		I	-	—	—	A	—	-	—	-	—	DS	—	Wall and door are removed.
3-56	AD-13	Double Swing	Entrance		H'	○		H'	○	X	X	D	○	DC	—	FB	X	DS	—	

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Appendix 3-1 Hardware survey results for Door

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

○ :No abnormality in operation ✕ :Replacement
 ▲ :Respond by repair

No.	Door No.	Door Type	Room Name	Master Key	Handle		Thumb Turn/Cylinder			Lock Case	Hinge		Door Closer		Flush Bolt		Door stopper		Supplementary information
					H'	X	H'	○	X	X	D	○	DC	—	FB	X	DS	X	
3-57	AD-12	Double Swing	Hall Way (Emergency)		H'	X	H'	○	X	X	D	○	DC	—	FB	X	DS	X	
3-58	AD-6	Single Swing	PSX		A	X Changed	A	○	X Changed	X Changed	B	○	DC	○	-	—	DS	?	
3-59	AD-7	Single Swing	Security		A	—	A	○	—	—	B	—	DC	—	-	—	DS	—	Wall and door are removed.
3-60	AD-6	Single Swing	Doctor on call		A	○	A	○	○	○	B	○	DC	X	-	—	DS	?	
3-61	AD-3'	Single Swing	Rest Rm		C	○	C	-	X	○	B	○	DC	X	-	—	DS	X	
3-62	SD-9	Single Swing	DS		I	X	I	-	—	—	A	○	-	—	-	—	DS	—	
3-63	SD-9	Single Swing	DS		I	○	I	-	—	—	A	○	-	—	-	—	DS	—	
3-64	AD-3'	Single Swing	Rest Rm		C	○	C	-	X	X	B	○	DC	X	-	—	DS	△ No Rubber	
3-65	SD-7	Single Swing	Storage		A	○	A	○	○	○	B	○	DC	○	-	—	DS	X	
3-66	AD-5	Single Swing	Utility Rm		A	○	A	○	○	○	B	○	DC	△ Adjustment	-	—	DS	○	
3-67		Double Swing	Minor Surgery			—			—	—		○		—		—		—	
3-68		Single Swing	Utility Rm			○			—	—		○		—		—		—	
3-69	AD-9	Single Swing	Fan Rm (Pent House)		I'	X	I'	-	X	X	C	○	-	△ Hard	-	X	-	—	
3-70	AD-17	Double Swing	Pump Rm		A	X	A	-	X	X	B	○	DC	X Rusted	FB	X	DS	—	
3-71	AD-16	Double Swing	Generator Rm		A	X	A	○	X	X	B	○	DC	X Rusted	FB	X	DS	—	
Total (broken)						23			18	18		6		29		10		13	
Total (adjustment)						5			5	3		10		22		0		31	

*1) If symbols and explanations do not match the current situation in the checklist, please correct them.

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Aliminum Door

Hinge		Lock Set		Handle	
symbol	Contents	symbol	Contents	symbol	Contents
A	Butt Hinge	A	Thumb turn - Cylinder lock	A	Lever handle - Lever handle
B	Pivot Hinge	B	Cylinder lock - Cylinder lock	B	Pull handle - Pull handle
C	Lavatory Hinge	C	Thumb turn - Indication	C	Lever handle - Lever handle
D	Floor Hinge	D	Thumb turn -	D	Lever handle - Lever handle
E	Hanger Rail	E	Thumb turn - Cylinder lock	E	Lever handle - Case handle
		F	Cylinder lock -	F	Case handle -
		G	-	G	-
		H	Indication - Thumb turn	H	Pull handle - Pull handle
		H'	Thumb turn - Cylinder lock	H'	Pull handle - Pull handle
		I	-	I	Push and Pull Type
		I'	Lock for Hatch	I'	Case handle -

Steel Door

Hinge		Lock Set		Handle	
symbol	Contents	symbol	Contents	symbol	Contents
B	Pivot Hinge	B	Cylinder lock - Cylinder lock	B	Pull handle - Pull handle
C	Lavatory Hinge	C	Thumb turn - Indication	C	Lever handle - Lever handle
D	Floor Hinge	D	Thumb turn -	D	Lever handle - Lever handle
E	Hanger Rail	E	Thumb turn - Cylinder lock	E	Lever handle - Case handle
		F	Cylinder lock -	F	Case handle -
		H	Cylinder lock - Thumb turn	H	Pull handle - Pull handle
		I	Cylinder lock	I	Push and Pull Type

Master key

symbol	Contents	
G	Master key common to all 3 buildings	
B-1	Master key for building 1 only	It should have the same master key system as the existing facility. Therefore, please clarify if the existing master key system is divided by building. In case of only the master key system common to all three buildings is used, enter "G" and do not enter "B-1", "B-2", "B-3".
B-2	Master key for building 2 only	
B-3	Master key for building 3 only	




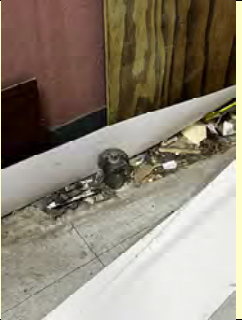

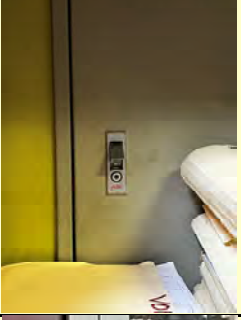
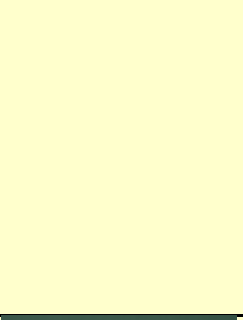
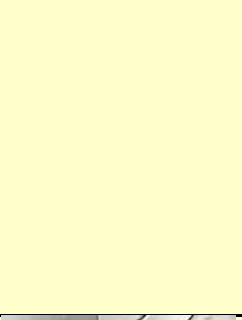


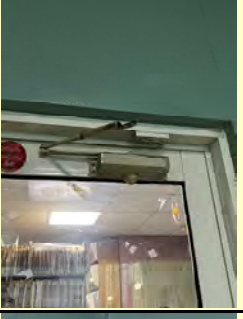


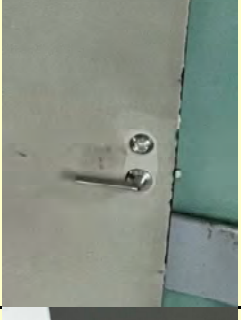

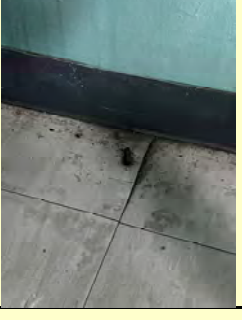

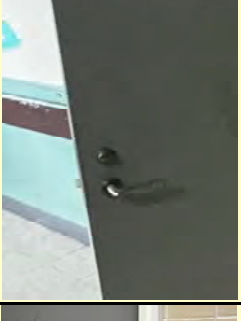

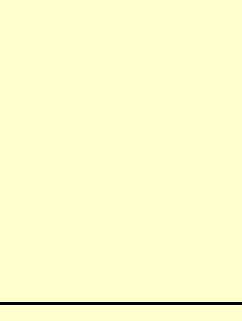


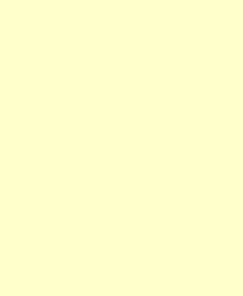
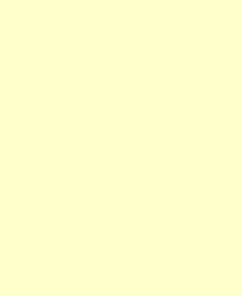
**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
Building-1						
1st Floor						
1-1	ACW-1	Entrance Hall (Right)				
1-2	ACW-1	Entrance Hall (Left)				
1-3	AD-5	Registration Reception				
1-4	AD-7	Reception -Health Inform.				
1-5	AD-2	Health Inform. -Director				
1-6	AD-3"	Rest Rm				

**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-7	AD-7	Medical Records				
1-8	SD-9					
1-9	AD-10	Medical Records				
1-10	SD-7	Stair Case				
1-11	SD-7	EPS				
1-12	SD-9	PS				

**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-13	AD-3	Rest Rm (Women)				
1-14	LSD-1	Rest Rm (Hndicaped)				
1-15	AD-3	Rest Rm (Men)				
1-16	AD-11	Connection				
1-17	AD-10	Drugs Storage				
1-18	AD-7	Compounding Rm				








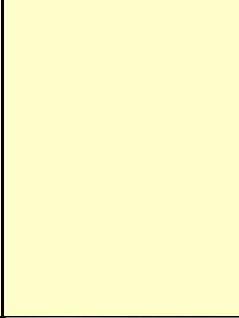


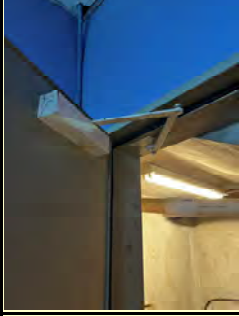



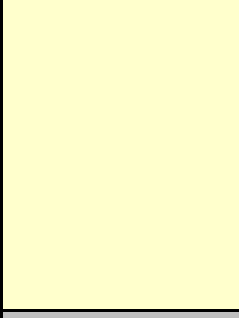
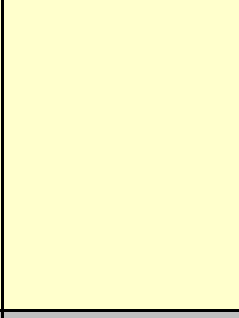




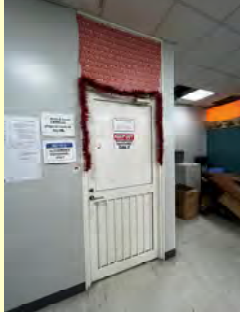



**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-19	AD-2	Director of Pharmacy				
1-20	SD-7	Stair Case				
1-21	AD-21	Reception				
1-22	AD-2	Director for Dental Services				
1-23	AD-3"	Rest Rm				
1-24	AD-7	Dental Laboratory				

**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-25	AD-7	Staff Rm				
1-26	SD-6	Panoramic X-ray				
1-27	SD-7A	Compressor Rm				
1-28	SD-9					
2nd Floor						
1-29	AD-1					
1-30	AD-8	Program Coordinator				

**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-31	AD-8	Public Helth Clinician				
1-32	AD-7	Communication Rm				
1-33	AD-8	Associate Administrators				
1-34	AD-8	Public Helth Medical Director				
1-35	AD-8	Public Helth Administrator				
1-36	AD-8	Assistant Secretary				




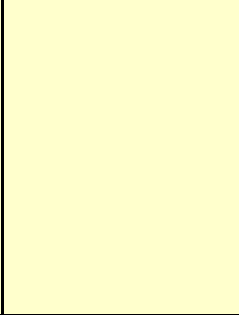


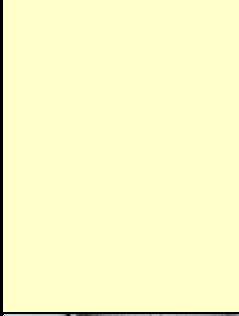
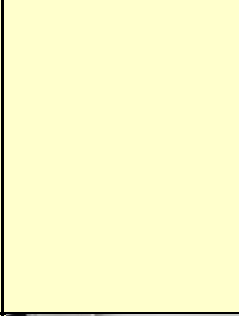





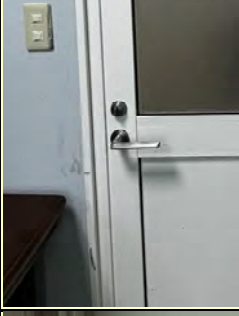




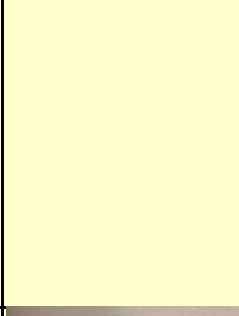



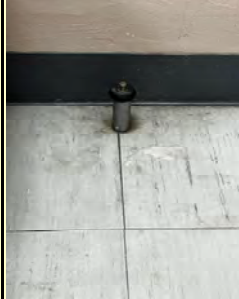
**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-37	AD-8	Health Promotion Director				
1-38	AD-1	Media Rm				
1-39	AD-3	Rest Rm (Men)				
1-40	AD-3	Rest Rm (Women)				
1-41	SD-7	EPS				
1-42	AD-21	Multipurpose Rm				

**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-43	AD-6	Kitchen				
1-44	SD-9					
1-45	AD-1	Helth Education Office				
1-46	AD-1	Nutrition Office				
1-47	SD-21	Srair Case				
1-48	AD-24	Coference Rm-2				


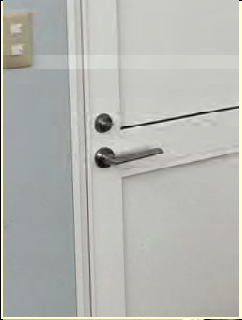









**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-49	AD-24	Coference Rm-1				
1-50	AD-9	Hospital Administration				
1-51	AD-7	Communication Rm				
1-52	AD-8	Hospital Administrator				
1-53	AD-8	Associate Administrators				
1-54	AD-8	Director for Quality Management				

**Appendix 3-1 Hardware survey results for Door
Building 1**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
1-55	AD-8	Quality Management Office				
1-56	AD-6'	Storage				
1-57	AD-22	Storage (Penthouse)				
1-58	AD-22	Stair Case				

Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
Building-2						
2-1	AD-14	Connection (line-C side)				
2-2	AD-14	Connection (Line D)				
2-3	SD-1	Entrance				
2-4	AD-2	Treatment Rm				
2-5	AD-7	Treatment Rm -Exam. Corridor				
2-6	AD-2	Examination 1				

Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-7	AD-7	Examination 1 -Exam. Corridor				
2-8	AD-2	Examination 2				
2-9	AD-7	Examination 2 -Exam. Corridor				
2-10	AD-2	Examination 3				
2-11	AD-7	Examination 3 -Exam. Corridor				
2-12	AD-2	Examination 4				





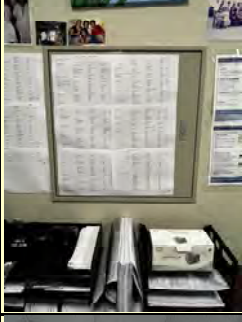
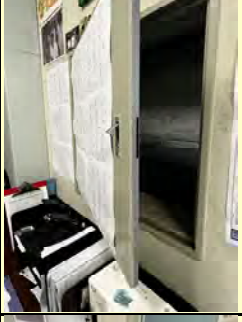
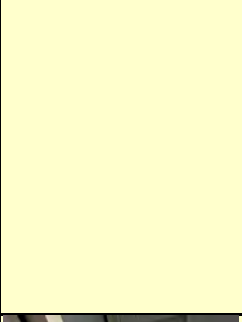
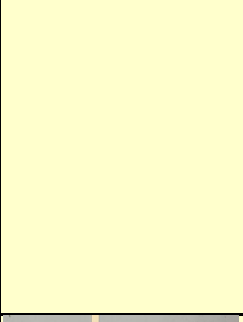



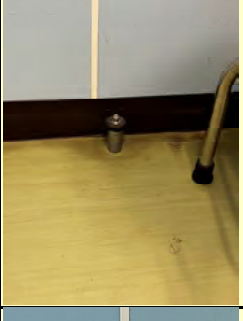
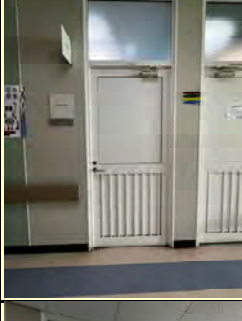





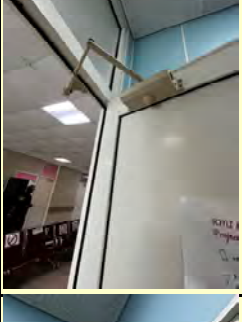
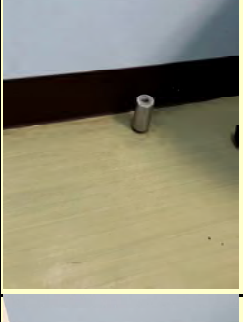



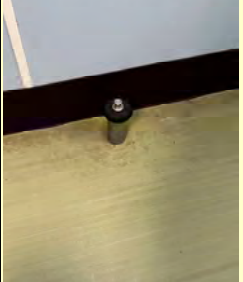
Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-13	AD-7	Examination 4 -Exam. Corridor				
2-14	AD-2	Examination 5				
2-15	AD-7	Examination 5 -Exam. Corridor				
2-16	SD-9	DS				
2-17	AD-2	Reception				
2-18	AD-7	Rest Rm -Storage				

**Appendix 3-1 Hardware survey results for Door
Building 2**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-19	AD-3'	Rest Rm				
2-20	SD-9	DS (Storage)				
2-21	AD-2	Triage (Left)				
2-22	AD-2	Triage (Right)				
2-23	AD-2	Examination 6				
2-24	AD-7	Examination 6 -Exam. Corridor				

**Appendix 3-1 Hardware survey results for Door
Building 2**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-25	AD-2	Examination 7				
2-26	AD-7	Examination 7 -Exam. Corridor				
2-27	AD-2	Examination 8				
2-28	AD-7	Examination 8 -Exam. Corridor				
2-29	AD-2	Examination 9				
2-30	AD-7	Examination 9 -Exam. Corridor				

Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-31	AD-2	Examination 5				
2-32	AD-7	Examination 5 -Exam. Corridor				
2-33	AD-2	Examination 4				
2-34	AD-7	Examination 4 -Exam. Corridor				
2-35	AD-2	Examination 3				
2-36	AD-7	Examination 3 -Exam. Corridor				

Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-37	AD-2	Examination 2				
2-38	AD-7	Examination 2 -Exam. Corridor				
2-39	AD-2	Examination 1				
2-40	AD-7	Examination 1 -Exam. Corridor				
2-41	AD-7	Examination Corridor				
2-42	AD-2	Reception				

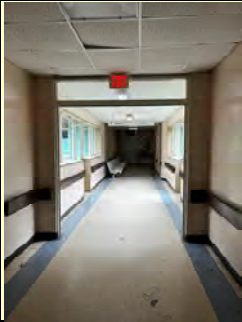
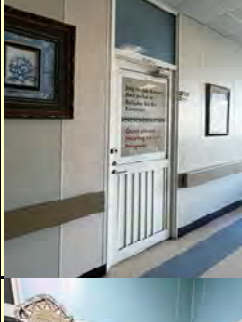

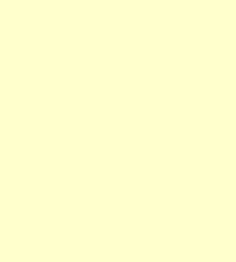
**Appendix 3-1 Hardware survey results for Door
Building 2**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-43	AD-7	Reception -Nurse Station				
2-44	AD-2	Nurse Station				
2-45	AD-5	Storage				
2-46	AD-3'	Toilet				
2-47	SD-8	Storage				
2-48	SD-7	EPS				

Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-49	AD-11	Connection -Building-3				
2-50	AD-2	Treatment Rm				
2-51	AD-7	Medicine -Ophthalmology				
2-52	AD-2	Reception				
2-53	AD-2	Reception -Ophthalmology				
2-54	AD-8	Reception -Ophthalmology				

Appendix 3-1 Hardware survey results for Door Building 2

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-55	AD-6	Storage				
2-56	AD-2	Treatment Rm				
2-57	AD-6	Treatment Rm -Ophthalmology				
2-58	AD-14	Connection (line-C)				
2-59	AD-14	Connection (line-D side)				
2-60	AD-15	Sub Entrance				





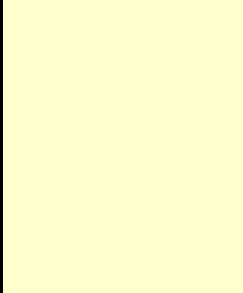
**Appendix 3-1 Hardware survey results for Door
Building 2**

Project: Follow-up cooperation on the project for improvement of the Majuro Hospital in the Republic of the Marshall Islands

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
2-61	AD-15	Sub Entrance				

















**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
Building-3						
3-1	SD-2	Connection -Entrance				
3-2	AD-3	Rest Rm (Right)				
3-3	AD-3	Rest Rm (Left)				
3-4	AD-10	Reception				
3-5	AD-5	Hematology -Microbiology				
3-6	AD-7	Safety Cabinet				




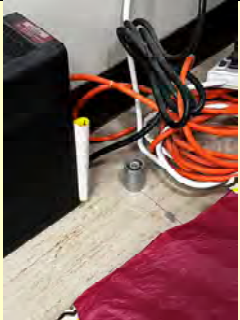







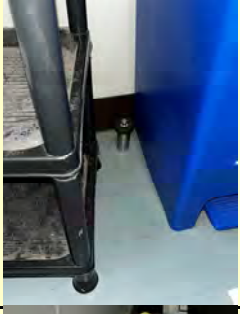
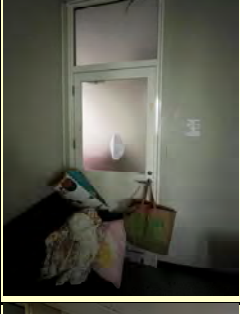


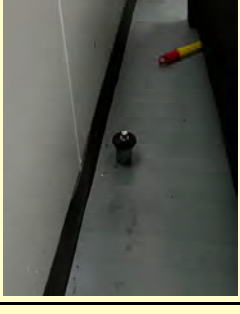



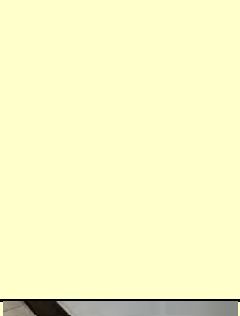

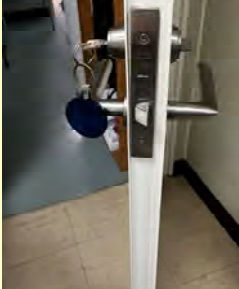


**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-7	AD-5	Autoclave				
3-8	AD-3"	Urine Collecting				
3-9	AD-10	Laboratory -Storage				
3-10	AD-5	Laboratory -Pathology				
3-11	AD-10	Pathology				
3-12	AD-7'	Tissue Processor				


**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-13	AD-2	Reception				
3-14	AD-7	Reception -Waiting Rm				
3-15	AD-7	Staff Rm				
3-16	AD-1	Nurse Station				
3-17	AD-2	Storage				
3-18	AD-6	Nurse Station -Storage				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-19	SD-9	DS				
3-20	AD-2	RH Director				
3-21	AD-2	Examination				
3-22	AD-2	Reproductive Health				
3-23	AD-3"	Rest room				
3-24	AD-8	Waiting Rm				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-25	AD-2	Internal Waiting				
3-26	AD-3'	Rest room				
3-27	AD-2	Examination				
3-28	SD-3	Connection				
3-29	SD-6	CT Scan				
3-30	AD-4	CT Scan				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-31	SD-4	CT Scan				
3-32	SD-5	CT Scan -X-ray Corridor				
3-33	AD-6	Dark Rm				
3-34	AD-6'	Storage				
3-35	SD-6	Change Rm				
3-36	AD-4	Change Rm -X-ray				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-37	SD-4	X-ray				
3-38	AD-4'	Rest Rm (X-ray)				
3-39	SD-5	X-ray -Control Corner				
3-40	AD-6'	Film Storage				
3-41	SD-6	Change Rm				
3-42	AD-4	Change Rm -General X-ray				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-43	SD-5	General X-ray -Control Corner				
3-44	SD-4	General X-ray				
3-45	SD-4	Mammography				
3-46	SD-5	Mammography -Corridor				
3-47	AD-7	Radiologist				
3-48	AD-2	Reception				

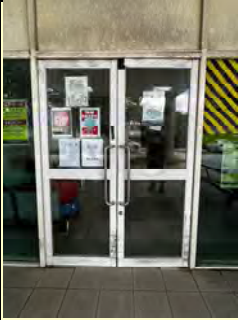




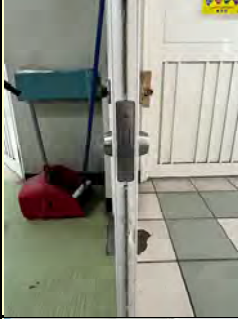
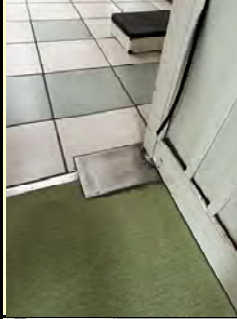







**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-49	AD-7	Staff Rm				
3-50	AD-5	Corridor				
3-51	AD-11	Waiting Hall				
3-52	AD-5	Storage				
3-53	AD-5	Custodian				
3-54	SD-7	Electrical Rm				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-55	SD-9		Door has been removed			
3-56	AD-13	Entrance				
3-57	AD-12	Hall Way (Emergency)				
3-58	AD-6	PSX				
3-59	AD-7	Security	Door has been removed			
3-60	AD-6	Doctor on call				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-61	AD-3'	Rest Rm				
3-62	SD-9	DS				
3-63	SD-9	DS				
3-64	AD-3'	Rest Rm				
3-65	SD-7	Storage				
3-66	AD-5	Utility Rm				

**Appendix 3-1 Hardware survey results for Door
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

No.	Door No.	Room Name	Door	Handle, Lock	Door Closer	Door Stopper
3-67		Minor Surgery				
3-68		Utility Rm				
3-69	AD-9	Fan Rm (Pent House)				
3-70	AD-17	Pump Rm				
3-71	AD-16	Generator Rm				

Appendix 3-2 Ceiling survey results

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	T-bar system Ceiling											Double board Ceiling			Supplementary information
	Damage				Dirt			Replaced Panel	Panels can be reuse	Necessary Replace base material	Damaged	Dirty	Necessary Replace base material		
	Damaged Panel	Out of flame	with Eqp	without Eqp	Dirty Panel	with Eqp	without Eqp								
Building-1															
1st Floor															
Entrance Hall (Right)												8.0	3.0	3.8	
Regestration Reception	6	0	3	3	0	0	0	0	19	0m 2					
Helth Inform. - Office	5	0	2	3	5	0	5	0	52	0m 2					
Helth Inform. - Director	0	0	0	0	2	2	0	0	25	0m 2					
Rest Rm	0	0	0	0	0	0	0	0	0	0m 2					There are signs that it has been repaired
Medical Records	7	0	2	5	7	1	6	0	95	0m 2					
Stair Case				0			0				3.0	2.3	2.0		Partially the base is not goodcondition, about 2m ² cannot be used
Rest Rm (Women)				0			0				0.0	1.0	0.0		
Rest Rm (Hndicaped)				0			0				0.0	0.0	0.0		
Rest Rm (Men)				0			0				0.0	0.0	0.0		There are signs that it has been repaired
Connection	4	0	0	4	2	0	2	12	16	0m 2					
Drugs Storage	0	0	0	0	2	2	0	0	62	6m 2					Partially the base is not goodcondition, about 6m ² cannot be used
Compounding Rm	0	0	0	0	1	1	0	0	15	0m 2					
Director of Pharmacy	0	0	0	0	0	0	0	0	16	0m 2					
Stair Case				0			0				3.0	0.0	0.0		
Reception	7	8	3	12	11	5	6	0	122	0m 2					
Director for Dental Services	0	1	0	1	1	1	0	0	11	0m 2					
Rest Rm	0	0	0	0	0	0	0	0	0	0m 2					
Dental Laboratory	0	0	0	0	4	2	2	0	15	0m 2					
Staff Rm	0	0	0	0	0	0	0	0	4	0m 2					
Panoramic X-ray	0	0	0	0	0	0	0	0	0	0m 2					
2nd Floor															
Primary Healthcare Administration	20	0	0	20	12	2	10	0	61	6m 2					
Program Coordinator	11	0	1	10	7	0	7	16	9	0m 2					
Public Helth Clinician	7	0	1	6	2	0	2	6	11	0m 2					
Communication Rm	3	1	0	4	3	0	3	0	7	0m 2					
Associate Administrators	6	0	0	6	2	2	0	3	8	0m 2					
Public Helth Medical Director				0			0								Can not entered
Public Helth Administrator	2	0	0	2	0	0	0	8	6	0m 2					
Assistant Secretary				0			0								Can not entered
Health Promotion Director				0			0								Can not entered
Media Rm	2	0	0	2	2	0	2	0	12	0m 2					

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Appendix 3-2 Ceiling survey results

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	T-bar system Ceiling										Double board Ceiling			Supplementary information
	Damage				Dirt			Replaced Panel	Panels can be reuse	Necessary Replace base material	Damaged	Dirty	Necessary Replace base material	
	Damaged Panel	Out of flame	with Eqp	without Eqp	Dirty Panel	with Eqp	without Eqp							
Rest Rm (Men)				0			0				0.0	0.0	0.0	Paint Finish
Rest Rm (Women)				0			0				9.0	0.0	0.0	Paint Finish
Multipurpose Rm	9	0	0	9	10	3	7	0	31	0m 2				
Helth Education Office	4	0	0	4	4	2	2	0	35	0m 2				
Nutrition Office	7	0	1	6	4	1	3	7	17	0m 2				
Coference Rm-2	6	0	0	6	7	0	7	13	16	0m 2				
Coference Rm-1	3	0	0	3	0	0	0	12	16	0m 2				
Hospital Administration	11	1	2	10	5	0	5	5	70	0m 2				
Communication Rm	1	0	0	1	2	0	2	0	14	0m 2				
Hospital Administrator	5	0	0	5	3	1	2	0	20	0m 2				
Associate Administrators	10	2	0	12	0	0	0	8	3	0m 2				
Director for Quality Management	2	0	0	2	2	0	2	7	11	0m 2				
Quality Management Office	6	0	0	6	0	0	0	0	23	0m 2				
Storage	2	0	0	2	0	0	0	0	0	0m 2				
Corridor and Void				0			0				3.0	7.0	0.0	
Building-1 Total	146	13	15	144	100	25	75	97	822	12m 2	26.0	13.3	5.8	
Building-2														
Entrance	1	0	0	1	1	0	1	0	22	0m 2				
Treatment Rm	0	0	0	0	2	2	0	0	20	0m 2				
Treatment Rm - Exam. Corridor	6	0	1	5	6	2	4	9	12	0m 2				
Examination 1	0	0	0	0	2	1	1	0	10	0m 2				
Examination 2	0	0	0	0	1	1	0	0	10	0m 2				
Examination 3	0	0	0	0	2	1	1	0	10	0m 2				
Examination 4	0	0	0	0	0	0	0	0	5	0m 2				
Examination 5	2	0	0	2	0	0	0	1	8	0m 2				
DS				0			0							No ceiling
Reception	3	1	0	4	3	2	1	0	13	0m 2				
Examination Corridor	6	2	1	7	4	2	2	0	41	0m 2				
Rest Rm				0			0				0.0	0.0	0.0	
Triage (Left)	0	0	0	0	1	1	0	0	5	0m 2				
Triage (Right)	0	0	0	0	1	0	1	0	5	0m 2				
Examination 6	27	0	3	24	0	0	0	0	0	0m 2				
Examination 7	32	0	3	29	1	0	1	0	0	0m 2				
Examination 8	11	0	0	11	16	2	14	0	0	0m 2				
Examination 9	1	0	0	1	1	1	0	0	5	0m 2				
Examination 5	2	0	0	2	4	1	3	0	4	0m 2				

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Appendix 3-2 Ceiling survey results

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	T-bar system Ceiling										Double board Ceiling			Supplementary information
	Damage				Dirt			Replaced Panel	Panels can be reuse	Necessary Replace base material	Damaged	Dirty	Necessary Replace base material	
	Damaged Panel	Out of flame	with Eqp	without Eqp	Dirty Panel	with Eqp	without Eqp							
Examination 4	6	0	0	6	18	3	15	0	0	0m 2				
Examination 3	26	0	1	25	6	1	5	0	0	0m 2				
Examination 2	4	0	0	4	16	1	15	0	0	0m 2				
Examination 1	13	0	0	13	5	1	4	0	0	0m 2				
Examination Corridor	11	0	1	10	15	2	13	0	10	0m 2				
Reception	8	1	0	9	7	0	7	0	0	0m 2				
Nurse Station	31	1	2	30	6	5	1	0	0	0m 2				
Storage	0	4	0	4	2	1	1	0	6	0m 2				
Toilet				0			0				0.0	0.0	0.0	
Storage				0			0				0.0	0.0	0.0	
Connection - Building-3	3	1	0	4	3	0	3	1	22	0m 2				
Treatment Rm	0	1	0	1	0	0	0	0	16	0m 2				
Medicine - Ophthalmology	1	0	0	1	1	1	0	0	2	0m 2	0.0	0.0	0.0	
Reception - Ophthalmology	0	0	0	0	1	1	0	0	5	0m 2				
Reception - Ophthalmology	0	0	0	0	1	1	0	2	11	0m 2				
Storage	0	0	0	0	0	0	0	0	0	0m 2				
Treatment Rm	1	0	0	1	3	2	1	1	15	0m 2				
Connection (line-C)	0	0	0	0	2	0	2	1	24	0m 2				
Waiting Hall	10	3	0	13	19	10	9	2	266	0m 2				
Building-2 Total	205	14	12	207	150	45	105	17	547	0m 2	0.0	0.0	0.0	
Building-3														
Connection - Entrance	0	0	0	0	0	0	0	34	0	0m 2				
Rest Rm (Right)				0			0				0.0	0.0	0.0	
Rest Rm (Left)				0			0				0.0	0.0	0.0	
Reception	15	0	8	7	31	1	30	0	64	0m 2				
Hematology - Microbiology	16	0	5	11	13	1	12	1	20	0m 2				
Safety Cabinet				0			0				0.0	0.0	0.0	
Autoclave	5	0	1	4	4	2	2	0	7	0m 2				
Urine Collecting				0			0				0.0	0.0	0.0	
Laboratory - Storage	0	1	0	1	1	0	1	0	15	0m 2				
Laboratory - Pathology	12	0	4	8	20	0	20	0	60	0m 2				
Tissue Processor				0			0				0.0	0.0	0.0	
Reception	5	0	1	4	1	1	0	0	15	0m 2				
Nurse Station	4	0	2	2	5	0	5	0	7	0m 2				
Storage	3	0	2	1	2	0	2	0	9	0m 2				
RH Director	2	0	1	1	2	1	1	0	8	0m 2				

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Appendix 3-2 Ceiling survey results

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	T-bar system Ceiling										Double board Ceiling			Supplementary information
	Damage				Dirt			Replaced Panel	Panels can be reuse	Necessary Replace base material	Damaged	Dirty	Necessary Replace base material	
	Damaged Panel	Out of flame	with Eqp	without Eqp	Dirty Panel	with Eqp	without Eqp							
Examination	2	0	0	2	3	0	3	0	11	0m 2				
Reproductive Health	3	0	0	3	0	0	0	0	8	0m 2				
Rest room				0			0				0.0	0.0	0.0	
Waiting Rm	3	0	1	2	2	1	1	0	45	0m 2				
Internal Waiting	0	0	0	0	0	0	0	0	6	0m 2				
Rest room				0			0				0.0	2.0	0.0	
Examination	0	1	0	1	2	0	2	0	7	0m 2				
Connection	0	0	0	0	0	0	0	52	0	0m 2				
CT Scan	0	1	0	1	0	0	0	0	0	0m 2				
CT Scan	0	0	0	0	2	0	2	1	38	0m 2				
Dark Rm				0			0				0.0	0.0	0.0	
Storage	2	0	0	2	0	0	0	0	1	0m 2				
Change Rm	1	0	0	1	0	0	0	0	0	0m 2				
X-ray	4	0	4	0	3	2	1	0	26	0m 2				
Rest Rm (X-ray)				0			0				0.0	0.0	0.0	
Film Storage	1	0	0	1	0	0	0	0	1	0m 2				
Change Rm	0	0	0	0	0	0	0	0	0	0m 2				
General X-ray - Control Corner	4	0	4	0	2	2	0	0	32	0m 2				
Mammography	2	0	2	0	2	2	0	0	11	0m 2				
Radiologist	1	0	0	1	1	1	0	0	11	0m 2				
Reception	1	0	1	0	0	0	0	0	16	0m 2				
Corridor	5	0	4	1	21	2	19	0	84	0m 2				
Waiting Hall	4	6	0	10	10	4	6	0	112	0m 2				
Storage	11	2	3	10	10	1	9	0	0	0m 2				
Custodian	5	0	2	3	0	0	0	0	13	0m 2				
Electrical Rm				0			0				0.0	0.0	0.0	
Entrance				0			0				4.0	0.0	0.0	
Hall Way (Emergency)	31	1	9	23	34	4	30	0	137	0m 2				
Security				0			0				0.0	0.0	0.0	
Doctor on call	11	0	2	9	0	0	0	0	4	0m 2				
Rest Rm				0			0				0.0	0.0	0.0	
Rest Rm				0			0				0.0	0.0	0.0	
Storage	0	0	0	0	1	1	0	0	8	0m 2				
Utility Rm				0			0				0.0	0.0	0.0	
Minor Surgery				0			0				0.0	0.0	0.0	
Building-3 Total	153	12	56	109	172	26	146	88	776	0m 2	4.0	2.0	0.0	

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Appendix 3-2 Ceiling survey results

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	T-bar system Ceiling									Double board Ceiling			Supplementary information	
	Damage				Dirt			Replaced Panel	Panels can be reuse	Necessary Replace base material	Damaged	Dirty		Necessary Replace base material
	Damaged Panel	Out of flame	with Eqp	without Eqp	Dirty Panel	with Eqp	without Eqp							
合計	504	39	83	460	422	96	326	202	2145	12m 2	30.0	15.3	5.8	

**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Building-1			
1st Floor			
Entrance Hall (Right)			
Entrance Hall (Left)			
Reception - Helth Inform.			
Helth Inform. - Director			
Rest Rm			
Medical Records			
Stair Case			

**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
EPS	No Ceiling	No Ceiling	No Ceiling
PS	No Ceiling	No Ceiling	No Ceiling
Rest Rm (Women)			
Rest Rm (Hndicaped)			
Rest Rm (Men)			
Connection			
Drugs Storage			

**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Compounding Rm			
Director of Pharmacy			
Stair Case			
Reception			
Director for Dental Services			
Rest Rm			
Dental Laboratory			


**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Staff Rm			
Panoramic X-ray			
Compressor Rm		No Ceiling	No Ceiling
2nd Floor			
Primary Health Care Admin			
Program Coordinator			
Public Helth Clinician			
Communication Rm			

**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Associate Administrators			
Public Helth Medical Director	Can not entered	Can not entered	Can not entered
Public Helth Administrator			
Assistant Secretary	Can not entered	Can not entered	Can not entered
Health Promotion Director	Can not entered	Can not entered	Can not entered
Media Rm			
Rest Rm (Men)			

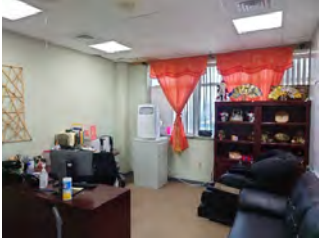


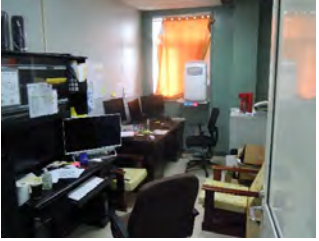
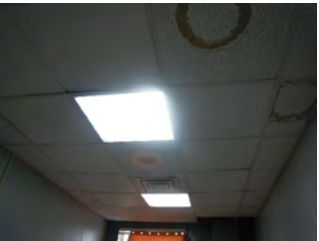
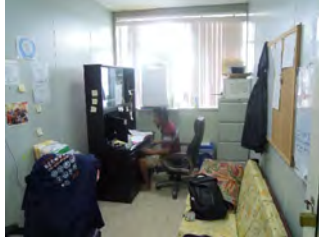


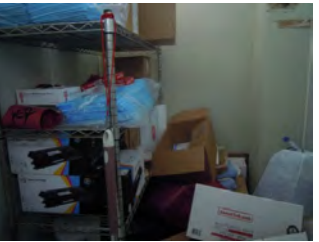

**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Rest Rm (Women)			
Multipurpose Rm			
Helth Education Office			
Nutrition Office			
Coference Rm-2			
Hospital Administration			
Communication Rm			

**Appendix 3-2 Ceiling survey results
Building 1**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Hospital Administrator			
Associate Administrators			
Director for Quality Management			
Storage			

**Appendix 3-2 Ceiling survey results
Building 2**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Building-2			
Entrance			
Treatment Rm			
Treatment Rm - Exam. Corridor			
Examination 1			
Examination 2			
Examination 3			
Examination 4			

**Appendix 3-2 Ceiling survey results
Building 2**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Examination 5			
Reception			
Examination Corridor			
Rest Rm			
Triage (Left)			
Triage (Right)			
Examination 6			

**Appendix 3-2 Ceiling survey results
Building 2**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Examination 7			
Examination 8			
Examination 9			
Examination 5			
Examination 4			
Examination 3			
Examination 2			

**Appendix 3-2 Ceiling survey results
Building 2**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Examination 1			
Examination Corridor			
Reception			
Nurse Station			
Storage			
Toilet			
Storage			

**Appendix 3-2 Ceiling survey results
Building 2**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Connection - Building-3			
Treatment Rm			
Medicine - Ophthalmology			
Reception - Ophthalmology			
Reception - Ophthalmology			
Storage			
Treatment Rm			

**Appendix 3-2 Ceiling survey results
Building 2**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Connection (line-C)			
Waiting Hall			

**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Building-3			
Connection - Entrance			
Staff Room			
Rest Rm			
Reception			
Hematology - Microbiology			
Safety Cabinet			
Autoclave			

**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Urine Collecting			
Laboratory - Storage			
Laboratory - Pathology			
Tissue Processor			
Reception			
Nurse Station			
RH Director			

**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Examination			
Reproductive Health			
Waiting Rm			
Internal Waiting			
Rest room			
Examination			
Connection			




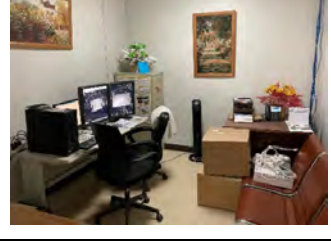

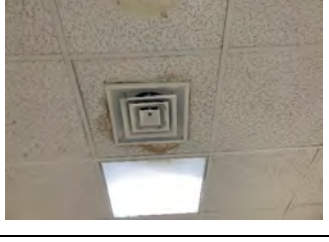
**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
CT Scan			
CT Scan			
Dark Rm			
Storage			
Change Rm			
X-ray			
Rest Rm (X-ray)			

**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Film Storage			
Change Rm			
General X-ray - Control Corner			
Mammography			
Radiologist			
Reception			
Corridor			







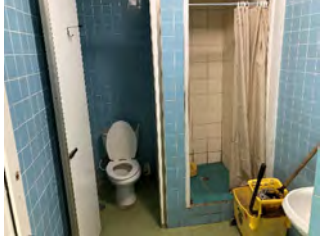








**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Waiting Hall			
Storage			
Custodian			
Electrical Rm			
Entrance			
Hall Way (Emergency)			
Security			

**Appendix 3-2 Ceiling survey results
Building 3**

Project: The Republic of the Marshall Islands Follow-up cooperation on the project for improvement of the Majuro Hospital

Room Name	Room Situation Picture	Ceiling Picture1	Ceiling Picture2
Doctor on call			
Rest Rm			
Rest Rm			
Storage			
Utility Rm			
Minor Surgery	