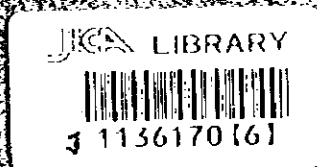


CIVIL DEFENCE
PALESTINE

NO. 1

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR THE IMPROVEMENT
OF THE FIRE FIGHTING SERVICES
IN THE GAZA STRIP
IN
PALESTINE**

MARCH, 1997



**JAPAN INTERNATIONAL COOPERATION AGENCY
FIRE PROTECTION EQUIPMENT AND SAFETY CENTER OF JAPAN**

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PREFACE

In response to a request from the Palestinian Authority, the Government of Japan decided to conduct a basic design study on the Project for the Improvement of the Fire Fighting Services in the Gaza Strip and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Palestine a study team from 3rd December to 22th December, 1996.

The team held discussions with the officials concerned of the Palestinian Authority, and conducted a field study at the study area. After the team returned to Japan, further studies were made, and as this result, the present report was finalized.

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

I wish to express my sincere appreciation to the officials concerned of the Palestinian Authority for their close cooperation extended to the teams.

March, 1997



Kimio Fujita

President

Japan International Cooperation Agency

March, 1997

LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for the Improvement of the Fire Fighting Services in the Gaza Strip in Palestine.

This study was conducted by Fire Protection Equipment and Safety Center of Japan, under a contract to JICA, during the period from 28th November, 1996 to 31st March, 1997. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Palestine and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

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

Very truly yours,

Nobuo Arakawa

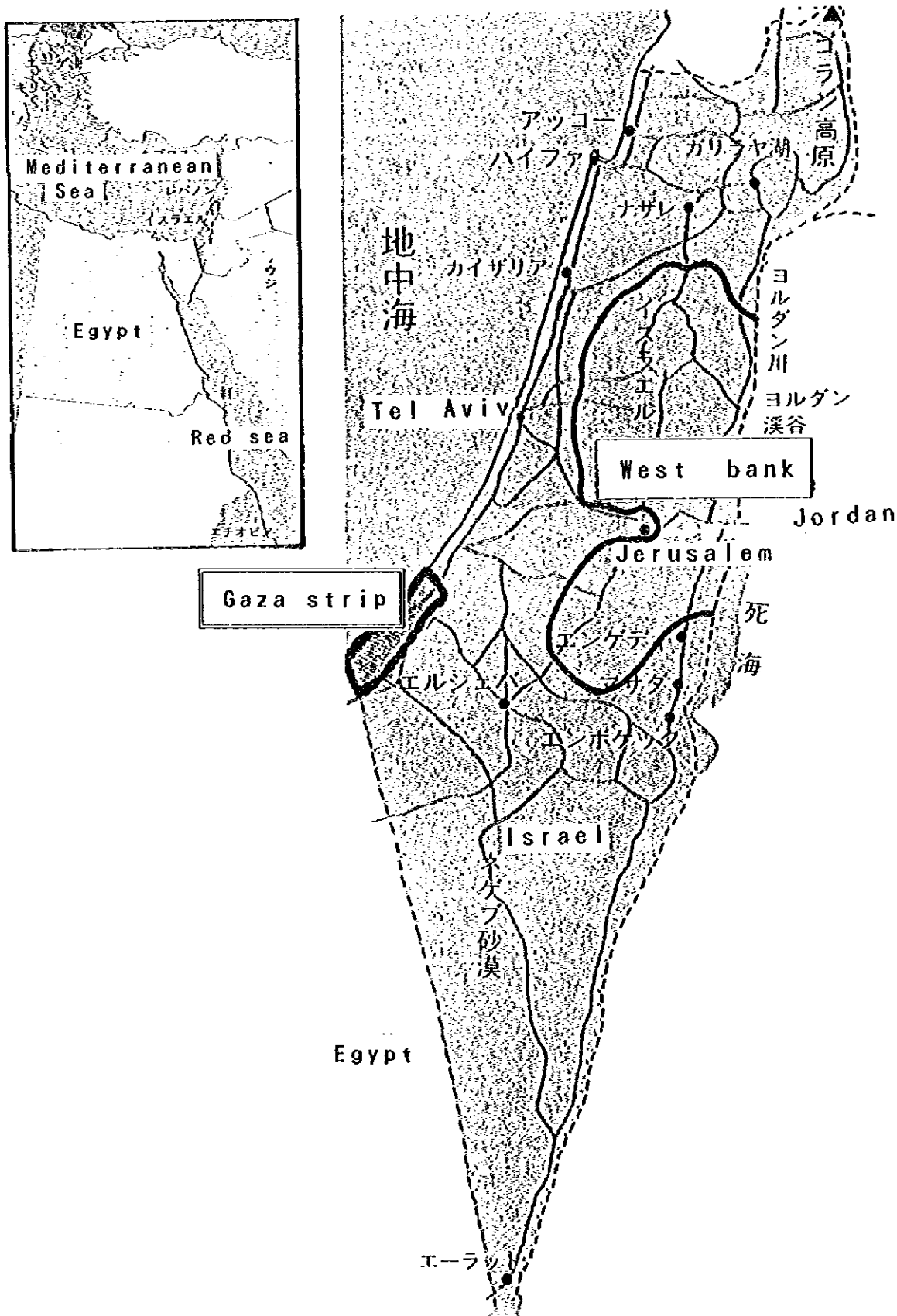
Nobuo Arakawa

Project Manager

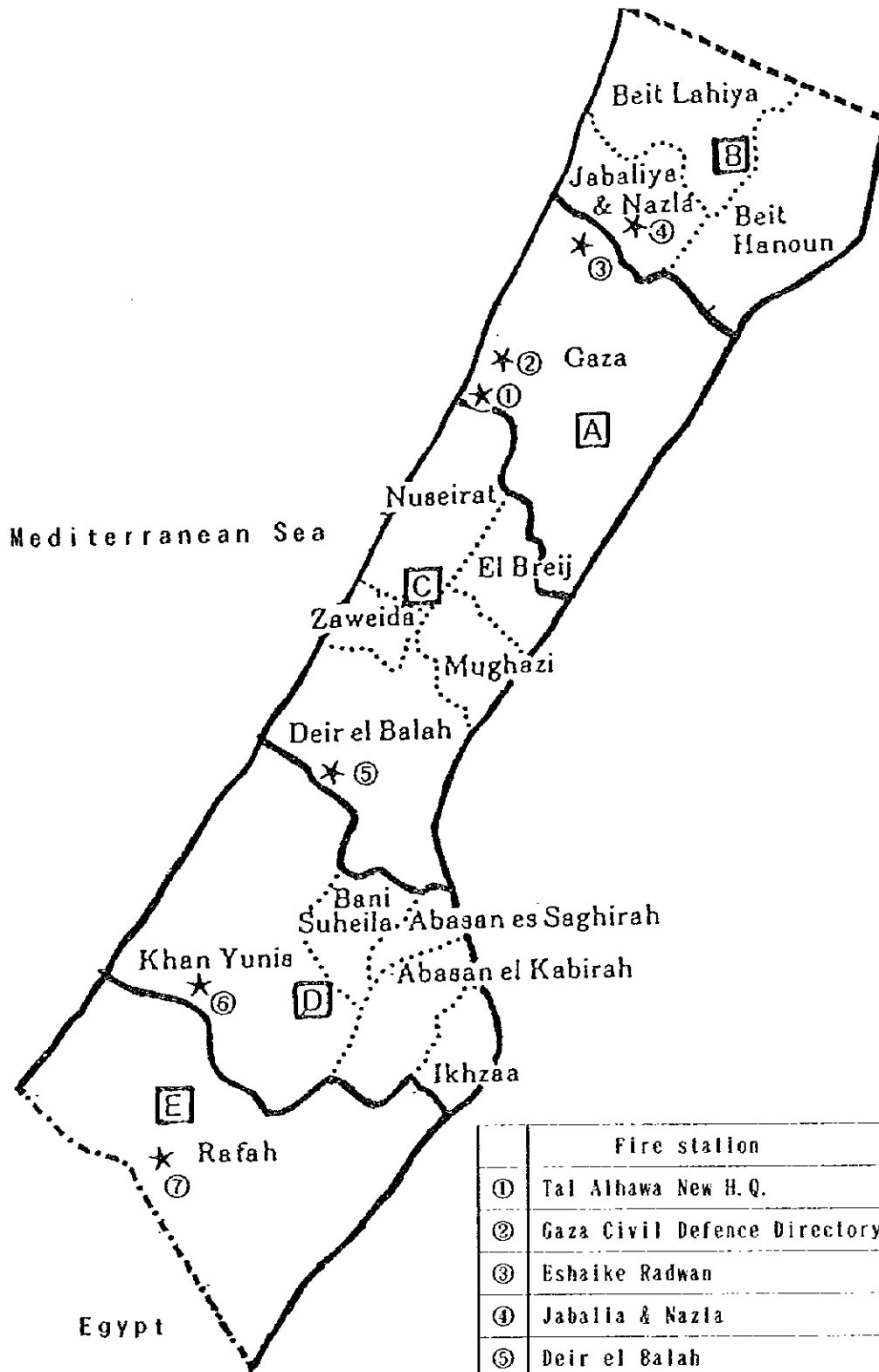
Basic design study team on the Project for
the Improvement of the Fire Fighting
Services in the Gaza strip

Fire Protection Equipment and Safety
Center of Japan

Location Map of Gaza strip



Location and its Jurisdiction of Fire Stations in Gaza strip



	Fire station	Jurisdiction
①	Tal Alhawa New H. Q.	
②	Gaza Civil Defence Directory	} A
③	Eshaike Radwan	
④	Jabalia & Nazla	B
⑤	Deir el Balah	C
⑥	Khan Yunis	D
⑦	Rafah	E

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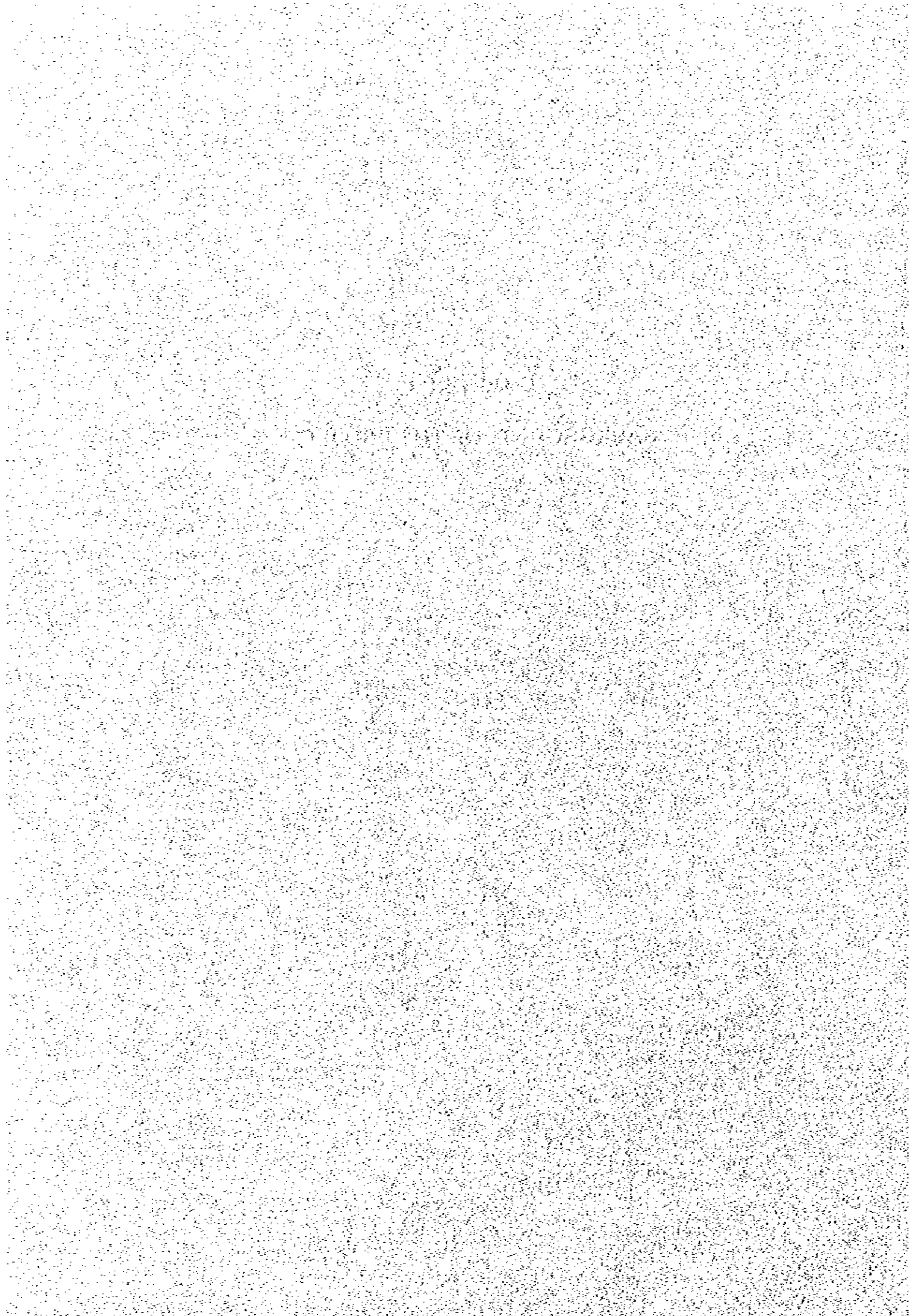
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CHAPTER 1
BACKGROUND OF THE PROJECT



CHAPTER 1

BACKGROUND OF THE PROJECT

1-1 Background of the Project

Following the signing and effectuation of the Declaration on the Principles of Provisional Autonomy by the Palestinian Liberation Organization (PLO) and the Government of Israel in 1993, the Palestinian Authority was established in May, 1994.

The Gaza Strip, the subject area of the Project, has a population of some 800,000, resulting in a high population density of 5,000 person/km² in its urban areas. There are eight refugee camps in the Gaza Strip and the population density of these camps of 30,000 - 100,000 persons/km² is extremely high. The general poverty together with the lack of socioeconomic infrastructure has exacerbated the local standard of living and daily life is vulnerable to various hazards, including fire.

Table 1-1 shows the number of fires recorded in the Gaza Strip in the last five years.

Table 1-1 Fires in Gaza Strip from 1991 to 1995

Year	1991	1992	1993	1994	1995
Number of Fires	178	221	154	207	478

Between 1994 and 1995, the number of fires jumped by 130% from 207 to 478 respectively. Many donors and aid organizations are currently implementing a number of projects, including infrastructure development projects. The increased investment by the private sector accompanying these projects has led to the occurrence of some 60 unconventional fires a year involving a synthetic resin factory and paint factory among others. As many new factories are constructed near residential quarters because of the absence of building regulations on the permitted types of buildings by area, the fire hazard for local inhabitants has increased.

The fire-fighting regime in the Gaza Strip comprises six fire stations, including the Headquarters, in five administration districts, 560 firemen and seven fire trucks (each station has one truck while the Headquarters has two trucks) (see Table 1-2). In addition to the fire trucks, there are four tankers (without a pumping unit) to transport fire-fighting water and eight trucks to transport firemen and equipment. The strength of the Civil Defence in the Gaza Strip is

much poorer than that in neighbouring cities as its ratio of 1.14 fire trucks per 100,000 persons is lower than the 2.69 fire trucks in Amman in Jordan, 2.80 fire trucks in Cairo in Egypt and 2.10 fire trucks in Damascus in Syria. The Civil Defence sends its firemen to Egypt and Jordan for training but the overall shortage of fire-fighting trucks and equipment prevents the Civil Defence from conducting adequate fire-fighting work.

The Palestinian Authority and the Civil Defence consider the protection of people's lives and assets from fire and other disasters, the protection of the local economic infrastructure and the promotion of social welfare to be urgent priorities and are already implementing a master plan which was finalised in March, 1995. The present budget level of the Civil Defence means that a large portion of the budget goes to the personnel cost, leaving little for the procurement of new equipment, etc.

Table 1-2 Existing Fire Trucks in Gaza Strip

Fire Station	Number	Year of Manufacture	Body Manufacturer	Water Tank Capacity (litres)	Foam Tank Capacity (litres)
Gaza Civil Defence Directory (Present Headquarters)	2	1993	HATEHOF (Israel)	3,000	200
		1995	HATEHOF (Israel)	3,000	200
Eshaikh Radwan	1	1995	BAI (Italy)	3,000	200
Jabalia & Nazla	1	1995	BAI (Italy)	3,000	200
Deir el Balah	1	1987	BEIT ALFA (Israel)	3,000	200
Khan Yunis	1	1988	BEIT ALFA (Israel)	3,000	80
Rafah (Airport excluded)	1	1993	HATEHOF (Israel)	3,000	500
Total	7				

It is understood that the UNDP will donate such fire-fighting equipment as aerial ladder trucks and chemical tender trucks, etc. in February, 1997 with a contribution of the Government of Japan. This is believed to be the only planned assistance for the fire-services of the Civil Defence.

Against this background, the Palestinian Authority made a request to the Government of Japan for the provision of grant aid to improve its fire-fighting capability. In response to this request, the Japan International Cooperation Agency (JICA) conducted a Project Formation Study in December, 1995 which confirmed the necessity to reinforce the fire-fighting equipment as requested.

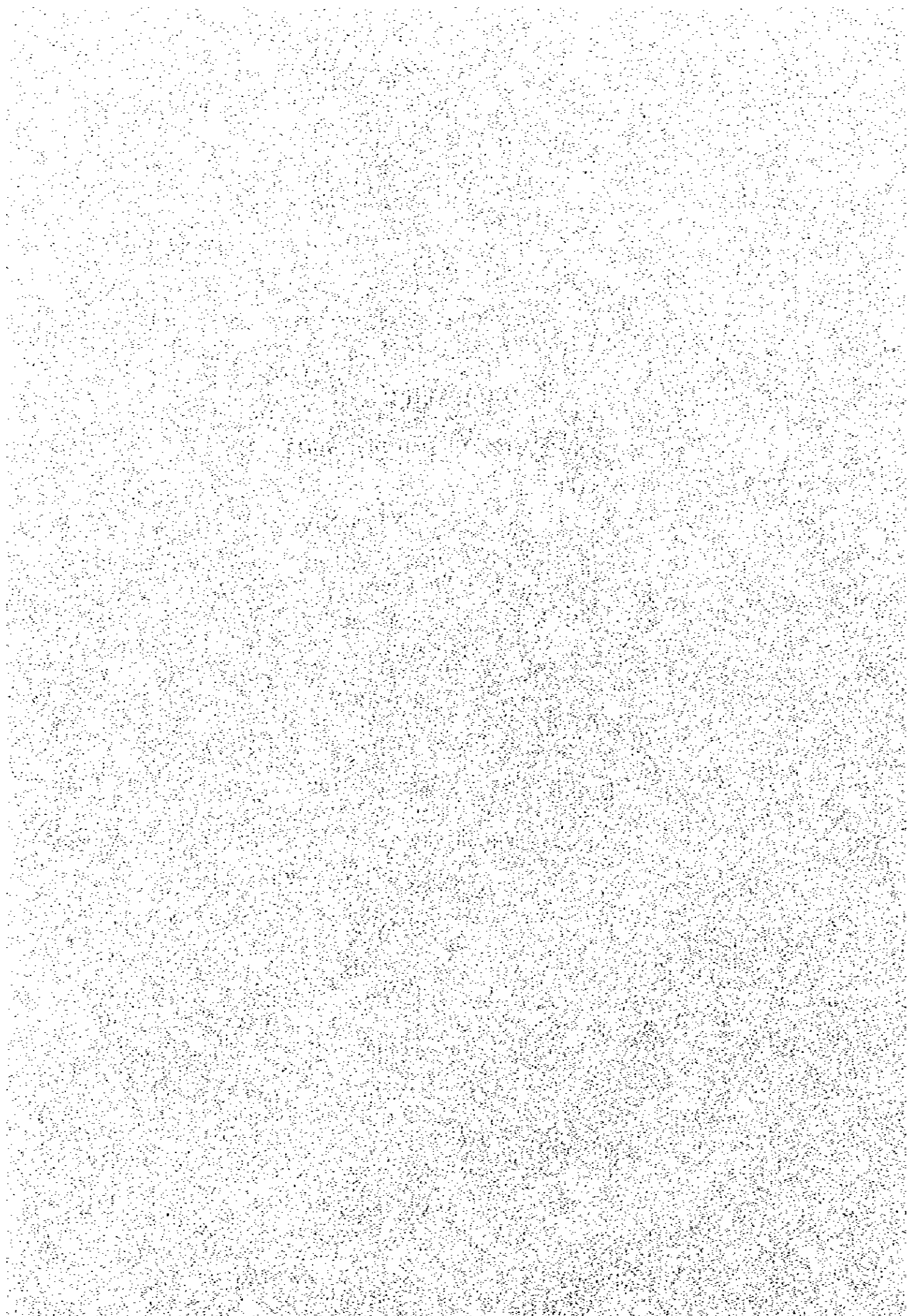
1-2 Outline of the Request

Under the Project, the Palestinian Authority requested Japanese grant aid with a view to strengthening the fire-fighting capability of the Civil Defence. Table 1-3 shows the range of fire trucks and equipment requested. The request covered both the Gaza Strip and the West Bank.

Table 1-3 List of Requested Fire Trucks and Equipment

Type of Equipment	Quantity Requested		
	Gaza Strip	West Bank	Total
1. Rescue Trucks	11	11	22
2. Gas Masks	400	600	1,000
3. Special Uniforms	280	220	500
4. Portable Light	45	55	100
5. Aerial Ladder Trucks	2	3	5
6. Chemical Tender Trucks	8	12	20
7. Water Tanker Trucks	8	12	20
8. Dragged Fire-Fighting Tankers	9	11	20
9. Fire-Fighting Units for Industrial Areas	7	3	10
10. Fire-Fighting Units for Electrical Fires	5	5	10
11. Radio Communication System	1	2	3
12. Spare Parts for Fire Trucks and Radio Communication System	1 set	2 sets	3 sets
13. Fire-Fighting Uniforms	27	23	50
14. Tankers with Vacuum Pump	10	10	20
15. Multi-Purpose Trucks	10	10	20
16. Air Mattresses	50	50	100
17. Diving Equipment	17 sets	3 sets	20 sets
18. Fire-Fighting Boats	3	0	3
19. First Aid Clinic Kits	2 sets	3 sets	5 sets
20. Ambulances	2	3	5
21. Generators	7	8	15

CHAPTER 2
CONTENTS OF THE PROJECT



CHAPTER 2 CONTENTS OF THE PROJECT

2-1 Objectives of the Project

A total of 478 fires were recorded last year in the Gaza Strip, the subject area of the Project, killing nine people and injuring another 130 people. The annual number of casualties has been increasing. In addition to the serious loss of human lives and physical injuries, the damage to assets is considerable, amounting to 1,124,364 US\$ in 1995. A noticeable characteristic of recent fires is the increasing number of fires involving medium-rise buildings and factories. Typical examples of the latter include a synthetic resin moulding factory, a paint factory and a sponge factory. The size of the burned area per fire is approximately 200 m² which is large (for instance, the corresponding figure for Chiba City in Japan which has a similar population size is approximately 40 m²).

The fire-fighting system in the Gaza Strip, which has a population of some 800,000, consists of six fire stations, including the Headquarters (HQ), serving five administrative districts. Because of the small number of fire stations and fire trucks, it can take more than 40 minutes for the firemen to reach the site after receiving a fire notice, partly because of the narrow roads and many obstacles, such as open markets and settlement check points. Needless to say, it is essential for the firemen to reach the site as soon as possible after the outbreak of a fire to rescue people and to extinguish the fire before it becomes too extensive to effectively combat. The quick arrival of firemen with appropriate equipment and gear is the key to reducing the number of casualties and to preventing the spread of fire. To do this, the Civil Defence in the Gaza Strip requires extra fire trucks and equipment. In view of the present conditions of the Gaza Strip, the highest priority should be given to the procurement and delivery of fire trucks, etc. with the latest specifications and features suitable regarding the local characteristics of the existing fire stations so that fires in any part of the Gaza Strip can be dealt with with equal efficiency.

The Civil Defence has prepared and is implementing the Fire Service Improvement Plan which calls for ① improvement of the fire stations and branch fire stations in the Gaza Strip, ② increase of the fire service manpower and ③ improvement of the fire trucks and fire-fighting equipment. All of these components aim at boosting the fire-fighting capability of the Civil Defence. The Project is designed to respond to ③ above, i.e. improvement of the fire trucks and fire-fighting equipment. With Japanese cooperation for the Fire Service Improvement Plan, it is hoped that the Project will contribute to reducing the damage caused by fire to local inhabitants.

2-2 Basic Concept of the Project

2-2-1 Review Results of the Request

- (1) The original request covered both the Gaza Strip and West Bank. The subject area of the Project, however, is restricted to the Gaza Strip where the project implementation system has been firmly established.
- (2) The fundamental principle of fire-fighting is to conduct activities intended to rescue people and to prevent the spread of fire, necessitating equipment designed to assist such activities. The subject equipment of the grant aid will, therefore, cover the minimum range of fire-fighting equipment required to conduct the assigned work, i.e. rescue of people and prevention of the spread of fire.
- (3) The Project intends the provision of a range of fire trucks and fire-fighting equipment which are believed to constitute the minimum urgent requirements of the Civil Defence. Consequently, ambulances, fire-fighting units for industrial areas, fire-fighting units for electrical fires, tankers with a vacuum pump and fire-fighting boats are omitted from the scope of the Project.
- (4) In the case of aerial ladder trucks which are strongly requested by the Civil Defence, their necessity is recognised because of the existence of many medium and high-rise buildings and the construction boom of medium and high-rise apartment blocks to accommodate the rapidly increasing population of both Gaza City and Khan Yunis City. Nevertheless, these trucks are omitted from the scope of the Project because the existing import restrictions between Israel and Palestine make it difficult for the Palestinian Authority to obtain spare parts and after-services for aerial ladder trucks which have special equipment, including electronic control equipment. The decision to omit aerial ladder trucks from the scope of the Project also reflects the present repair system regarding special fire trucks in need of improvement.
- (5) In regard to fire-fighting equipment, the requested gas masks are substituted by air breathing apparatus carried by each fire truck (except for the small tanker truck). In addition, compressors to refill the air cylinders will also be provided. Moreover, each rescue truck will have an air bag (to function as a jack) and all the trucks will be provided with a first aid kit.

- (6) The fire stations selected for the Project are capable of appropriately managing and effectively using the equipment to be provided under the Project. To be more precise, the subject stations are the existing HQ and five fire stations as well as the new Tal Alhawa HQ to which the present HQ will be relocated.

2-2-2 Scope and Specifications of the Project

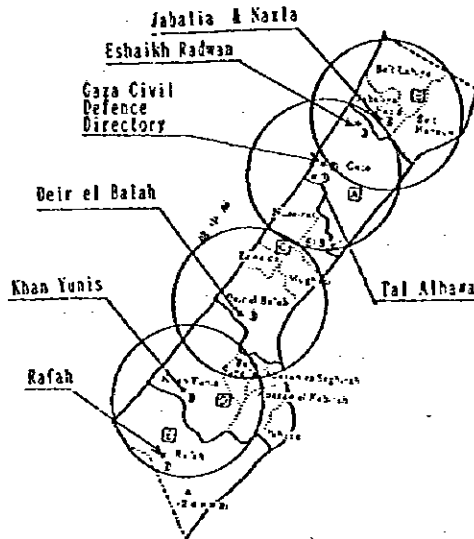


Fig. 2-1 Service Area of Each Fire Station

The fundamental priority of fire-fighting activities is to rescue people from fire and then to concentrate on preventing the spread of fire. At the site of a fire, entrance to a burning building requires the presence of a rescue truck equipped with various tools to create a rescue path and rescue equipment. It is also essential to ensure the efficient distribution of such rescue trucks so that the response time to a fire site after receipt of a fire notice can be minimised. Under the present set up of the fire services in the Gaza Strip, it appears appropriate for four rescue trucks to be assigned to the four stations indicated in Fig. 2-1 to achieve a minimum response time, disregarding the administrative

boundaries of the fire stations. In addition, actual fire-fighting activities which must be simultaneously conducted with the rescue activities must be supported by the rapid arrangement of multiple fire hoses to encircle the fire in order to contain and to extinguish it. At present, a fire in the Gaza Strip tends to unnecessarily spread in the directions in which there is no fire-fighting action due to the shortage of equipment, resulting in an extensive area of destruction and substantial damage. This suggests the crucial importance of establishing a basic fire-fighting system with the provision of a minimum of two fire trucks at each fire station. The Project anticipates meeting this minimum quantitative requirement to establish a reasonable fire-fighting capacity consisting of different types of fire trucks, taking the cooperation projects of other donors into consideration. As hardly any hydrants or water supply for fire-fighting is available in the Gaza Strip, water tankers with a pump will be provided. Moreover, in view of the increasing trend of fires involving factories and chemicals, chemical tender trucks will also be provided. In the case of the Deir el Balah Fire Station which has four refugee camps within its administrative area, one small tanker truck with good movability on narrow roads in densely populated areas will be provided to improve the fire-fighting capability covering refugee camps.

Furthermore, fixed radio equipment will be provided at the HQ as well as fire stations together with mobile radio units and portable radio units to achieve well controlled fire-fighting activities to maximise the efficient use of the new (and existing) fire-fighting equipment.

2-3 Basic Design

2-3-1 Design Concept

(1) Selection of Standard Types of Equipment

In order to ensure ease of operation and convenience for maintenance, standard types of equipment will be selected and complicated and/or special specifications will be avoided.

(2) Design Features Suitable for Local Natural Conditions

- ① The coastal feature of the Gaza Strip, which faces the sea to the west, makes all equipment liable to corrosion by salt water and salty air. It is, therefore, necessary to consider possible salt damage in the selection of the equipment materials and construction method, etc.
- ② The dry climate in summer may have a negative impact (sandy dust, etc.) on the equipment, making an upgraded air filter and intensified sealing, etc. essential design features.

(3) Selection of Equipment, Taking Social Conditions into Consideration

The Gaza Strip has no natural water supply sources, such as rivers or ponds. As hydrants are only available at a rate of one hydrant/km² in part of Khan Yunis City as part of the domestic water supply system, there is a general shortage of water supply for fire-fighting purposes. This situation necessitates the use of as large a water tank as possible. However, the tank size is restricted by the truck size, in turn restricted by the narrow local roads and other conditions. In general, as fire trucks must get as near as possible to the site of a fire, they are required to have certain specifications to suit the street characteristics of the Gaza Strip, including a suitably small size and small minimum turning radius. The travelling performance is virtually determined by the vehicle weight. Using the travelling performance of the chemical tender trucks currently in use as the selection guideline, the maximum water tank size is believed to be approximately 5,000 litres.

In preparation for a situation in which water for fire-fighting purposes is in short supply, a water tanker(s) will be mobilised together with fire trucks. In addition, fire stations will be encouraged to help each other to provide an effective response to fires.

(4) Selection of Fire trucks Capable of Providing a Prospect of Effective Work with Minimum Equipment

The fire trucks to be selected, the main function of which is to extinguish fires, will be the multi-purpose type which are capable of dealing with various fire situations, including ordinary fires, oil fires, electrical fires and vehicle fires.

Rescue trucks will carry not only the equipment required to rescue people from a fire but also the equipment required for the rescue of victims and the appropriate handling of traffic, labour and water accidents, all of which are increasing in the Gaza Strip.

(5) Radio Communication System

A radio communication system will be set up at the HQ and at the fire stations for coordinated vehicle operation by the Civil Defence. In addition, the fire-fighting radio communication network will be complemented by further mobile radio units and portable radio units. All the equipment will use a mechanical operation system instead of computerised operation to make the maintenance easy. General-purpose type equipment will be selected in view of maintenance convenience.

(6) Spare Parts

The equipment to be selected will be those types for which efficient after-service to deal with post-procurement problems can be provided. Particular attention will be paid to equipment maintenance and the availability of spare parts.

2-3-2 Basic Design

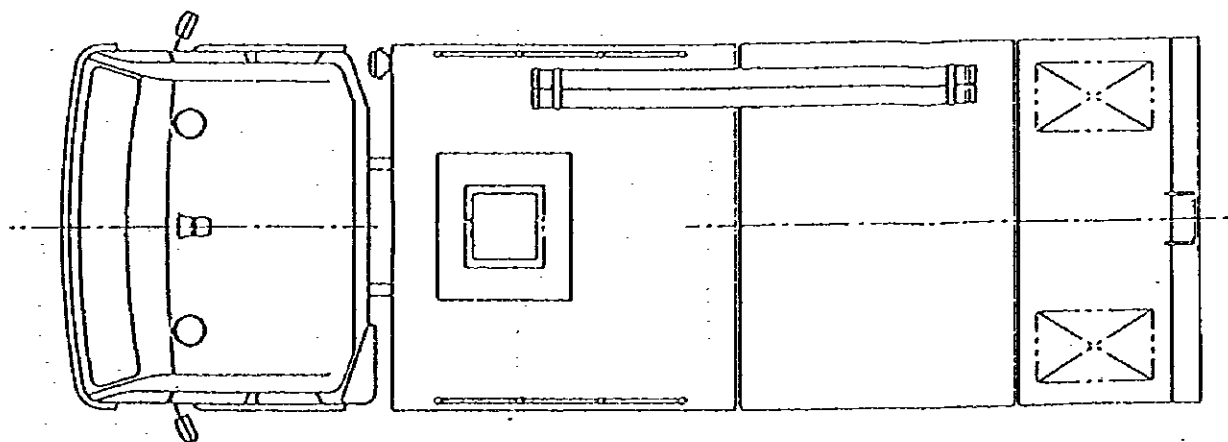
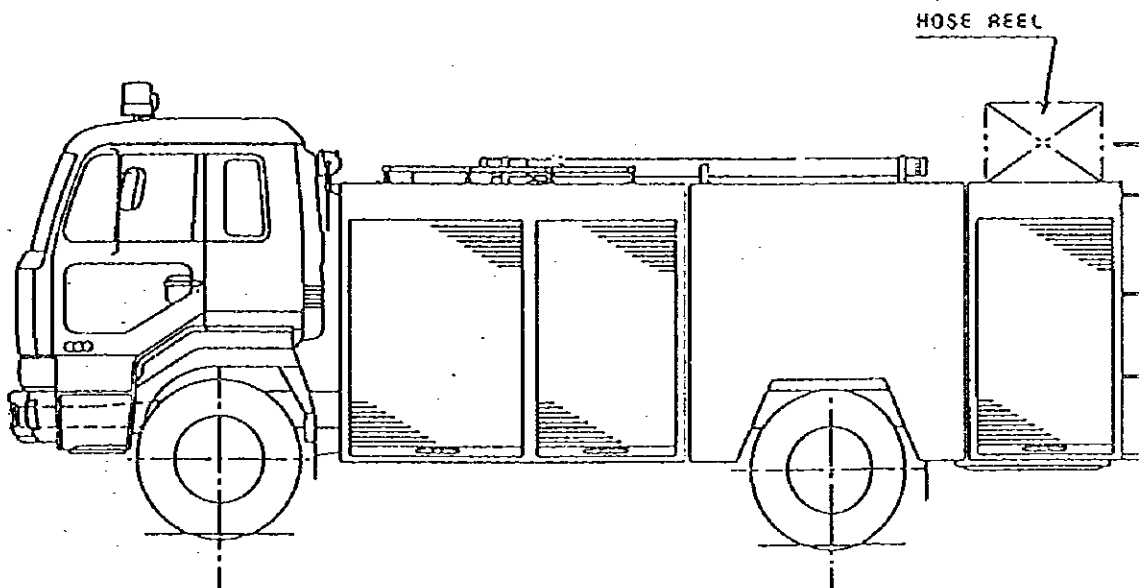
The types of fire-fighting equipment to be provided under the Project and their planned places of assignment are shown in Table 2-1 and Table 2-2 respectively.

Table 2-1 Fire Trucks and Equipment to be Provided Under the Project

Type	Quantity	Specifications / Purpose of Use
Water Tanker with Pump	4	Uses the water carried in the tank to extinguish an ordinary fire; the tank capacity is 5,000 litres
Chemical Tender Truck	3	Sprays foam in the case of an oil fire or water in the case of an ordinary fire; the water tank capacity is 5,000 litres and the foam tank capacity is 500 litres
Rescue Truck	3	Carries various types of equipment to rescue people from a fire and other disasters; the equipment includes a night lighting unit, power generator and winch
Small Tanker Truck	1	A pick-up truck carrying a 400 litre water tank to conduct fire-fighting activities in areas with narrow roads
Radio Communication System	1 set	Designed to support effective vehicle operation at the time of a disaster, the radio communication network system consisted of a fixed HQ unit, fixed fire station units, vehicle units and portable units
Air Compressor	2	To be used for filling breathing apparatus with air; the filling pressure is 300 kg/cm ²
	1	To be used for filling diving apparatus with air; the filling pressure is 200 kg/cm ²
Air Breathing Apparatus	7	Ensures the proper breathing of firemen engaged in rescue operation inside a burning building, etc. (with one spare cylinder each)
Special Rescue Uniform	6	To be used for a large fire where the radiation heat is extremely high
Fire-Fighting Uniform	69 sets	Sets of fire-fighting uniforms for ordinary fires (fire resistant outfit, helmet and gloves, etc.)
	45	Rescue uniforms for firemen working with rescue trucks (versatile fire resistant outfit, helmet, face-up boots and gloves, etc.)
Portable Light	48	Rechargeable, portable torch used by firemen at night or in dark places
Rescue Diving Equipment	9 sets	Diving equipment (including rescue rope and float) for sea rescue activities; to be loaded on rescue trucks
Electric Generator	5	To be used as an emergency power generation unit at the five fire stations

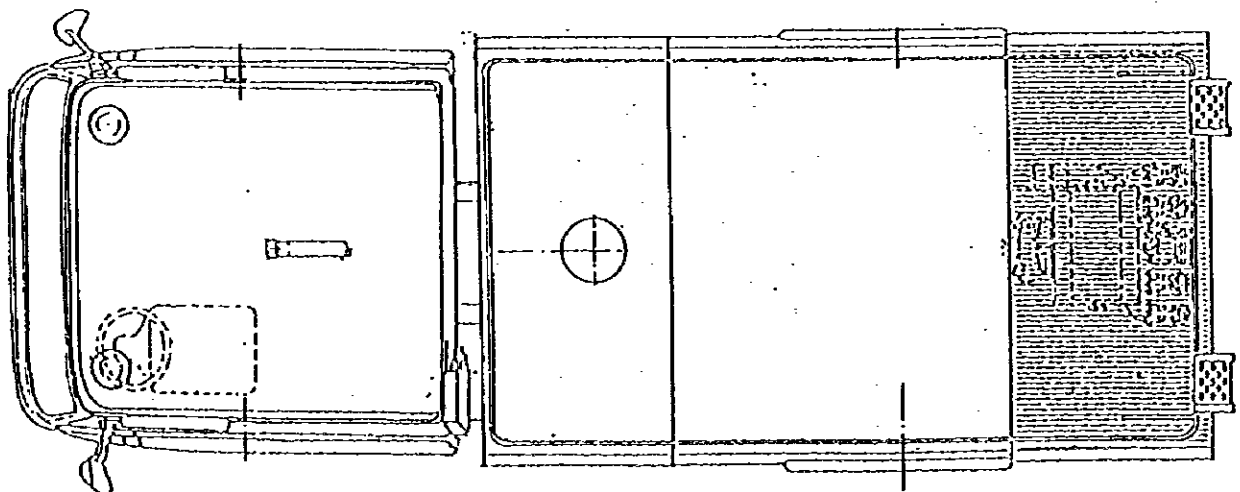
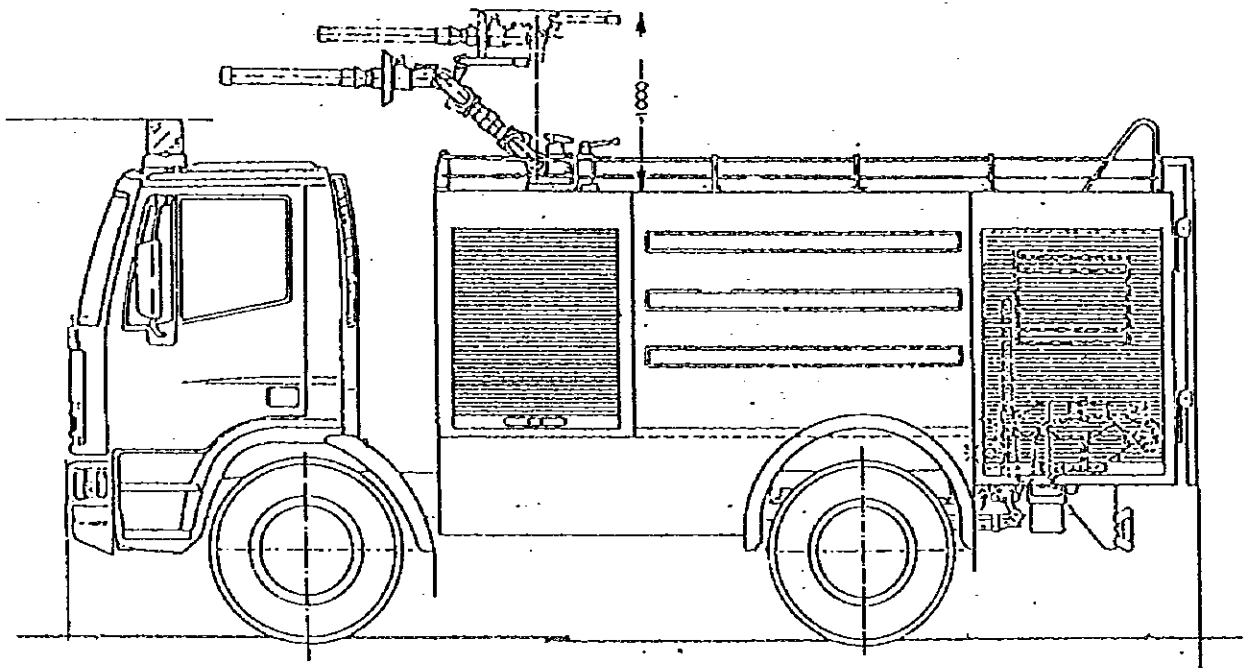
Water Tanker With Pump

1. Main Specifications	2. Main Equipment/Tools on Board
• Seating capacity : 3	• Fire-fighting uniform / helmet / boots : 3 sets
• G.V.W. : 15,000 kg	• Air breathing apparatus : 3
• Pumping unit (water spray capacity) : 2,800 litres/min-10.5 kg/cm ² 200 litres/min-40.0 kg/cm ²	• Various water nozzles : one set
• Water tank capacity : 5,000 litres (1)	• Aluminium ladder : 1
• High pressure hose reel : 2 ø 25 mm × 30 m (with nozzle)	• Portable lighting unit (with generator and cable) : one set
• Radio equipment : one set	• Foam nozzle (400 litres/min) : 1
	• Portable foam mixer : 1
	• Axe, fire hook and hammer, etc. : one set
	• Rubber fire swatter : 5
	• Fire hoses : 10



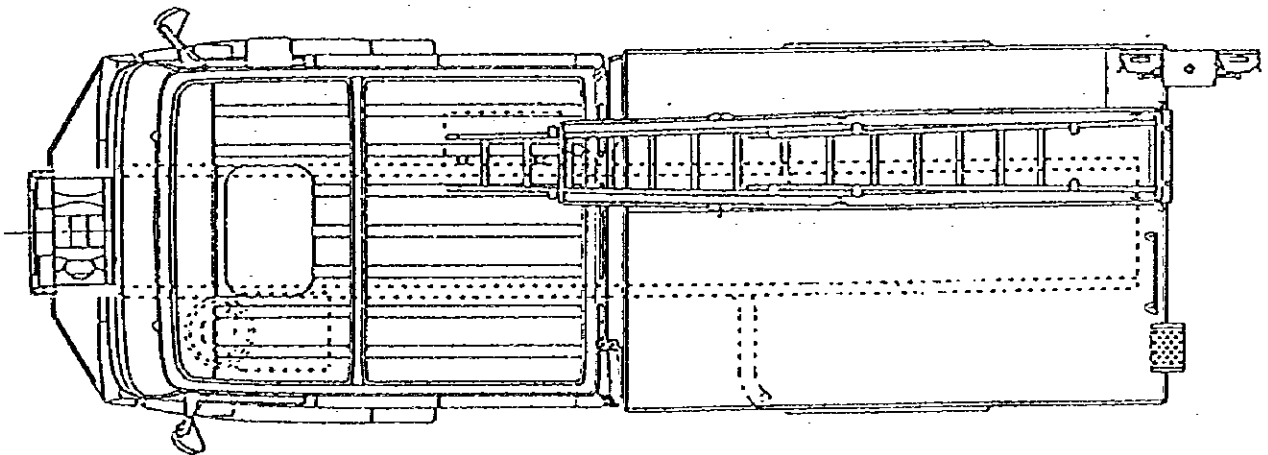
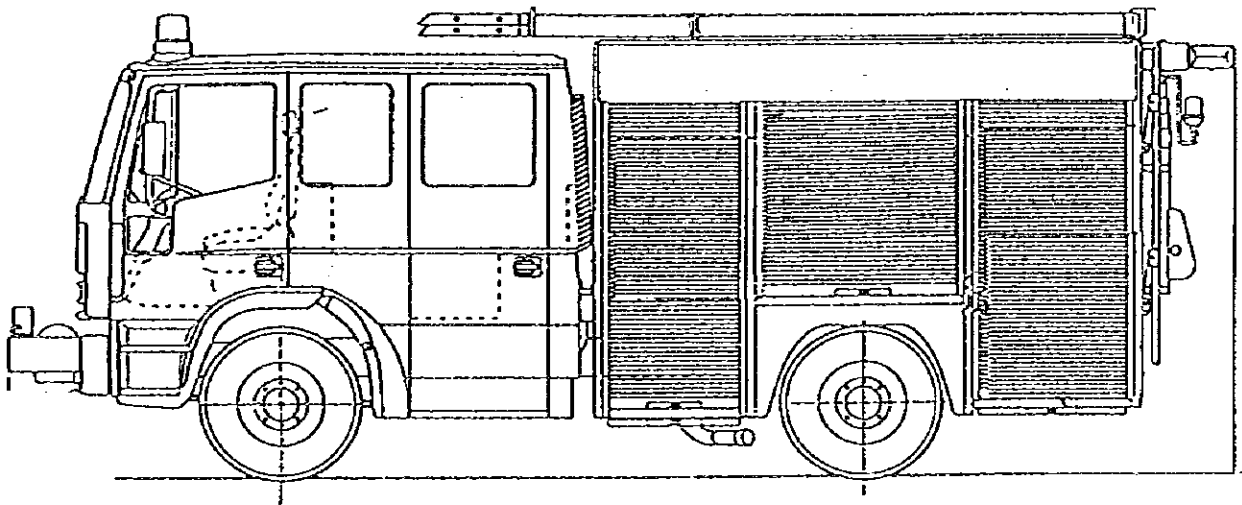
Chemical Tender Truck

1. Main Specifications	2. Main Equipment/Tools on Board
• Seating capacity : 3	• Fire-fighting uniform / helmet / boots : 3 sets
• G.V.W. : 15,000 kg	• Heat resistant uniform : 2
• Pumping unit (water spray capacity) : 2,800 litres/min-10.5 kg/cm ² 200 litres/min-40.0 kg/cm ²	• Air breathing apparatus : 3
• Foam mixer : 1	• Various water nozzles : one set
• Water tank capacity : 5,000 litres (1)	• Aluminium ladder : 1
• Foam tank capacity : 500 litres (1)	• Portable lighting unit (with generator and cable) : one set
• Turlet nozzle : 1	• Foam nozzle (400 litres/min) : 1
(Maximum water spray : 2,000 litres/min)	• Portable foam mixer : 1
• High pressure hose reel : 2 Ø 25 mm x 30 m (with nozzle)	• Axe, fire hook and hammer, etc. : one set
• Radio equipment : one set	• Fire hoses : 10
	• Foam agent (20 litre can)



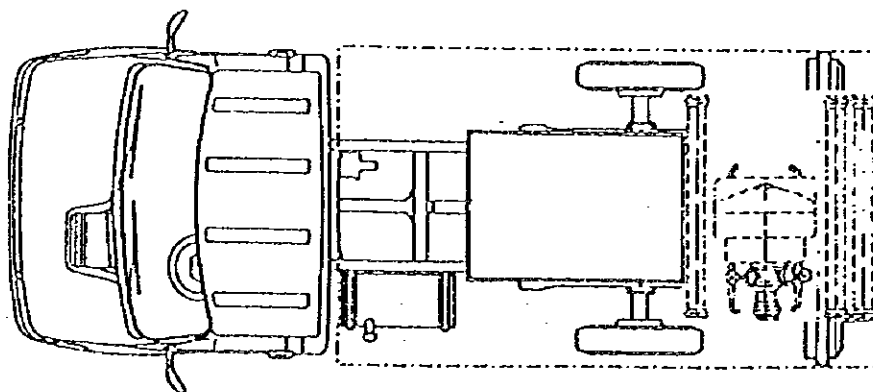
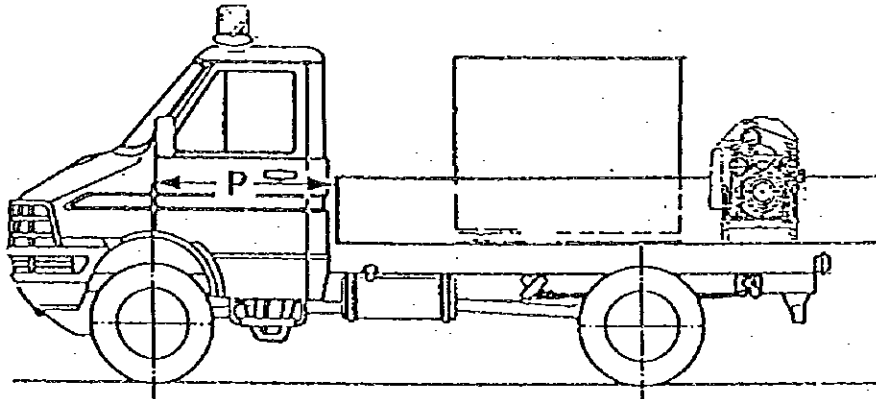
Rescue Truck

1. Main Specifications <ul style="list-style-type: none"> • Seating capacity : 6 • G.V.W. : 11,000 kg • Winch Unit (maximum : one set 5 tons × 40 m wire) • Lighting unit : 1 (500 W × 2) (with height adjuster and rotating device) • Loudspeaker : 1 • Radio equipment : one set 	2. Main Equipment/Tools on Board <ul style="list-style-type: none"> • Fire-fighting uniform/helmet/ : 6 boots • Air breathing apparatus : 5 • Hydraulic rescue equipment : one set (spreader/cutter/jack) • Air bag (used as a jack) (for 12, 24 : one set and 40 tons) • Portable lighting unit (with : one set generator and cable) • Chainsaw : 1 • Engine cutter : 1 • Aluminium ladder : 1 • Diving set : 3 sets
---	---



Small Tanker Truck

1. Main Specifications	2. Main Equipment/Tools on Board
• Seating capacity : 3	• Fire-fighting uniform / helmet / boots : 3 sets
• Driving mechanism : 4 x 4	• Air breathing apparatus : 3
• G.V.W. : 2,600 kg	• Various water nozzles : one set
• Pumping unit (water spray capacity) : 2,000 litres/min-6.0 kg/cm ²	• Aluminium ladder : 1
• Water tank capacity : 400litres (1)	• Axe, fire hook and hammer, etc. : one set
• Radio equipment : one set	• Fire hoses : 5
	• Steel wire scissors : 1
	• Universal axe : 1
	• Hammer : 1



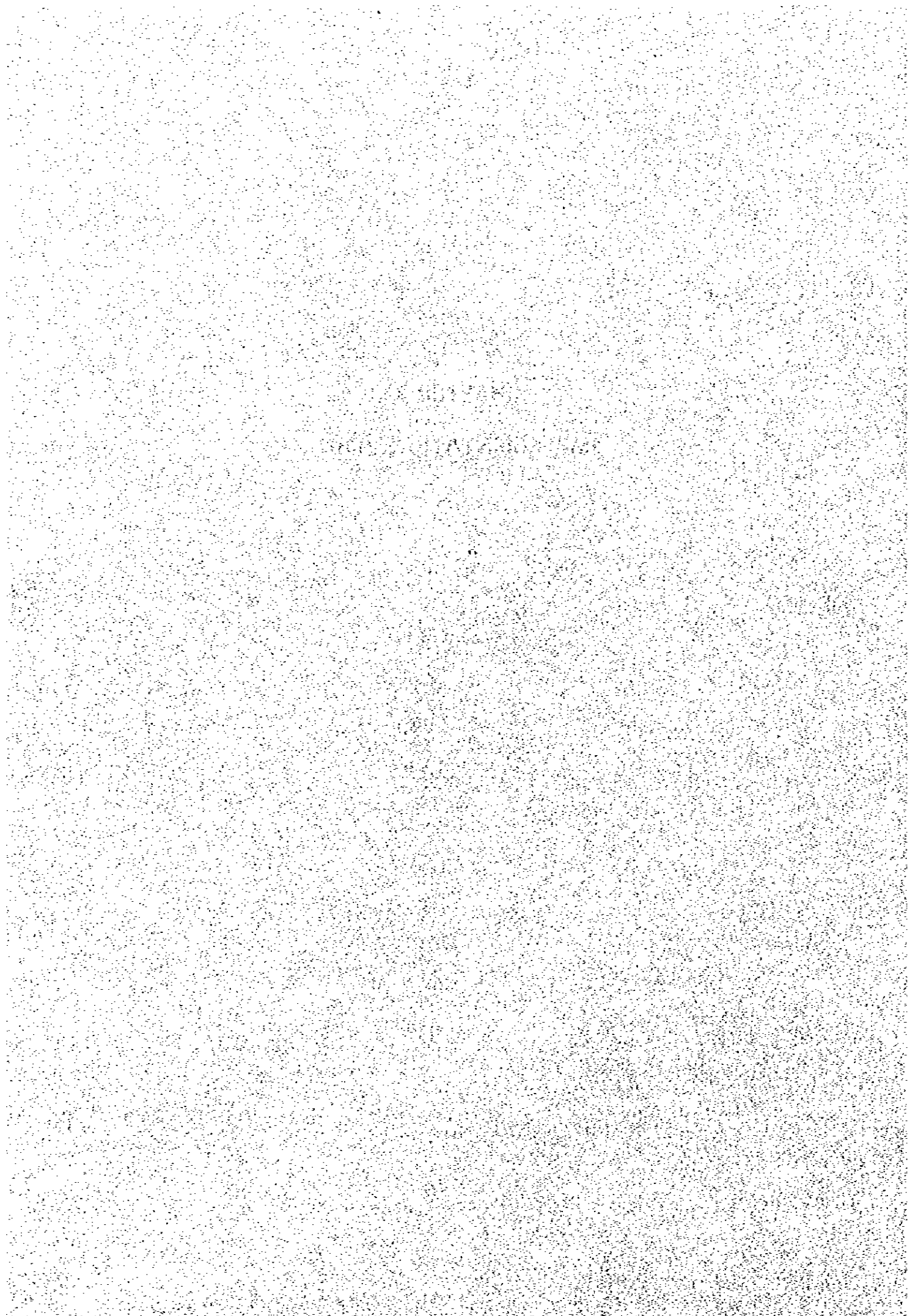
**Table 2-2 Assignment of Fire-Fighting Equipment to be Provided Under the Project
(Fire Trucks)**

Fire Station	Types of Fire Trucks Provided under the Project				Existing Fire Trucks
	Chemical Tender Truck	Water Tanker with Pump	Small Tanker Truck	Rescue Truck	Chemical Tender Truck
Gaza HQ				(1)	2
Eshaikh Radwan		1			1
Jabalia and Nazla		1		1	1
Deir el Balah	1	1	1	1	1*
Khan Yunis	1	1		1	1*
Rafah	1				1
Tal Alhawa (New HQ)	(3)				
Total	3	4	1	3	7

Notes (1) An asterisk (*) denotes the existing fire trucks requiring replacement.

(2) Figures in brackets indicate fire trucks to be provided by the UNDP. In addition, one aerial ladder truck will be provided at the HQ.

CHAPTER 3
IMPLEMENTATION PLAN



CHAPTER 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

The Project will be implemented under the grant aid scheme of Japan following a cabinet decision by the Government of Japan to approve the Project and the subsequent signing of the Exchange of Notes (E/N) by the Government of Japan and the Palestinian Authority. The actual implementation of the Project will be the responsibility of the project implementation body on the Palestinian side, the consultant and equipment supplier.

(1) Project Implementation Body

The project implementation body on the Palestinian side is the Civil Defence and the Civil Defence Director will be a party to the consultancy agreement, the equipment supply agreement and the equipment installation work agreement under the Project.

(2) Consultant

Following signing of the E/N, it will be necessary for the Civil Defence to conclude a consultancy agreement regarding the detailed design and supervision of the Project with a Japanese consulting firm recommended by JICA. This agreement will become valid on certification by the Government of Japan.

Following certification of the consultancy agreement by the Government of Japan, the consultant will prepare detailed design documents through consultations with the Civil Defence. With the approval of such documents by the Civil Defence, the consultant will then proceed to the tender and work supervision stages.

(3) Equipment Supplier

The equipment supplier for the Project must be an incorporated Japanese company with certain qualifications and will be selected through tender. In principle, it will be necessary for the Civil Defence to conclude an equipment supply agreement with the lowest bidder among those tenderers satisfying the conditions specified by the tender documents. This agreement will become valid on certification by the Government of Japan. The selected equipment supplier will conduct the necessary procurement and delivery to the Civil Defence by the date specified in the agreement.

3-1-2 Implementation Conditions

- (1) The fire trucks to be procured under the Project are special fire trucks and, therefore, some time will be required for their manufacture.
- (2) It is necessary to take the site conditions into consideration in the planning of the installation of the radio communication equipment.

Following completion of the detailed design, the consultant will determine the specifications of the fire trucks and equipment to be provided under the Project and will prepare the tender documents. Approximately three months will be required to complete all the stages, including approval of the specifications and tender documents by all related organizations.

3-1-3 Scope of Works

The scope of the respective work for which the Government of Japan and the Palestinian Authority are responsible for the Project is outlined below.

(1) Scope of Work for the Government of Japan

- ① Procurement cost of the fire trucks and equipment to be provided under the Project
- ② Installation cost of the radio communication system
- ③ Transportation cost of the fire trucks and equipment to be provided under the Project to the Civil Defence sites in the Gaza Strip
- ④ Guidance on the use of the fire trucks and equipment to be provided under the Project and the cost of such guidance
- ⑤ Cost of the consultancy work regarding the above work

(2) Scope of Work for the Palestinian Authority

- ① Preparation and provision of the facilities and sites required to base or install the fire trucks/equipment to be provided under the Project
- ② Provision of a temporary storage site(s) for the fire trucks and equipment to be provided under the Project
- ③ To make all necessary applications to and complete all necessary procedures of the Israeli authorities in regard to the landing of the fire trucks and equipment at an Israeli port, the importation procedure for such fire trucks and equipment and the land transportation of the fire trucks and equipment through Israeli territory in view of the swift transportation of the fire trucks and equipment in question to the Gaza Strip

- ④ To arrange the swift customs clearance of the fire trucks and equipment and their delivery to the project sites in the Gaza Strip
- ⑤ Installation of the antenna poles for the radio communication system
- ⑥ Miscellaneous
 - i) To secure the manpower required to man the new fire trucks and equipment
 - ii) To dispatch the necessary number of personnel to Egypt for driver training to secure a sufficient number of drivers for the new fire trucks.

3-1-4 Consultant Supervision

The consultant, which is an incorporated Japanese company recommended by JICA in accordance with Japan's grant aid scheme, will conclude a consultancy agreement with the project implementation body, i.e. the Civil Defence, of the Palestinian Authority and will then conduct the detailed design for the Project and the work supervision.

In conducting the work supervision, the consultant will ensure the procurement of the fire trucks and equipment in accordance with the detailed design documents and will provide fair guidance, advice and coordination so that the equipment supply agreement is properly carried out. The actual contents of the supervision work are outlined below.

(1) Assistance for Tender for and Signing of Equipment Procurement Agreement

The consultant will prepare the tender documents required for the selection of the equipment supplier and will conduct such tender-related work as announcement of the tender, acceptance of tender applications, pre-qualification, distribution of tender documents, acceptance of bidding documents and evaluation of bids. The consultant will also provide advice to the Civil Defence in regard to the equipment supply agreement.

(2) Inspection and Approval of Site and Shop Drawings, etc.

The consultant will inspect the site and shop drawings and various documents submitted by the equipment supplier, provide guidance if necessary and approved them if they are found to be satisfactory.

(3) Factory Inspection

The consultant will conduct the on-site inspection of the factories manufacturing the contracted fire trucks and equipment if such inspection is deemed necessary with a view to confirming the quality and performance as required by the agreement.

(4) Witnessing of Equipment Delivery

The consultant will witness the delivery inspection of the fire trucks and equipment by the Civil Defence, confirm the completion of delivery and obtain certificates of completion from the Palestinian side for the consultant and equipment supplier.

(5) Advice and Guidance for Vehicle/Equipment Operation

The consultant will provide advice and guidance on the planning and contents, etc. of the programme to be prepared and implemented by the equipment supplier to teach the staff members and engineers of the Civil Defence how to operate/handle the fire trucks and equipment after their delivery.

3-1-5 Procurement Plan

It will be necessary to import the fire trucks to be procured under the Project as these fire trucks are not manufactured in Palestine. The Civil Defence currently has two Italian-made chemical tender trucks, five Israeli-made chemical tender trucks and three Japanese-made equipment transporters in the Gaza Strip. In addition, five Japanese-made fire trucks which have been procured by the UNDP with Japanese financial contribution will be provided to strengthen the fire-fighting capability of the Civil Defence. Table 3-1 shows the results of a study on third-country manufacturers of fire trucks.

Out of the current fleet, those fire trucks made in Italy and those made by Hatchof, Ltd. of Israel show signs of corrosion in some places due to poor quality control even though they are only 2 - 3 years old. Meanwhile, Beit Alta Trailer Co., another Israeli manufacturer, is too small to deliver the ordered fire trucks within the planned time limit of the Project. Consequently, the fire trucks and equipment to be provided under the Project will be procured in Japan or such third countries as Germany or Austria in view of high quality, sufficient manufacturing capability, ease of obtaining spare parts and expendables after initial procurement and provision of repair and after-service systems in the future.

The planned route for importation is the use of Port Ashdod in Israel for initial landing, followed by land transportation to the Gaza Strip. The actual handing over of the fire trucks and equipment from the Japanese side to the Palestinian side will be conducted at the office of the Civil Defence.

Table 3-1 Results of Study on Third Country Manufacturers

No.	Study Item	Mets (Germany)	Magirus (Germany)	Hatchof (Israel)	Beit Alfa (Israel)	Rosenbauer (Austria)
1	Past business experience in the Gaza Strip	No	No	Yes	Yes	No
2	Interest in the Gaza Strip	No The export prospects of only one aerial ladder truck, the main export products, is more risky than attractive	Yes Any order can be met as various types of chassis are exported to the region involved	Yes Interested as the short distance to the Gaza Strip makes it easy to supply products as well as after-service	Yes Interested as the short distance to the Gaza Strip makes it easy to supply products as well as after-service	Yes All the planned fire trucks except the aerial ladder truck can be supplied as they are exported worldwide
3	Agent in the Gaza Strip	No	No	No	No	Yes
4	Agent, etc. in Israel	The agent of Benz is used as most chassis are made by Benz	① MIMSAR, Co. (Kibbutz) ② Tel Aviv ③ Workshop ④ 50	① Company itself ② Nazareth ③ Manufacturing factory ④ 150	① Company itself ② Beit Alfa (Kibbutz) ③ Manufacturing factory ④ 40	① Fink Nurnat. ② Tel Aviv ③ Workshop ④ -
5	After-service and parts supply to the Gaza Strip	Use of Benz agent	Good parts supply system as it is part of the IVECO Group, a truck manufacturer	Company itself	Company itself	Use of a local agent
6	Quality control and production control at manufacturing plant	Reliable	Reliable (QC certification of ISO 9001 obtained in June, 1996)	Less Reliable (QC certification of ISO 9002 obtained in November, 1995)	Reliable (QC certification of ISO 9002 obtained in April, 1996)	Reliable (QC certification of ISO 9001 obtained in January, 1997)
7	Miscellaneous			Two chemical tender trucks made in 1993 and currently used by the Civil Defence show rust on the instrument panel and other sections, indicating inferior anti-rust treatment.	The production facilities are small with limited output	Business dealings are handled by Kronenburg B.V. in Holland which is a daughter company of Rosenbauer International in Austria

In regard to the radio communication system, an enquiry was made to Motorola in the US, the equipment of which is currently used by the Civil Defence, for a quotation. However, the company replied that it was not prepared to receive an order for other than standard products or to conduct the on-site installation work. As no other manufacturer is capable of carrying out the on-site installation work under the Project in the Gaza Strip, the procurement of the radio communication system is Japan-tied. Table 3-2 shows the planned equipment supply sources.

If procurement is made from a third country, the necessary procedure will be followed by the Government of Japan and the Palestinian Authority following the signing of the E/N for the Project.

Table 3-2 Planned Supply Sources of Fire Trucks and Equipment

Type	Quantity	Purpose of Use	Supply Source
Water Tanker with Pump	4	Uses the water carried in the tank to extinguish an ordinary fire; the tank capacity is 5,000 litres	Japan, Germany or Austria
Chemical Tender Truck	3	Sprays foam in the case of an oil fire or water in the case of an ordinary fire; the water tank capacity is 5,000 litres and the foam tank capacity is 500 litres	
Rescue Truck	3	Carries various types of equipment to rescue people from a fire and other disasters	
Small Tanker Truck	1	A pick-up truck carrying a 400 litre water tank to conduct fire-fighting activities in areas with narrow roads	
Radio Communication System	one set	Designed to support effective vehicle operation at the time of a disaster	Japan
Air Compressor	2	To be used for filling air breathing apparatus with air; the filling pressure is 300 kg/cm ²	Germany
	1	To be used for filling diving apparatus with air; the filling pressure is 200 kg/cm ²	

3-1-6 Implementation Schedule

The implementation schedule following the signing of the E/N regarding the implementation of the Project will consist of two stages, i.e. preparation of the detailed design and equipment procurement. Equipment procurement will actually have two components, i.e. procurement and delivery of the fire trucks and equipment and procurement and installation of the radio communication system. The equipment for the radio communication system will be delivered to the project sites prior to the fire-fighting equipment so that installation work can commence early for completion by the end of the project period. The implementation schedule is shown in Table 3-3.

Table 3-3 Project Implementation Schedule

No. of Month	1	2	3	4	5	6	7	8	9	10	11	12
Implementation Design [Total: 3.5 months]	□	Field study										
		□	Preparation of tender documents									
			□	Approval of tender documents								
				□	Public notification of tender, Tender, Evaluation of tender and its approval, Contracting with suppliers							
Equipment Procurement [Total: 8.5 months]				Manufacture and procurement							①	
										[Fire trucks] ▼	Shipping	□
											[Radio communication system] ▼	Shipping
											Installation	②
												Operation guidance

- Remarks: ① As to fire trucks and equipment, the contract is considered to be completed when the shipping certificate is received.
 ② As to the installation work of radio communication system, this work will be completed within the fiscal year by sending radio communication units as early as possible.

3-1-7 Obligations of Palestinian Authority

In order to ensure the smooth implementation of the Project, the Palestinian Authority will take the following measures.

- (1) To accord all Project-related suppliers all facilities required to conduct their assigned business in the Gaza Strip in accordance with the certified agreements for the Project.
- (2) To exempt all Project-related suppliers and equipment, etc. entering the Gaza Strip in accordance with the certified agreements for the Project from any customs duties, taxes and levies which may be imposed in the Gaza Strip.

(3) To bear the following expenses

- ① Bank commission relating to the B/A (Banking Arrangement) and issue of the A/P (Authorisation to Pay)
- ② Costs incurred by tax exemption arrangements and import procedure
- ③ Expenses regarding the operation and maintenance of the fire trucks and equipment to be provided under the Project

3-2 Operation and Maintenance Plan

The fire trucks and equipment to be provided under the Project must be properly maintained by the Civil Defence in view of their prompt mobilisation at the time of a disaster. What are required to ensure the readiness of the fire trucks and equipment are (i) an appropriate manpower level, (ii) the provision of an appropriate operation and maintenance budget, (iii) the establishment of an appropriate inspection and maintenance system and (iv) the provision of an after-service system, including the prospect of the prompt supply of spare parts for the repair of breakdowns.

In regard to the provision of manpower, even if the planned fire trucks are fully manned, there will still be 200 surplus firemen above the manpower level required to man the entire fleet. In addition, the budget to dispatch drivers, who will be the main operators of the new fire trucks and equipment, to the driver training course in Egypt has already been secured.

The maintenance cost items will presumably consist of (i) fuel for the fire trucks, (ii) engine oil, (iii) grease, etc., (iv) facility management cost (electricity for battery recharging and washing water, etc.) and (v) spare parts. As a quantity of the main spare parts, including those requiring regular replacement and expendables, will be provided with the fire trucks, there will be no spare parts requirement for approximately two years. Consequently, the immediate maintenance cost will largely consist of the fuel cost and engine oil cost.

(1) Fuel Cost

In view of the narrow geographical feature (some 30 km long) of the Gaza Strip and the overlapping coverage of the stations, the daily travelling distance per fire-fighting vehicle is estimated to be 50 km, i.e. a return journey of 40 km and pumping operation for the equivalent of 10 km. As the fuel efficiency of the fire trucks is 5 km/litre, it is assumed that one vehicle will consume 10 litres of fuel per day. The fuel for the fire trucks is gas oil, the price of which in the Gaza Strip is 0.38 US\$/litre. The fuel cost for the 11 fire trucks to be provided under the Project is calculated as follows.

- Annual consumption = 10 litres/day × 365 days/year × 11 = 40,150 litres
- Annual fuel cost = 40,150 litres × 0.38 US\$/litre = 15,257 US\$

(2) Engine Oil Cost

The engine oil of each vehicle is changed at least once a year, requiring 40 litres of engine oil per year. The engine oil cost is 0.93 US\$/litre and the annual cost of engine oil for the 11 fire trucks is calculated as follows.

- Annual engine oil cost = 40 litres/year × 11 × 0.93 US\$/litre = 409.2 US\$

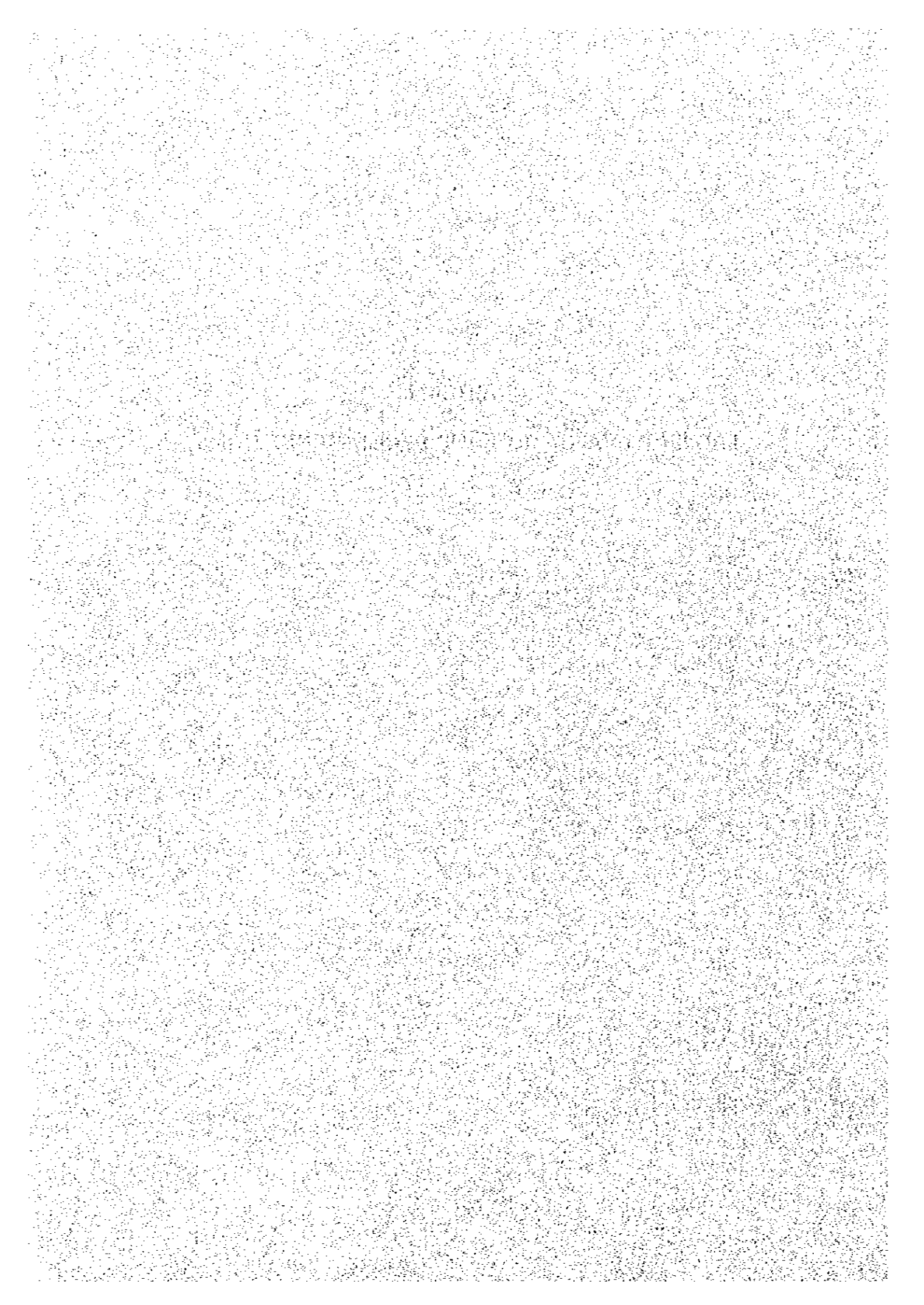
The combined annual cost of fuel (15,257 US\$) and engine oil (409.2 US\$) is 15,666.2 US\$.

This estimated amount represents 0.7% of the fuel cost in the annual budget of the Civil Defence in 1995 and should be easily met. While vehicle maintenance is mainly conducted by the drivers at each station, there is a back-up system for repairs, etc. which are beyond the capability of the stations at the HQ and government vehicle workshop.

Spare parts are currently ordered through local dealers. If they are not immediately available, a dealer with Israeli contacts is requested to obtain them from Israel. Spare parts can be delivered in 2 - 3 days from Israel provided they are in stock and in 10 - 30 days are necessary if they are not in stock in Israel. In general, all spare parts except those for old equipment can be procured in one way or another. After-service for the new fire trucks will be available through a chassis agent in Israel or the West Bank, etc. even if Japanese or European third country fire trucks are selected.

CHAPTER 4

PROJECT EVALUATION AND RECOMMENDATIONS



CHAPTER 4

PROJECT EVALUATION AND RECOMMENDATIONS

4-1 Project Effect

Current Conditions and Problems	Improvement Measures Under the Project	Type and Degree of Project Benefits
<p>1. Inadequate Fire-Fighting Capability</p> <p>The Gaza Strip has a population of approximately 800,000 and its population density of 2,230 persons/km² is fairly high compared to other cities in the world. The annual population growth rate of 5% is also high. In 1995, 478 fires were recorded in the Gaza Strip, killing nine people and injuring another 130. The burned area per fire is as large as 400 m² and the number of fires is increasing following the steady population increase.</p> <p>Meanwhile, fire-fighting in the Gaza Strip relies on seven chemical tender trucks at six stations. Excepting for the HQ, each fire station has only one vehicle. Two of the existing fire trucks are deteriorated. The general lack of fire stations, fire trucks and auxiliary equipment means an inadequate response to fires and other disasters.</p> <p>With the growing industrial activities, fires have already occurred at a synthetic resin moulding factory, sponge factory and paint factory, etc. due to the improper storage or inappropriate handling of hazardous substances.</p>	<p>Some of the deteriorated fire trucks currently in use will be replaced and, with the new fire trucks, basic fire-fighting tactics, i.e. the attacking of a fire from two directions, can be adopted. A small tanker truck will be posted at the Deir el Balah Fire Station which serves four refugee camps and other areas to ensure good maneuverability in the narrow streets. Three new chemical tender trucks will be provided to deal with industrial fires.</p>	<p>The implementation of the Project will greatly improve the fire-fighting capability in the Gaza Strip and will achieve a substantial reduction of the burned area per fire. The new fleet is also expected to reduce the level of casualties and damage to property.</p> <p>It is realistically hoped that damage in the neighbourhood of an industrial fire, which tends to widely spread, will be reduced in addition to a reduction of the damage to the factory itself to protect the industrial and economic foundations.</p>
<p>2. Shortage of Rescue Equipment</p> <p>Despite the steady increase of fire casualties, labour accidents due to the increasing socioeconomic and industrial activities and traffic accidents due to intensified motorisation, the lack of various rescue equipment on the part of the Civil Defence means less than satisfactory rescue operation performance.</p> <p>The coastal nature of the Gaza Strip attracts many sea-bathers with the undesirable death of some 20 people every year. At present, however, the Civil Defence has no sea rescue equipment.</p>	<p>Three new versatile rescue trucks capable of responding to various disasters, including fires, will be provided together with various types of rescue equipment. These trucks will also carry diving sets to deal with accidents at sea, such as drowning and shipwrecks involving fishing boats, etc.</p>	<p>The provision of rescue equipment designed to deal with fires, traffic accidents and labour accidents, etc. will reduce the number of casualties of such accidents.</p>

Current Conditions and Problems	Improvement Measures Under the Project	Type and Degree of Project Benefits
<p>3. Shortage of Water Supply</p> <p>The level of rainfall in the Gaza Strip is very low throughout the year and there are virtually no natural water supply sources, such as rivers. Hydrants are now being introduced at a rate of one hydrant/km in part of Khan Yunis City where a domestic water supply system is being developed. This hydrant density means only the supply of water to water tanks. As no specially designated water supply for fire-fighting purposes is available in other parts of the Gaza Strip, the water supply shortage poses a great problem for fire-fighting activities.</p>	<p>A total of seven new fire trucks (water tankers with pump and chemical tender trucks), each equipped with a 5,000 litre water tank, will be provided.</p>	<p>The provision of fire trucks carrying water which is in short supply will significantly improve the fire-fighting capability of the Civil Defence, reducing both the area burned by fire and damage to people and assets.</p>
<p>4. Inefficient Radio Communication System</p> <p>Response to a disaster is primarily made by each local station to which a telephone call reporting a fire, etc. is made from the area for which it is responsible. The so mobilised fire station may request reinforcement by other stations if the fire is too large for one station to deal with.</p> <p>Old mobile units or portable units are currently used as fixed units at the fire stations. Because of the low output, the communication distance is rather limited, hindering efficient coordination between fire stations in the fighting of a fire or any other disaster.</p>	<p>A proper central unit will be established at the HQ to clarify the conditions and locations of fire trucks in the Gaza Strip and to issue prompt and appropriate commands to fire stations as well as fire companies. This base unit will be accompanied by a fire truck condition information panel and an amplifier for dispatch command. A new base unit, mobile (vehicle) units and portable units will be provided for each fire station (excluding those to be provided by the UNDP) to establish reliable communication links between the HQ and fire stations, between fire stations and between fire stations, fire trucks and fire companies to ensure efficient fire-fighting activities.</p>	<p>The reporting of a fire by a member of the public is usually made by telephone. However, the lack of telephones means that some time is required for the information to reach the fire company. Under the new system, the HQ will be able to issue an accurate mobilisation command which is appropriate regarding the type and extent of disaster. In addition, if the mobilised fire trucks face any kind of problem, a replacement company can be promptly dispatched. The development of these vital radio communication links between stations, fire trucks and/or firemen will lead to efficient fire-fighting activities, minimising the damage due to fires.</p>

4-2 Verification of Appropriateness of the Project

Strenuous efforts are being made in the Gaza Strip to build the foundations of a new state following the establishment of the Palestinian Authority. The Palestinian economy is financially supported by various donors to promote employment and other purposes and various industries have begun to emerge.

The Gaza Strip has an extremely high population density of 5,000 persons/km² which has been exacerbated by the high annual population increase rate of 5%. Due to the geographical smallness of the area, there is a construction boom of medium-high and tall apartment buildings, causing rapid urbanisation throughout. Under these circumstances, the number of disasters, including fires, shows an increasing trend and the types of fires have diversified to include those at synthetic resin moulding, paint and sponge factories, reflecting the emerging diversity of local industrial activities. Meanwhile, as the fire-fighting capability of the Civil Defence in the Gaza Strip consists of only six fire stations with 560 firemen and seven chemical tender trucks (two at the HQ and one each at the five local fire stations), there is a definite shortage of fire trucks and equipment.

In recognition of this situation, the Civil Defence has prepared the Fire Service Improvement Plan. However, it has found it difficult to consolidate the fleet and equipment due to a lack of sufficient budgetary appropriation.

The Project intends the provision of the latest fire trucks, comprising chemical tender trucks, water tankers with a pump, a small tanker truck and rescue trucks as well as a radio communication system and other equipment, all of which are required to provide basic fire services, i.e. rescue and the prevention of the spread of fire. Consequently, the fire-fighting capability of the Civil Defence will significantly improve, thus permitting the prompt response to a fire.

Implementation of the Project is urgently required to reduce both physical and material damage and to ensure the safety of the some 800,000 people living in the Gaza Strip. The Project will also protect the economic structure of the Gaza Strip, thereby directly and indirectly contributing to the consolidation of the foundation of a state aiming at improving social welfare.

The Civil Defence has sufficient manpower and technical expertise to adequately operate and maintain the new fire trucks and equipment and no problems are anticipated in regard to maintenance as the system and funding to support the operation and maintenance of the new fire

trucks and equipment have already been secured. Accordingly, the implementation of the Project with grant aid provided by the Government of Japan is judged highly appropriate.

4-3 Recommendation

In addition to the substantial benefits of the Project described in 4.1, the fact that the Project will widely achieve much improvement regarding the BHN (Basic Human Needs) of local inhabitants further underlines the appropriateness of the Project. In addition, the Palestinian side (Civil Defence) has sufficient manpower and funding to properly implement the Project and to manage the new fire trucks and equipment after the project period. The Project will, nevertheless, be implemented more smoothly and effectively if the following recommendations are followed.

(1) Project Implementation Body

As the Project will be implemented under the grant aid regime of the Government of Japan, there will be a time limit on its completion. The Palestinian side will be required to ensure a prompt response to the signing of the E/N, signing of the consultancy agreement, approval of the detailed design documents to be prepared based on the present Basic Design Report, tender and signing of the equipment supply agreement, etc.

The fire trucks and equipment to be provided under the Project will require transportation by land from a landing port in Israel to sites in the Gaza Strip. It will be necessary for the Civil Defence to make the necessary applications to the competent Israeli authorities regarding customs clearance at an Israeli port and land transportation through Israeli territory so that all the imported fire trucks and equipment reach their respective destinations without delay.

(2) Securing of Manpower

Apart from two new fire trucks to replace existing fire trucks of the same type, all other fire trucks will be additions to the present fleet, requiring staff members for their operation. From the viewpoint of the efficient utilisation of these new fire trucks, it will be particularly important to secure a sufficient number of drivers. These drivers will have to acquire sufficient knowledge of the performance of the fire trucks and the skills to operate them. It will be necessary to send such drivers to a driver training course in Egypt in order to meet the qualification conditions for drivers which are internally adopted by the Civil Defence.

(3) Establishment of Vehicle Inspection and Maintenance System

A daily inspection and maintenance system must be established so that the new fire trucks and equipment are effectively used to deal with fires and other disasters. In view of the plan to conduct technically advanced repair and maintenance work at the government workshop, it will be necessary for the mechanics of the said government workshop to undergo inspection and maintenance training for the fire trucks and equipment after their arrival at the respective destinations.

(4) Construction of Garages, etc.

Although every fire station in the Gaza Strip has an exclusive garage for fire trucks, it will be necessary for the Civil Defence to extend the garage at the Jabalia & Nazla Fire Station and the Rafah Fire Station to accommodate the new fire trucks.

A special storage house or similar facility with shelves to stack the spare parts, etc. to be provided under the Project will be required to ensure proper storage conditions and inventory control.

(5) Provision of Facilities for Equipment Installation

The installation engineers of the radio communication system should be provided with all appropriate facilities so that the installation work can be quickly and smoothly completed. As part of the radio communication system installation requirements, an antenna pole for the fixed unit at the HQ and local fire stations must be positioned to ensure uninterrupted radio communication.

(6) Recommendations

Implementation of the Project will not only substantially improve the fire-fighting capability in the Gaza Strip but will also make it possible for the Civil Defence to combat those types of fires which are currently difficult to efficiently deal with and which have been left to die out naturally in many cases. Moreover, the burned area per fire will be reduced together with a reduction of the extent of the damage to people and assets, etc.

It will, however, be the responsibility of the Civil Defence to realise such benefits of the Project by effectively using the fire trucks and equipment to be provided under the Project. Improvement of the fire-fighting capability of every single member of the Civil Defence and consolidation of the fire-fighting system in the Gaza Strip as described below are essential requisites to achieve the maximum performance potential of the fire trucks and equipment in question.

① Consolidation of Legal Framework for Fire-Fighting

The legal framework for fire-fighting should be consolidated as the foundation for a desirable fire-fighting system in line with the process of nation building. This framework should address various issues, such as fire prevention measures, the control of dangerous substances, regulations on the installation of fire-fighting facilities, fire prevention responsibilities and building regulations from the viewpoint of fire prevention, etc.

② Water Supply for Fire-Fighting

Water supply for fire-fighting purposes should feature in plans to develop the domestic water supply and sewerage systems and to establish public gardens, etc. as the availability of water is a fundamental requirement for fire-fighting.

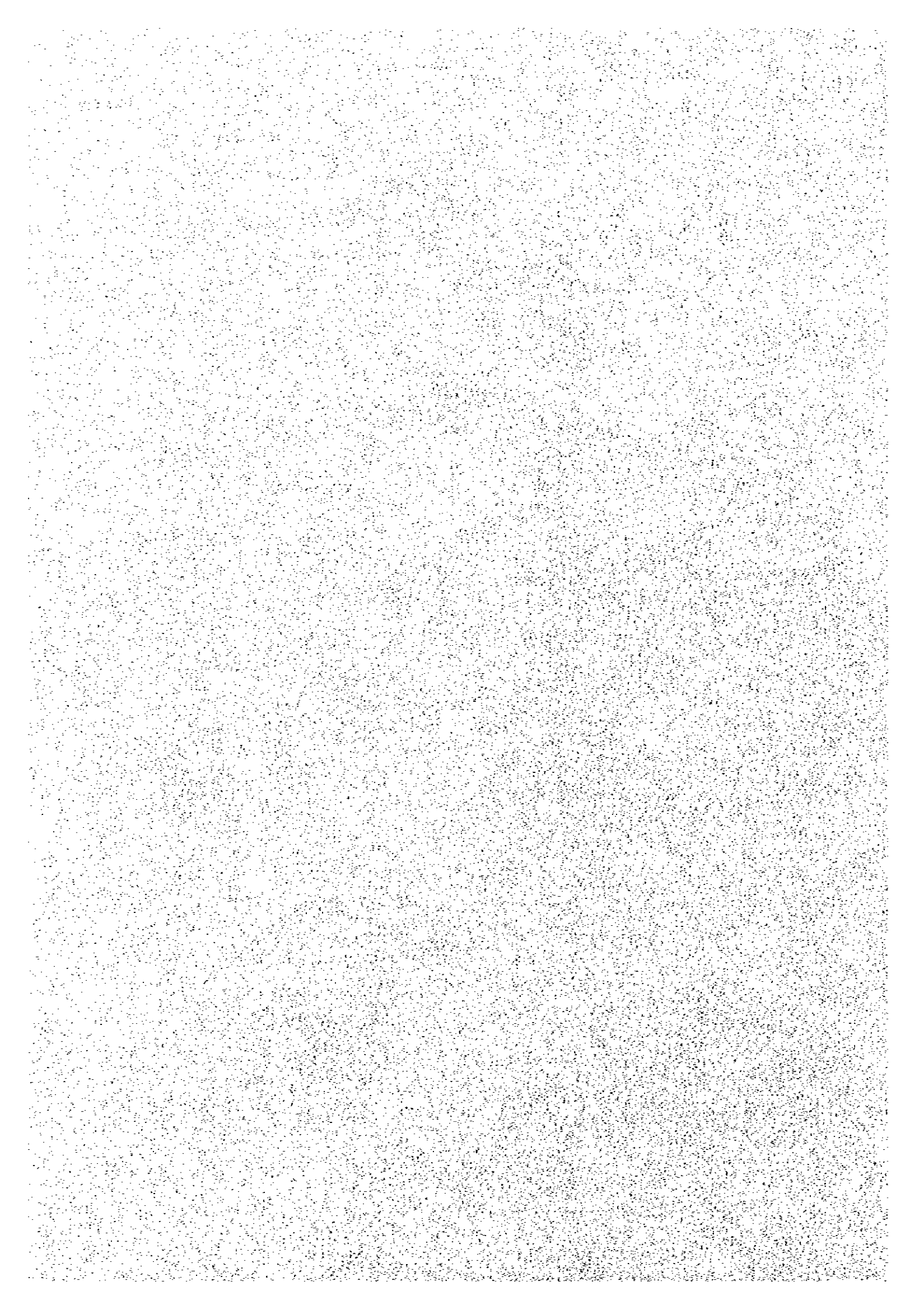
③ Education of Firemen and Development of Fire-Fighting Training Facilities

Efficient and effective fire-fighting demands the competence of firemen in terms of the relevant knowledge and skills as well as the provision of fire-fighting equipment. It is, therefore, necessary to establish an educational institution to teach the professional knowledge and skills required of firemen and also to construct fire-fighting training facilities for practical training purposes.

④ Public Relations and Awareness Activities for Fire Prevention

Many fires are caused by human error and it is, therefore, important to raise the level of fire prevention awareness among the public. Even though public relations and awareness activities are currently being conducted, the methods and contents require review for further improvement.

APPENDIX



APPENDIX 1 MEMBER LIST OF STUDY TEAM

• **Member of Administration side**

Leader	Kenji MATSUMOTO	Deputy Director Coordination and Appraisal Division, Grant Aid Project Study Department, Japan International Cooperation Agency
Technical Adviser	Tadao HIRONIWA	Chief Manager Fire Defence Division, Fire and Disaster Management Agency, Ministry of Home Affairs

• **Member of Consultant side**

Chief Consultant / Fire Fighting Planner	Nobuo ARAKAWA	Senior Director International Cooperation Department, Fire Protection Equipment and Safety Center of Japan (FESC)
Equipment Planner / Procurement Planner	Mizuhiko TSUNODA	Manager International Cooperation Department, FESC
Cost Estimator / Procurement Planner	Fumio SUEHIRO	Adviser International Cooperation Department, FESC

APPENDIX 2 SURVEY SCHEDULE

Period : 3rd December ~ 22th December, 1996

No	DATE	OFFICIAL	CONSULTANT
1	Dec. 3 (TUE)	[Narit → Paris]	
2	4 (WED)	[Paris → Tel Aviv]	
3	5 (THU)	Courtesy visit : Embassy of JAPAN, Ministry of Planning & International Cooperation, Civil Defence of Interior Ministry	
4	6 (FRI)	• Courtesy visit : UNDP (Jerusalem)	
5	7 (SAT)	• Site survey	
6	8 (SUN)	Study team meeting & Data arrangement	
7	9 (MON)	Discussion : Ministry of Planning & International Cooperation and Civil Defence	
8	10 (TUE)	• Discussion : Ministry of Planning & International Cooperation and Civil Defence • Courtesy Visit : chairman Yasser ARAFAT	
9	11 (WED)	• Signing on Minutes • Report : Embassy of JAPAN	• Singning on Minutes • Site survey
10	12 (THU)	[Tel Aviv → Frankfurt]	Site survey
11	13 (FRI)	[Frankfurt →	Study team meeting & Data arrangement
12	14 (SAT)	→ Narita]	Site Survey
13	15 (SUN)		Site Survey
14	16 (MON)		• Site survey • Discussion : Civil Defence
15	17 (TUE)		Discussion : Civil Defence
16	18 (WED)		• Survey of import and transportation procedure in Israel • Report: Embassy of JAPAN
17	19 (THU)		[Tel Aviv → Frankfurt] Survey of body maker (BEIT ALFA and HATEHOF in Israel)
18	20 (FRI)		[Tel Aviv → Frankfurt] Survey of body maker (MAGIRUS in Germany)
19	21 (SAT)		[Frankfurt →
20	22 (SUN)		→ Narita]

APPENDIX 3

LIST OF PARTY CONCERNED IN THE RECIPIENT COUNTRY

- **Palestinian National Authority**
 - President Yasser Arafat
 - Ms. Hanan Khalil Al-Wazir (Office of the President, Director Presidential Protocol)

- **Ministry of Planning & International Cooperation**
 - Mr. Waleed A.Siam (Deputy Director General)

- **Civil Defence**
 - Mr. Mahmoud Abu Marzoug (Director General)
 - Mr. Mohammad Shehada (Project Management Engineer)
 - Mr. Mahmmod Dammagh (Commander of Rafah)
 - Mr. Rashad Elsheh (Commander of Eshaikh Radwan)
 - Mr. Mustafh Wafi (Commander of Deir el Balah)
 - Mr. Mahmud Fayad (Commander of Jabalia & Nazla)
 - Mr. Yehia Abu Samra (Commander of Khan Yunis)
 - Mr. Khalil Abdalrahman (Industrial Safety Officer of Khan Yunis fire station)

- **Civil Defence Council**
 - Mr. Muhanna (President's Consultant)
 - Mr. Abdel R. El-Majaida (National Security, Director General)
 - Mr. Aref Khatab (President's Guard Chief)
 - Mr. Fuad El-Shubaki (Finance Dept. Chief)

- **Workshop of Ministry.**
 - Mr. Hassan Ali Sharah (General)
 - Mr. Mohamed El Nokhala (Engineer)

- **United Nations Development Program (UNDP)**
 - Mr. Omar Daojdi (Senior Adviser)
 - Mr. Khaled Shahwan (Operations Officer)
 - Mr. Olivier Cavey (Programme Management Officer)
 - Ms. Valerie Cliff (Head of Governance Unit)

• State of Israel, Ministry of the Interior, Fire & Rescue Deputy Commission

Mr. Shimon Ben-Ner (Vice Commissioner)

Mr. Leonid Shaiman (Chief Engineer)

• Manufacturers of Third Nations

Metz Feuerwehrgeraete GmbH (Germany)

Mr. Manfred Wittmann (Sales Director Export)

Iveco Magirus AG (Germany)

Mr. Gerhard Kienzler (Head of Export Dept.)

Mr. Manfred Hertenberger (District Manager)

Beit Alfa Trailer Co. (Israel)

Mr. Gil Ben-Zvi (General Manager)

Mr. Noam Hen (Marketing Manager)

Hatchof Ltd. (Israel)

Mr. Doron Spitz (General Manager)

Mr. David Dayan (Project Manager)

• Customs clearers & Transporters

PANALPINA PALESTINE LTD.

Mr. Fadi Nasrawi (Sales Manager)

AMIT LTD.

Mr. Ron Berry (Managing Director)

• EMBASSY OF JAPAN

Mr. Katsuo SHOJI (First Secretary)

APPENDIX 4 MINUTES OF DISCUSSION

MINUTES OF DISCUSSIONS

on

the Basic Design study
on the Project for the Improvement of Fire Fighting Services
in the Palestinian Authority territory for "Gaza strip"

In response to a request from Palestinian Authority, the Government of Japan decided to conduct a Basic Design Study on the Project for the Improvement of Fire Fighting Services in the Palestinian Authority territory for "Gaza Strip" (hereinafter referred to as "the Project"), and entrusted the study to Japan International Cooperation Agency (JICA).

JICA sent to the Palestinian Authority territory for "Gaza Strip" the Basic Design Study Team headed by Mr. Kenji MATSUMOTO, Deputy Director of Cooperation and Appraisal Division, Grant Aid Project Study Department, JICA, and is scheduled to stay in Palestinian Authority territory for "Gaza Strip" from 6th December to the 17th December, 1996.

The team held a series of discussions on the Project with the officials concerned of Palestinian Authority and conducted field survey at the study area.

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

The team will proceed to further work and prepare the Basic Design Study Report.

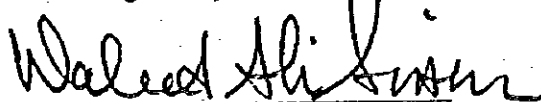
Gaza, 11th December, 1996



Kenji MATSUMOTO

Leader

Basic Design Study Team, JICA



WALEED SIAM

Ministry of Planning and International Cooperation
Assistant Director General
International Cooperation



MAHMOUD ABU MARZOUK

Brigadiere General

Director General of Civil Defence
"Gaza"

ATTACHMENT

1. Objective of the Project

The Objective of the Project is to expand and improve the Fire Fighting Services in the Palestinian Authority territory for "Gaza strip" by providing fire fighting equipment, in order to minimize the number of casualties and losses of fires and other disasters, and to contribute to social and economic development in the Palestinian Authority territory for "Gaza strip"

2. Responsible and executing organization

The responsible and executing organization of the Project is the Civil Defence, Ministry of Interior.

The Organization Chart of the Civil Defence is shown in Annex-1.

3. Project site

The Project site is within the district of the Palestinian Authority territory for "Gaza strip". Rafah airport fire station is not included in this Project. The Map of the Palestinian Authority territory for "Gaza strip" is shown in Annex-2.

4. Contents requested by Palestinian Authority

After a series of discussions, Palestinian Authority requested the items listed in Annex-3 (including sufficient spare parts). However, the final contents of the Project will be decided by the Japanese side at its discretion.

5. Japan's Grant Aid Program

The Palestinian Authority has understood the system and characteristics of Japan's Grant Aid Program explained in Annex-4 by the Team.

6. Necessary measures to be taken by Palestinian Authority

Palestinian Authority will take the following necessary measures for smooth implementation of the Project, and proper and effective operation and maintenance of the equipment provided under the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

- (1) To secure, with respect to the supply of the equipment and services

under the verified contracts, that Japanese nationals shall not be subject to any customs duties, internal taxes and other fiscal levies which may be imposed in the Palestinian Authority territory for "Gaza strip"

- (2) To accord Japanese nationals whose services may be required in connection with the supply of the equipment and the services under the verified contracts such equipment as may be necessary for their entry into the Palestinian Authority territory for "Gaza strip" and stay therein for the performance of their work in accordance with the relevant laws and regulations of the Palestinian Authority territory for "Gaza strip"
- (3) To ensure prompt unloading, customs clearance for the eventual port and prompt internal transportation therein of the equipment.
- (4) To bear all the expenses, other than those to be borne by the Government of Japan under the Grant Aid for the execution of the Project.
- (5) To ensure the garage and warehouse to keep securely the equipment.
- (6) To allocate enough number of trained firemen to the fire stations to be covered under the Project in order to operate and maintain the equipment.
- (7) To ensure proper budget for fuel, maintenance and repair of the equipment.

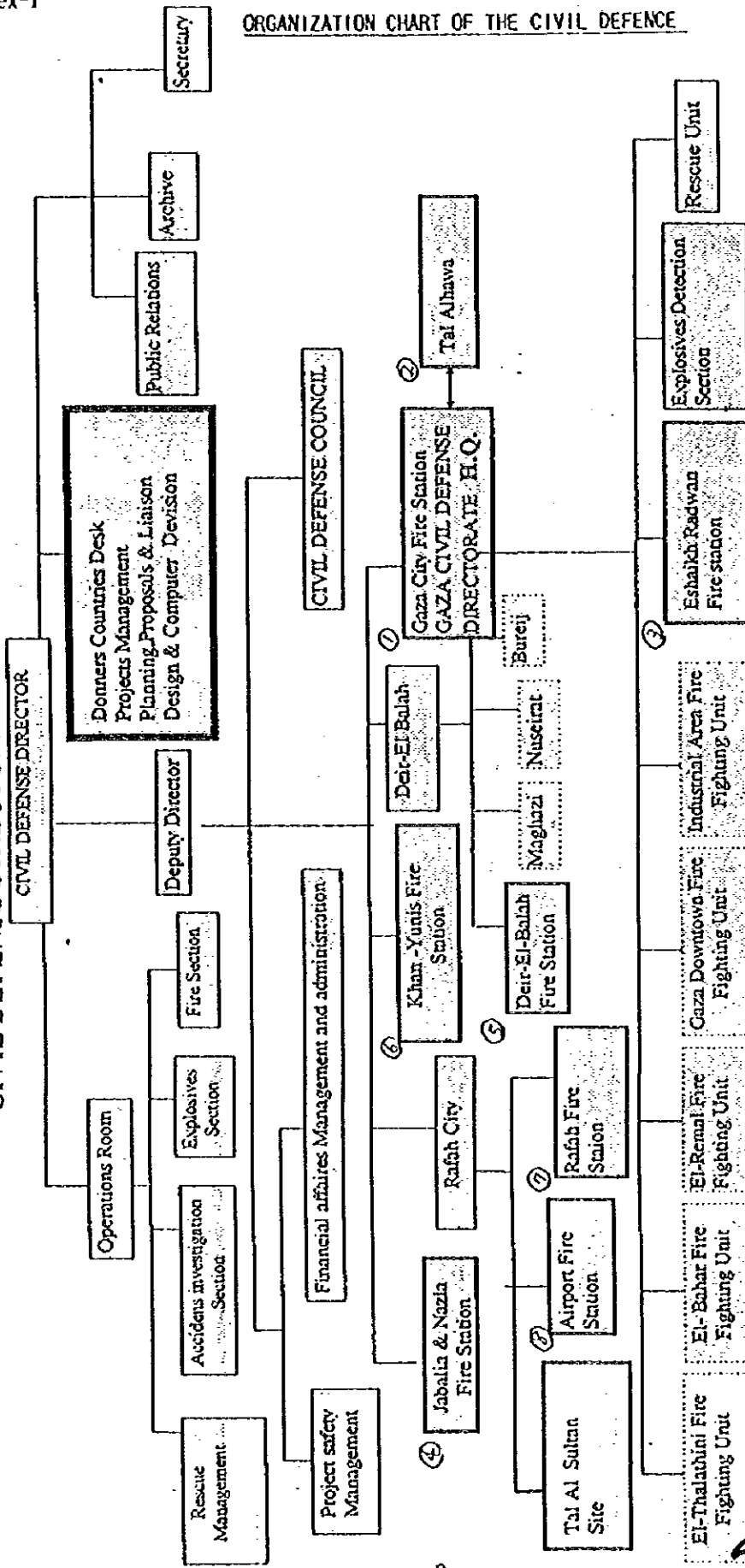
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ORGANIZATION CHART OF THE CIVIL DEFENCE

CIVIL DEFENSE DIRECTORATE ORGANIGRAM

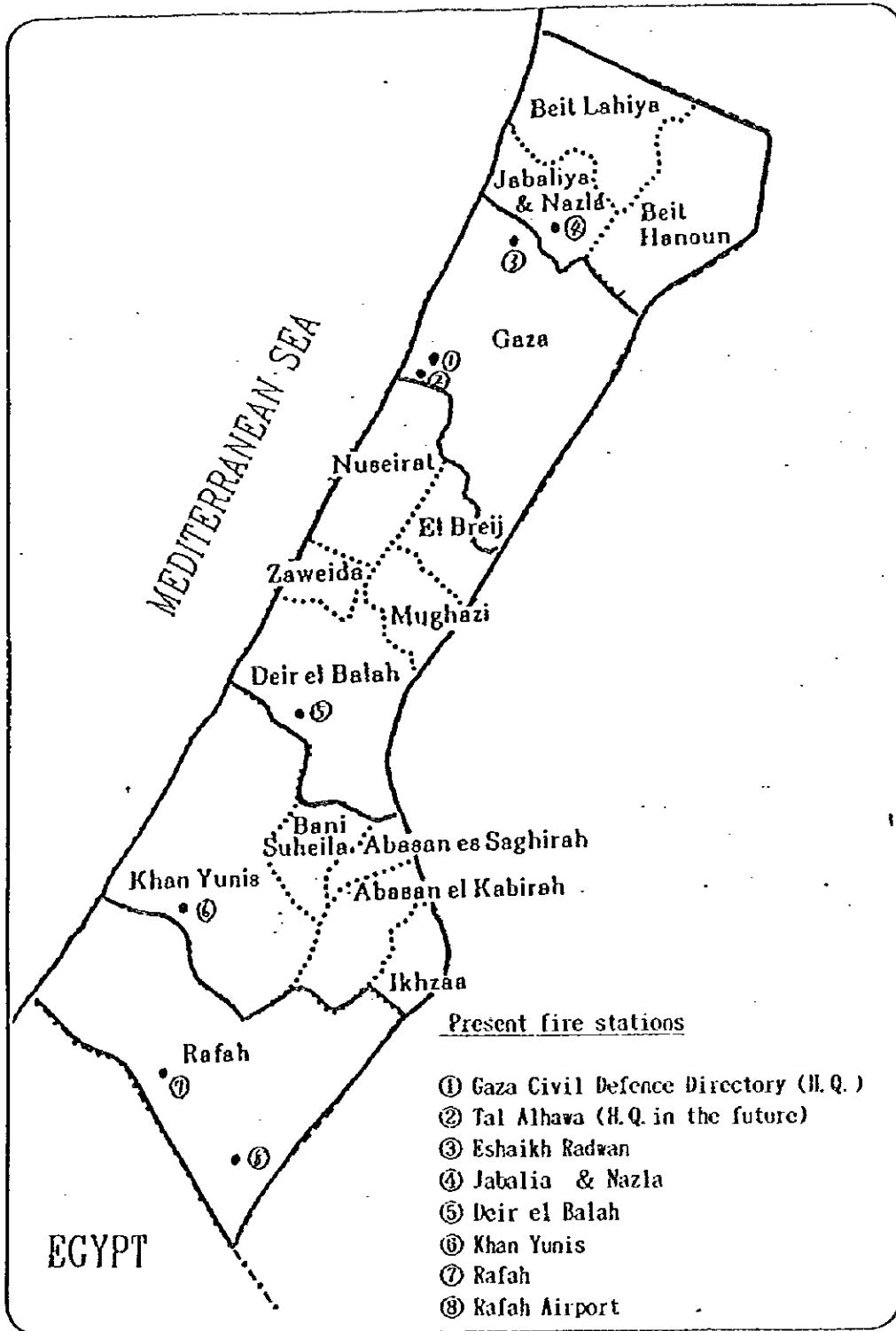


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MAP OF Palestinian Authority territory for "Gaza strip"



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CONTENTS REQUESTED BY PALESTINIAN AUTHORITY

The contents of the Project covered under the Japan's Grant Aid finally requested by Palestinian Authority are as follows with priority "A", "B" and "C" in this order.

However, the final contents of the Project will be determined by the Japanese side at its discretion.

Name of vehicles	Number of vehicles requested			
	Priority			Total
	A	B	C	
Turn table ladder	1	0	0	1
Rescue truck	2	2	4	8
Chemical tender truck	2	1	5	8
Water tanker with pump	2	2	2	6
Fire equipment transport truck	0	0	5	5
Emergency rescue ambulance	0	1	3	4
Small tanker truck	0	1	6	7
T o t a l	7	7	25	39

JAPAN'S GRANT AID PROGRAM

(1) Grant Aid Procedures

① Japan's Grant Aid Program is executed through the following procedures.

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

② Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

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

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

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

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

(2) Basic Design Study

① Contents of the Study

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

follows:

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

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

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

② Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA. The consulting firm(s) used for the study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

(3) Japan's Grant Aid Scheme

① What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable

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

② Exchange of Notes (E/N)

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

- ③ "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

- ④ Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

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

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

⑤ Necessity of "Verification"

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

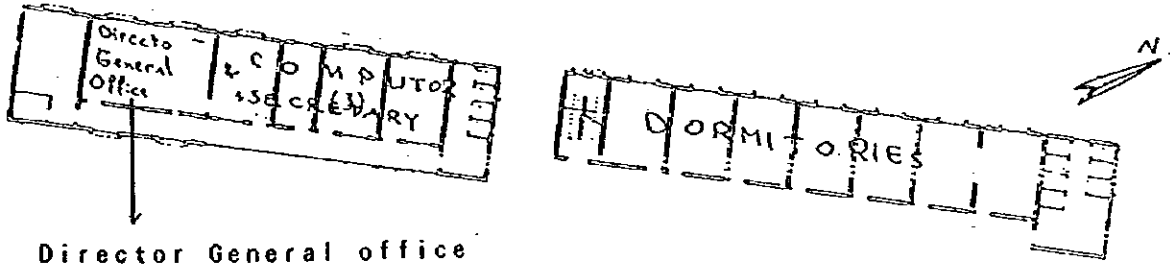
⑥ Undertakings required of the Government of the Recipient Country

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

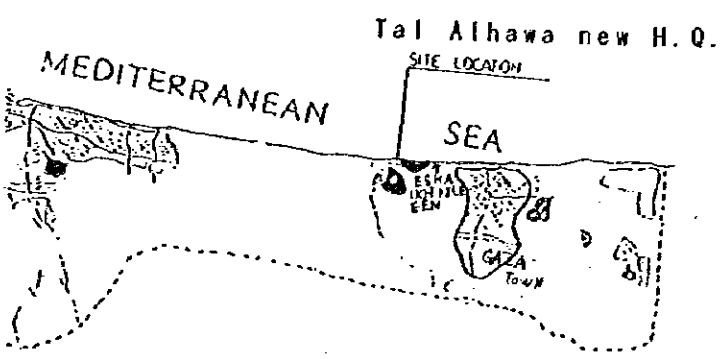
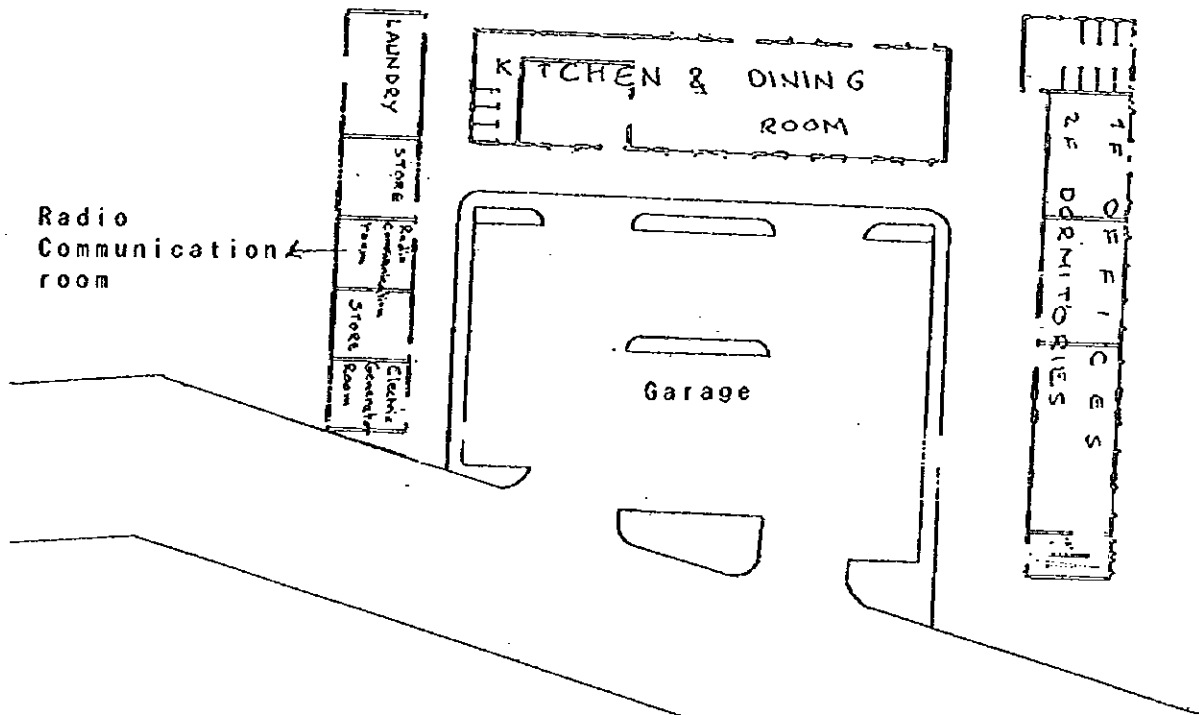
- a) To secure buildings (ex. garages) prior to the procurement of the equipment under the Grant Aid.
- b) To ensure all the expenses and prompt execution for unloading, customs clearance at the eventual port of disembarkation and internal transportation of the products purchased under the Grant Aid.
- c) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
- d) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- e) "Proper Use"
The recipient country is required to maintain and use equipment purchased under the Grant Aid properly and effectively and assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.
- f) "Re-export"
The products purchased under the Grant Aid should not be re-exported from the recipient country.
- g) Banking Arrangements (B/ A)
 - g-1) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
 - g-2) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

APPENDIX 5 GARAGE PLAN OF FIRE STATION

① Tal Alhawa new H.Q.



Director General office

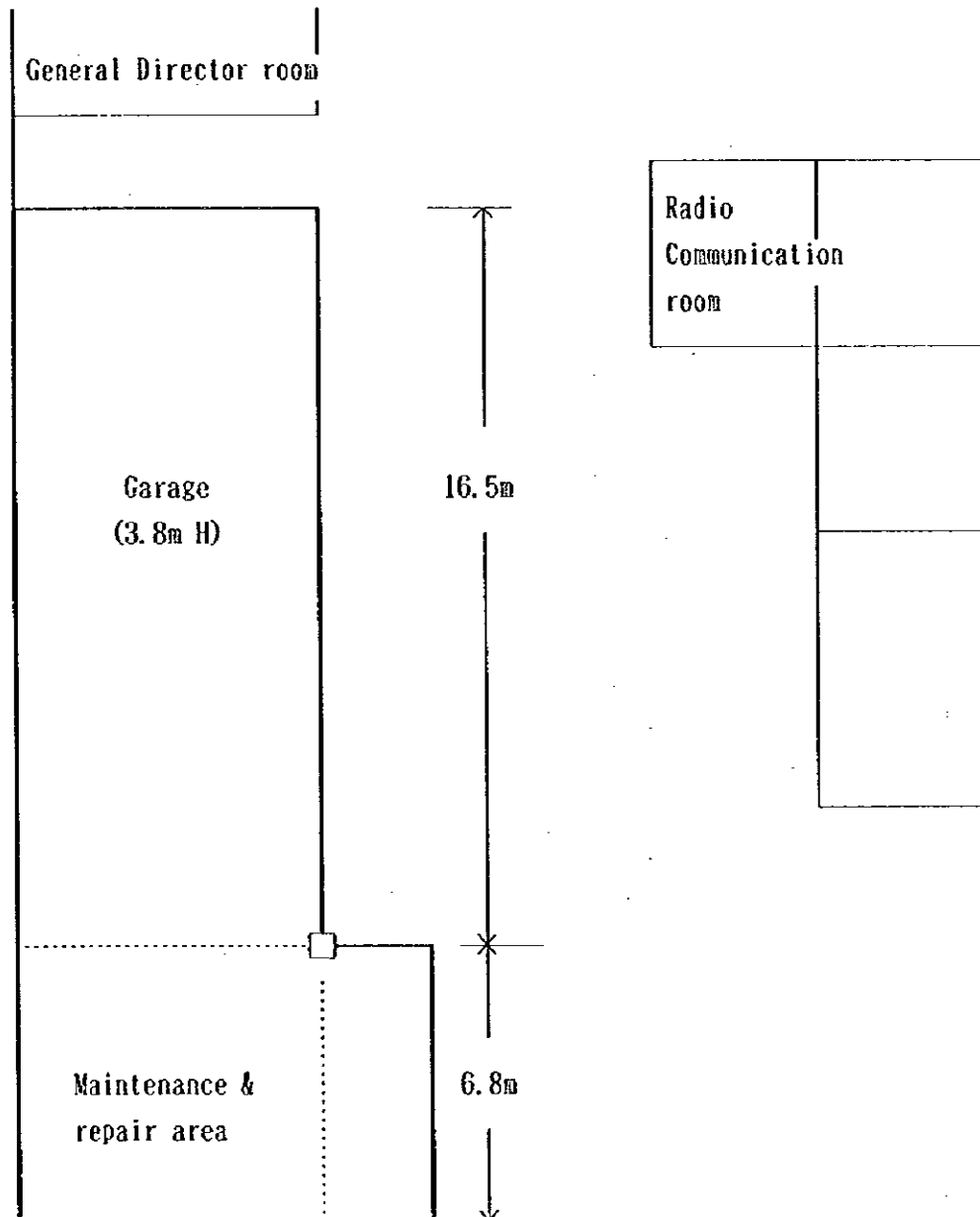


PLAN OF TAL ALHAWA
NEW HEAD QUARTERS

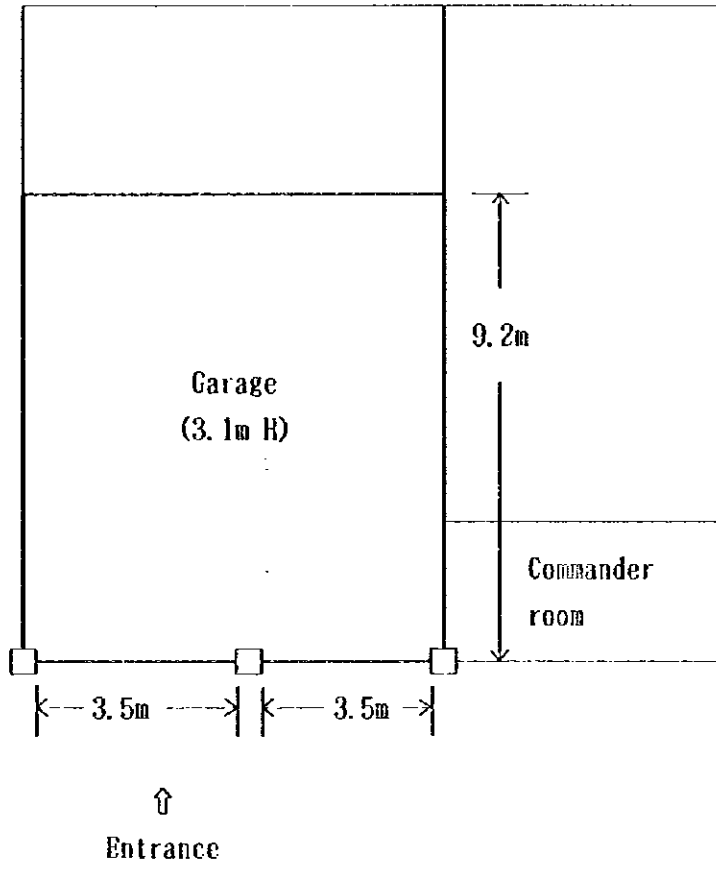
Mohammad Shehadeh

December 16, 1996

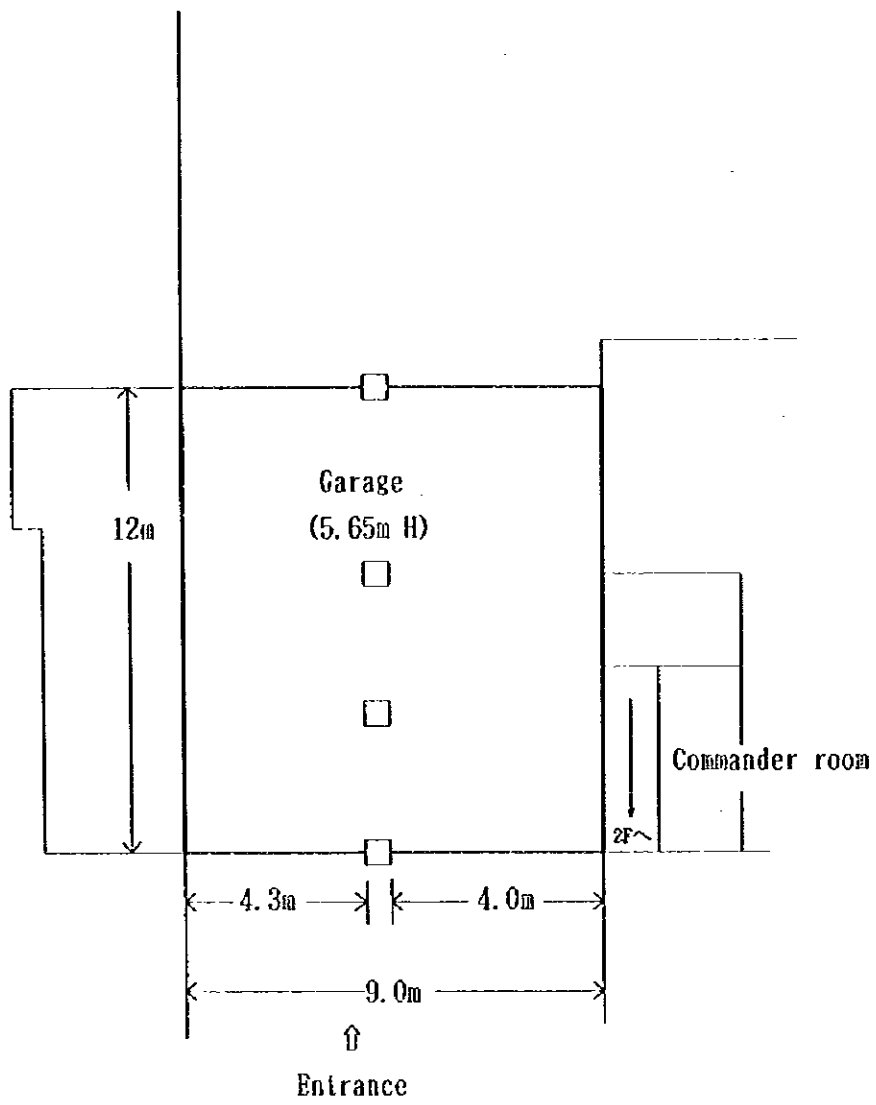
② Gaza Civil Defence Directory (Present H. Q.)



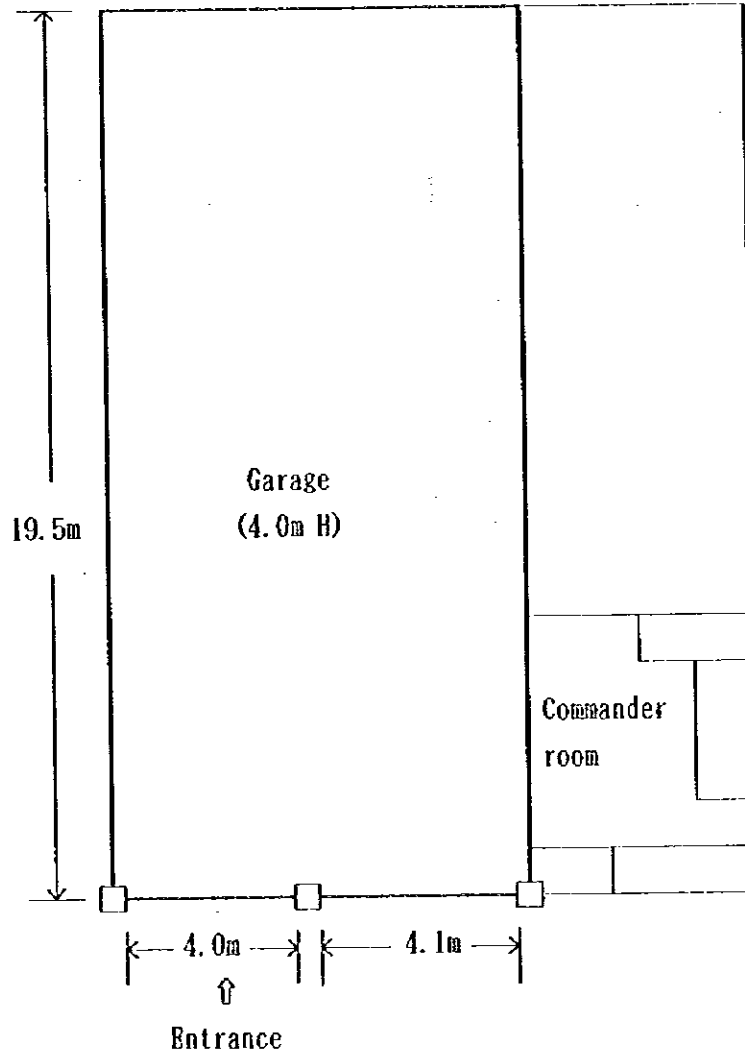
③ Bshaikh Radwan fire station



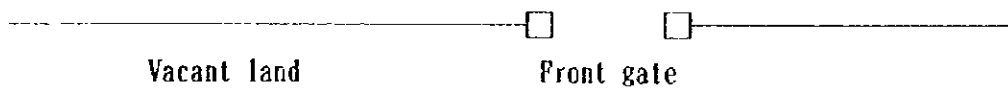
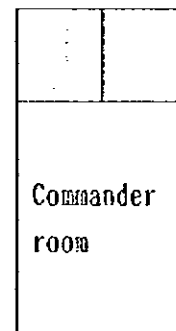
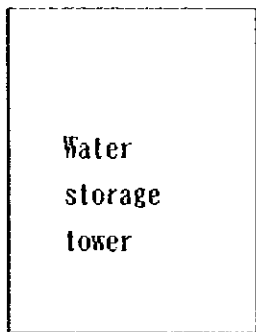
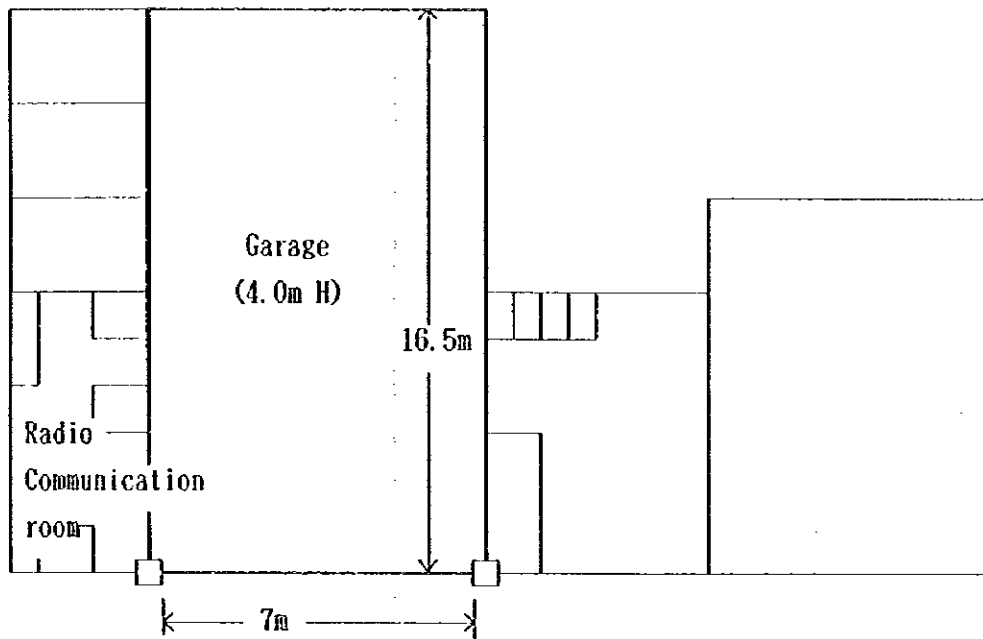
④ Jabalia & Nazla fire station



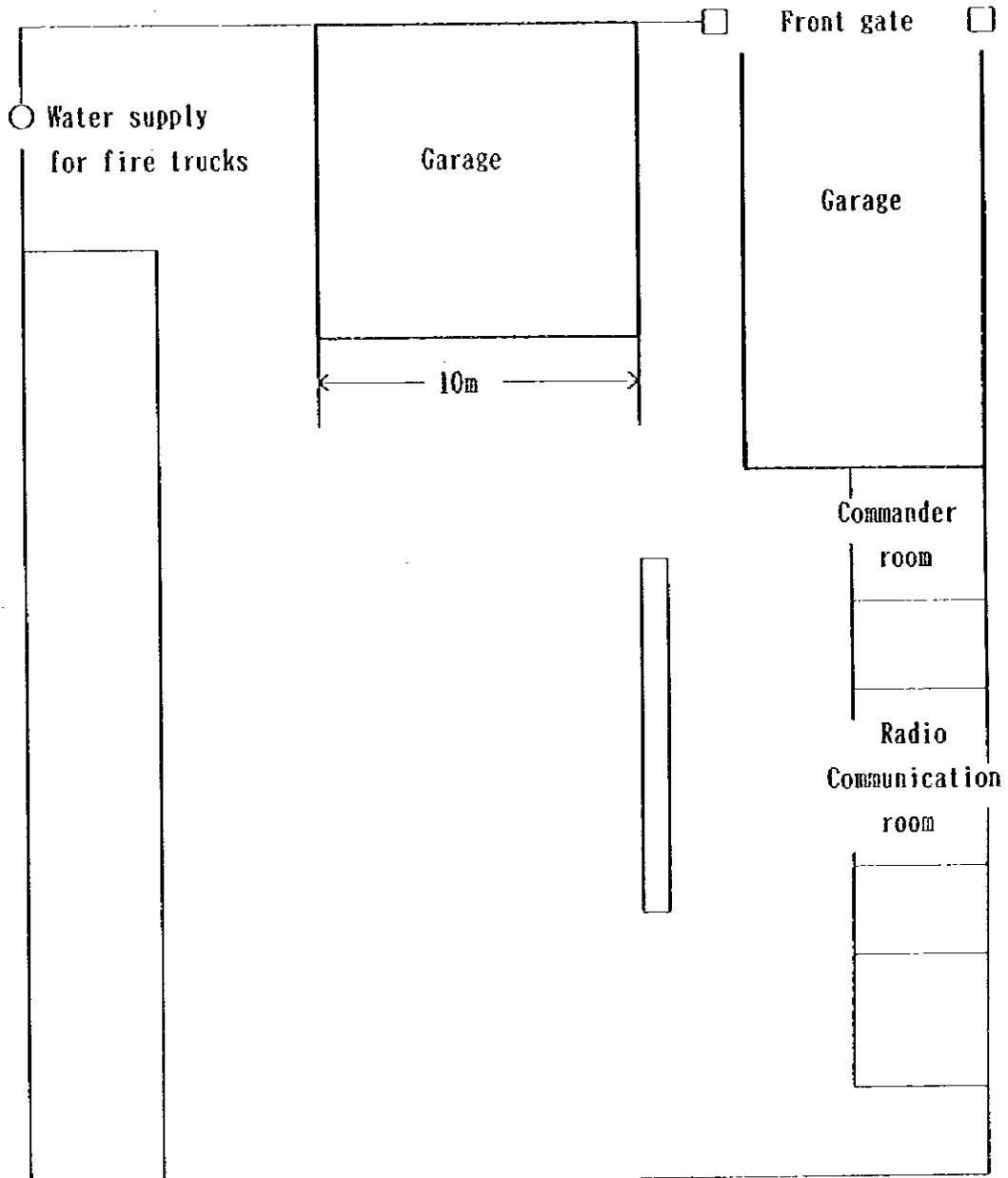
⑤ Deir el Balah fire station



⑥ Kahn Yunis fire station



⑦ Rafah fire station



JICA