STUDY REPORT
ON
THE PROJECT FOR SUPPLY OF
ROAD CONSTRUCTION EQUIPMENT
IN WESTERN MINDANAO
IN
THE REPUBLIC OF THE PHILIPPINES

MARCH 1998

JAPAN INTERNATIONAL COOPERATION AGENCY

STUDY REPORT
ON
THE PROJECT FOR SUPPLY OF
ROAD CONSTRUCTION EQUIPMENT
IN WESTERN MINDANAO
IN
THE REPUBLIC OF THE PHILIPPINES

MARCH 1998

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

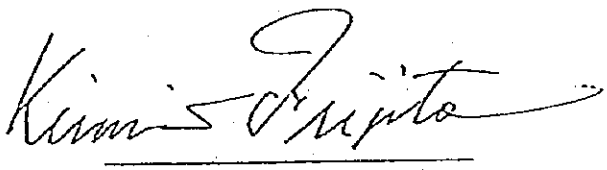
In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct a basic design study on the Project for Supply of Mobile Road Asphalt Mixing Plants and Paving Equipment and entrusted the Japan International Cooperation Agency (JICA) to conduct the study with the assistance of the Japan International Cooperation System (JICS).

JICA sent to Philippines a study team from January 12 to January 31, 1998.

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

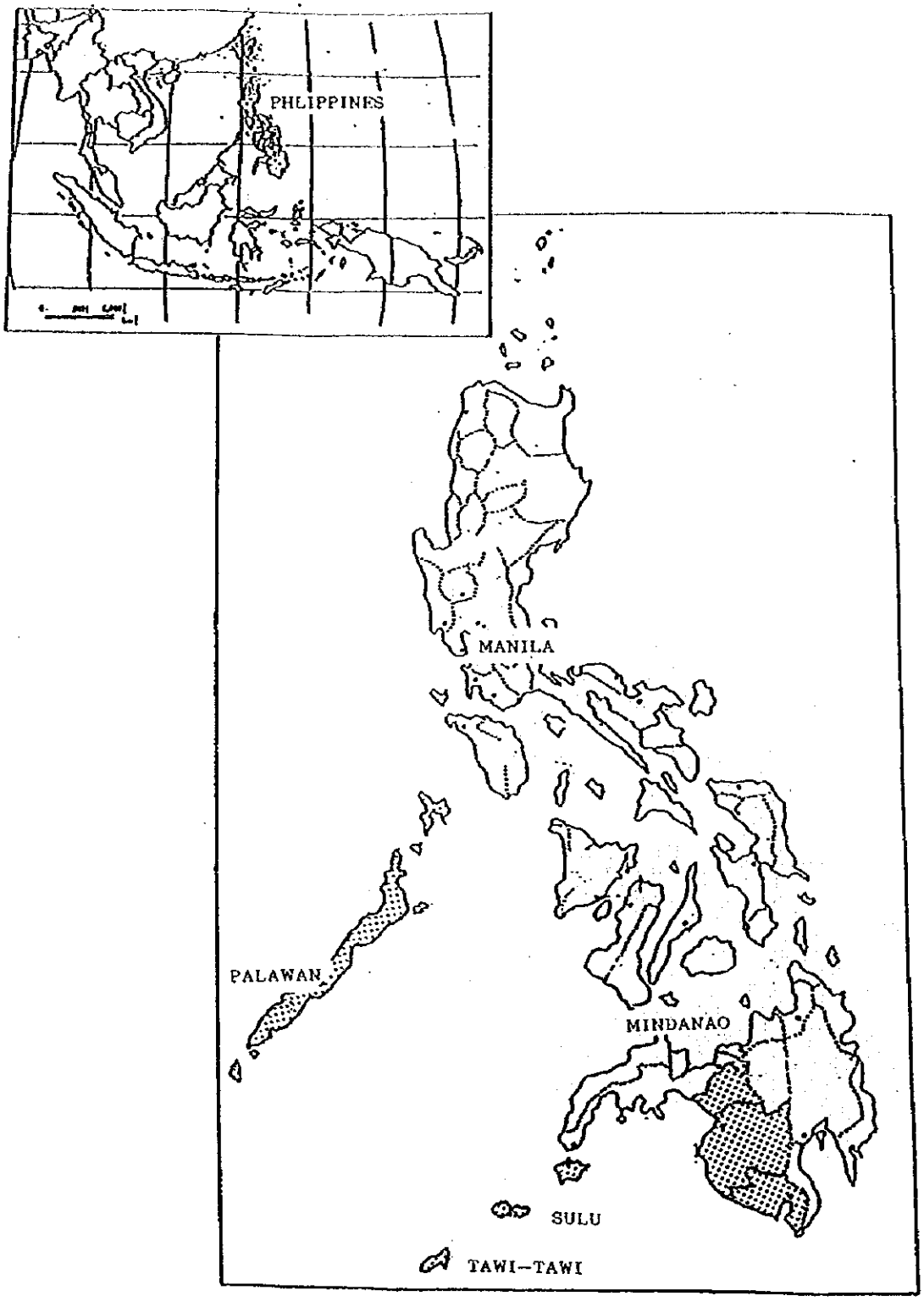
I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation extended to the team.

March 1998

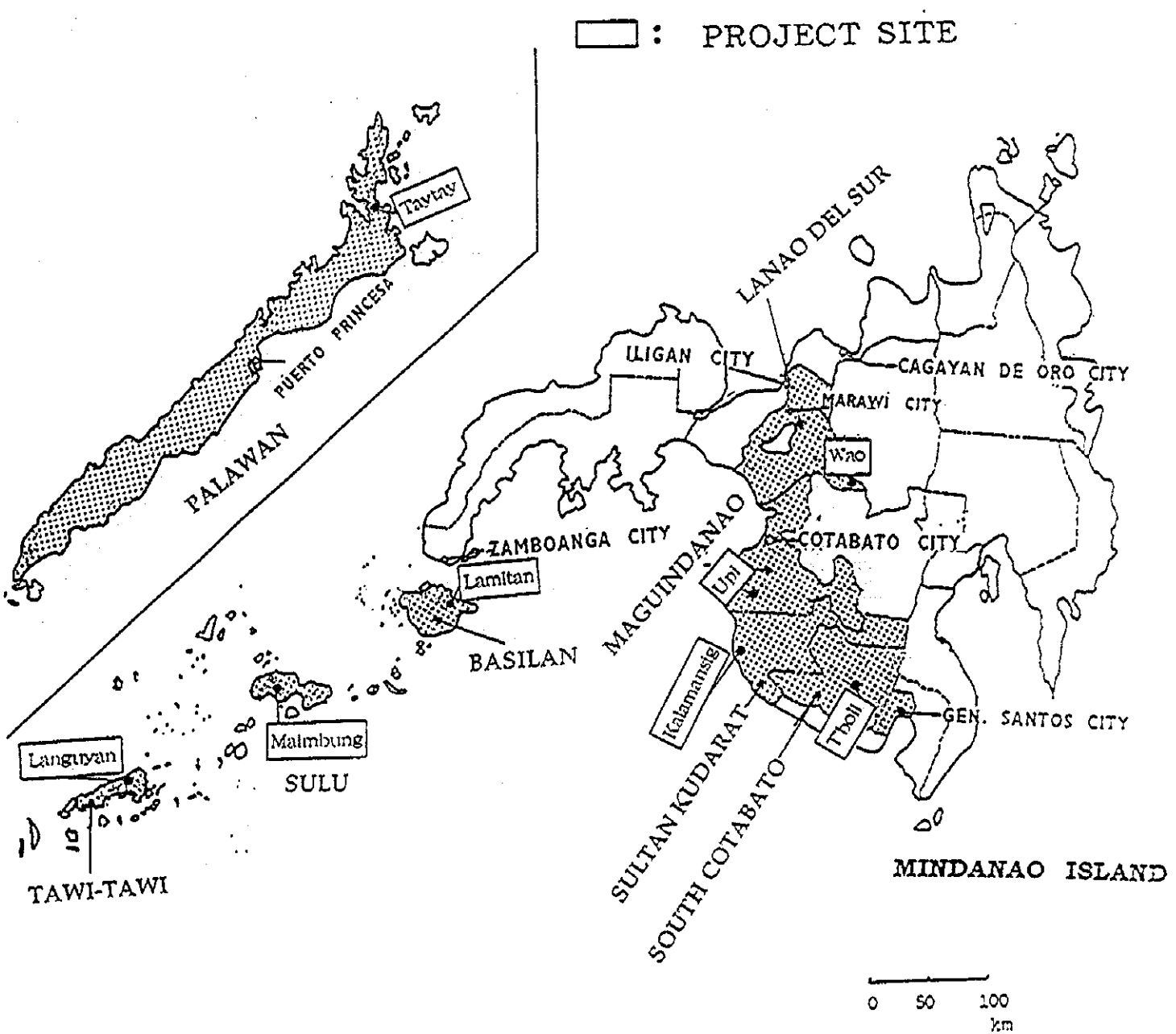


Kimio Fujita
President
Japan International Cooperation Agency

Table of Contents



Location Map of Republic of Philippines


: PROJECT SITE
Taytay
PUERTO PRINCESA
PALAWAN
LANAO DEL SUR
ILIGAN CITY
CAGAYAN DE ORO CITY
MARAWI CITY
Wao
ZAMBOANGA CITY
COTABATO CITY
Lamitan
BASILAN
MAGUINDANAO
Uni
Kalamansig
Tboli
GEN. SANTOS CITY
SULTAN KUDARAT
SOUTH COTABATO
Malmbung
SULU
Languyan
TAWI-TAWI
MINDANAO ISLAND
0 50 100
km

Abbreviations

MNLF(Moro National Liberation Front)

DILG(Department of the Interior and Local Government)

SPCPD(Southern Philippines Council for Peace and Development)

SZOPAD(Special Zone of Peace and Development)

ARMM(Autonomous region of Muslim Mindanao)

DPWH(Department of Public Works and Highway)

IRA(Internal Revenue Allotments)

Chapter 1 Background of the Project

In the Republic of the Philippines (to be referenced as "the Philippines" hereafter), the Islam accounts for approximately 7% (4. 6 million) of the entire nation. Most of the Islam live in the southwest region of Mindanao, where the Islam power, mainly consisting of the Moro National Liberation Front (MNLF), has been conducting guerrilla activities in pursuit of the independence of the Republic of Moro Nation since the movement for independence became illegal in 1970. Thus the socioeconomic development could not have proceeded.

However, the Ramos administration established in 1992 has tried to promote the reconciliation with the Islam liberation power and concluded the peace agreement in September 1996. In response to this agreement, a Southern Philippines Council for Peace and Development (SPCPD) was established to reconcile the powers including the Islam, the Christian, and the aborigine in that area. Development of the area is going to be proceeded mainly in the Southern Zone of Peace and Development (SZOPAD) consisting of the areas shown in Table 1. The development of SZOPAD is one of the most important subjects in the Philippines.

Table-1: Special Zone of Peace and Development (SZOPAD)

	Zone	Province	City
1	RegionIV	Palawan	Puerto Princesa
2	RegionIX	Zamboanga del Sur	Zamboanga Pagadian
		Zamboanga del Norte	Dipolog Dapitan
		Basilan	
3	RegionXI	Davao del Sur	
		South Cotabato	General Santos
		Sultan Kudarat	
		Sarangani	
4	RegionXII	Lanao del Norte	Iligan
		North Cotabato	
5	ARMM	Sulu	
		Tawi-Tawi	
		Maguindanao	Cotabato
		Lanao del Sur	Marawi

ARMM (Autonomous region of Muslim Mindanao)
Source:SPCPD

The SZOPAD consists of fourteen provinces and nine cities including approximately 10 million people (15% of the entire population) and about 70,000 km2 area (24% of the entire national land).

However because of insufficient and unprepared road networks, the movement of people and

commodities has been restricted, causing the socioeconomic development to be delayed. About half of the residents of SZOPAD belong to the poorest households.

Comparison of the total road lengths in the entire national land of the Philippines and in the SZOPAD including national, Provincial, and municipal roads is shown in Table 2. As indicated in this Table, the road networks in the SZOPAD are not sufficiently prepared compared with the average roads in the country, which constitutes a factor to restrict the socioeconomic development. Thus an urgent preparation of road networks is necessary.

Table-2:Comparison of road density in the entire national land of the Philippines and that in SZOPAD

	Total road length (km)	%	Land area (km^2)	%	Road density (km/km^2)
National	161,200	100	300,000	100	0.54
except SZOPAD	127,800	79	229,300	76	0.56
SZOPAD	33,400	21	70,700	24	0.47

Source:SPCPD, Department of Public Works and Highway(DPWH)

Compared with other areas in the Philippines, eight municipalities, which are the subject areas of this Project, are suffering from severe influences on the living of residents because the road situations are the worst among the roads in the SZOPAD where the road development is delayed. Because of the unprepared existing road networks or insufficient roads in these areas, local residents have difficulty in moving and causing many villages to be isolated. Needless to say about the ordinary movement such as going to school or commuting to office, the residents have difficulty in transporting emergency patients. In addition, lack of distribution of agricultural products hinders economical development, which causes most residents to belong the needy households. For these reasons, development of these municipalities constitutes an imminent subject to the government of the Philippines.

Table-3: Municipalities which are the subject areas of this Project

	Zone	Province	Municipality	Remark	proposed road length (km)
1	RegionIV	Palawan	Taytay	Christians	350.00
2	RegionIX	Zamboanga del Sur			
		Zamboanga del Norte			
		Basilan	Lamitan	Christians	120.75
3	RegionXI	Davao del Sur			
		South Cotabato	T'boli	Indigenous	457.00
		Sultan Kudarat	Kalamansig	Christians	274.00
		Sarangani			
4	RegionXII	Lanao del Norte			
		North Cotabato			
5	ARMM	Sulu	Maimbung	Muslims	102.00
		Tawi-Tawi	Languyan	Muslims	112.25
		Maguindanao	Upi	Muslims	520.00
		Lanao del Sur	Wao	Muslims	129.00

ARMM (Autonomous region of Muslim Mindanao)
Source:SPCPD

Each municipality has formulated the Local Road Preparation Plan to resolve the above mentioned problems under the insufficient and unprepared road situations as shown in Table 3. However, insufficient existing equipment and decrepit equipment in each municipality is constituting significant obstacles in implementing these plans.

Under these circumstances, the government of the Philippines requested the government of Japan for the grant aid to procure the equipment for road construction and maintenance.

Chapter 2 Contents of the Project

2-1 Objectives of the Project

This Project will be implemented in eight municipalities. By procuring the road construction and maintenance equipment necessary for the implementation of plan formulated by the Department of Interior and Local Government (DILG), SPCPD, and eight municipalities, this Project will improve the local roads of municipalities at the rate of an average of 50 km a year. By doing so, this Project intends to improve the living of the residents by enabling the smooth movement of residents in the community and the access to main cities and increase the income of farmers.

2-2 Basic Concept of the Project

The roads in the Philippines are broadly classified into the following four types:

1. National roads -> Department of Public Works and Highways (DPWH)
2. Provincial roads -> Provincial governments
3. Municipal roads -> Municipalities
4. Barangay roads -> Barangay

This Project will procure the road construction and maintenance equipment necessary for the preparation and improvement of municipal and Barangay roads in eight municipalities in accordance with the Local Road Preparation Plan formulated by each municipality.

The examination method of the equipment and the configuration and the number of the items of necessary equipment will be determined in accordance with the following concept.

<Examination method of the equipment>

The subject areas are broadly classified into four municipalities in the inland areas of Mindanao Island (including mountainous areas) and four municipalities in islands.

The contents of the equipment will be the same for all municipalities because the subject areas of this Project have similar meteorological and geographical conditions. Most of the existing roads in the subject areas are almost same being simple unpaved roads prepared only by cutting through jungles, the structures of planned roads (unpaved roads with the width of about 4 m) are almost same for all areas, and the equipment to be procured has the minimum necessary contents and numbers for the road construction work.

The specifications have been adjusted so that they would conform to the present road situations because the requested equipment is fairly large-scale equipment compared with the present situations of the roads in the Project areas of eight municipalities. Thus the specifications are prepared by referencing to the present road situations (such as the width or the allowable weight of

bridge), the structure of planned roads, the existing equipment in eight municipalities, the results of the delivery in Mindanao by the main manufacturers, and the standard of civil engineering calculation by the Ministry of Construction of Japan.

<Configuration and the number of necessary equipment>

The necessary equipment is classified into the equipment used for the construction and improvement of roads and the one for road maintenance in accordance with the objectives.

(1) The equipment used for the construction and improvement of roads

This type of equipment is used for the construction and improvement of the unpaved roads. The work process includes excavation, loading, transportation, correction of track, and compaction. Main equipment for each process is shown below.

1. Bulldozer (for excavation and dozing), 2. wheel loader (for loading), 3. dump truck (for transportation), 4. motor grader (for correction of tracks), and 5. vibratory roller (for compaction).

Other than these, 6. excavator (for excavation of side ditches and excavation), 7. trailer truck (for transportation of construction machines), and 8. surveying equipments will be used.

The work load of each equipment is shown in Table 4. The number of items in a cycle is estimated using the work load of vibratory roller which has the least working ability as the reference.

Table-4: Calculation method of production for each unit of equipment

	Equipment	Work amount per hour	Summary of values	Vibratory Roller is 1	Necessary units
1	Bulldozer 160-180HP 20ton	60×2.81×1×0.55/1.87 =49.6m³/h	2.81 : Production per cycle(m³) 1 : Grade factor 0.55 : Job efficiency 1.87 : Cycle time (in minute)	0.81	1
2	Wheel Loader 130-145HP 11ton	3,600×1.35×1.2×0.35/40 =51.0m³/h	1.35 : Production per cycle (m³) 1.2 : Grade factor 0.35 : Job efficiency 40 : Cycle time (sec)	0.78	1
3	Dump Truck 4-5m³	4×4=16m³/h	4 : Body volume (m³) 4 : Number of trip	2.50	3
4	Motor Grader 135HP	3.7×1800×0.1×0.5/8 =41.6m³/h	3.7 : Blade width (m) 1800 : Working speed (m/h) 0.1 : Grading depth (m) 0.5 : Job efficiency 8 : Average work frequency	0.96	1
5	Vibratory Roller 10ton	2000×2×0.1×0.5/5 =40.0m³/h	2000 : Working speed(m/h) 2 : Effective pressing width(m) 0.1 : Pressing thickness(m) 0.5 : Job efficiency 5 : Average work frequency	1.00	1

One each of 6. Excavator, 7. trailer truck, and 8. surveying equipment will be procured as the supplemental equipment in a cycle. The numbers of items for road construction and improvement equipment for each municipality are shown in Table 5.

Table-5: The numbers of items for road construction and improvement equipment

No.	Equipment	T'boli	Upi	Maimbung	Kalamansig	Wao	Lamitan	Languyan	Taytay	Total
1	Bulldozer	1	1	1	1	1	1	1	1	8
2	Wheel Loader	1	1	1	1	1	1	1	1	8
3	Dump Truck	3	3	3	3	3	3	3	3	24
4	Motor Grader	1	1	1	1	1	1	1	1	8
5	Vibratory Roller	1	1	1	1	1	1	1	1	8
6	Excavator	1	1	1	1	1	1	1	1	8
7	Trailer Truck	1	1	1	1	1	1	1	1	8
8	Surveying equipment	1	1	1	1	1	1	1	1	8

(2) Equipment used for the maintenance

Most of the existing roads are unpaved and have no drain ditch. Even with slight rain fall, roads are easy to be damaged and causes traffic to stop. However under the present situations, the residents are suffering severe damages because the damaged roads cannot be handled immediately due to lack of equipment. By considering the importance of daily and continuous implementation of maintenance works to the existing roads, one each of 1. bulldozer (for excavation and dozing), 3. dump truck (for transportation), and 4. motor grader (for correction of track) will be procured. By considering the road conditions and the priority of maintenance, the same type of road maintenance equipment will be procured as that of the road construction equipment. The numbers of the items for road maintenance equipment are shown in Table 6.

Table-6: The numbers of the items for road maintenance equipment

No.	Equipment	T'boli	Upi	Maimbung	Kalamansig	Wao	Lamitan	Languyan	Taytay	Total
1	Bulldozer	1	1	1	1	1	1	1	1	8
3	Dump Truck	1	1	1	1	1	1	1	1	8
4	Motor Grader	1	1	1	1	1	1	1	1	8

2-3 Basic Design

2-3-1 Design Concept

(1) Concept on the natural conditions

Because the average temperature and the precipitation of the Philippines in a year are high, the design will be made in accordance with the tropical specifications.

(2) Concept on the use of local contractor and equipment

In this Project, no local contractor will be used.

(3) Concept on the maintenance ability of the implementation agency

The equipment will be selected from the general use type so that the engineers of each municipality can easily maintain it. The agent of the manufacturers that delivers the equipment must explain the operation and maintenance method sufficiently.

(4) Concept on the type and the grade of the equipment

The specifications must be appropriate for the present situations by referencing to the road situations of each municipality (width, bridge and so on), the structures of planned roads, the existing equipment, and the past results of delivery in Mindanao by main manufacturers.

(5) Concept on the construction period

The equipment to be procured will be positioned in eight municipalities. It will take about one month for the equipment to be delivered from Japan to the main harbor of Mindanao. However because the equipment will be transported from the main harbor of Mindanao to each work site, smooth unloading and customs clearance are expected.

2-3-2 Basic Design

The main specifications, numbers of items, and the objectives to use on the equipment to be procured by this Project are shown in Table 7.

Table-7: Equipment plan

No.	Name of Equipment	Specifications	Purpose	Q'ty
1	Bulldozer	20ton Class, 160-180HP, Ripper, Straight tilt, ROPS Canopy	for road construction and maintenance	16
2	Wheel Loader	11-13ton, ROPSCanopy, STDBucket	for road construction	8
3	Dump Truck	Max.Payload 7ton class, 4×2, for mud,sand,gravel	for road construction and maintenance	32
4	Motor Grader	135HPClass, 3.7mBrade, ROPScanopy	for road construction and maintenance	16
5	Vibratory Roller	10ton Class, Canopy	for road construction	8
6	Excavator	10ton Class, STDHoe Bucket(0.46m3)	for road construction	8
7	Trailer Truck	Max.Payload 25ton , Low bed Type	for road construction	8
8	Theodolite	Digital Type, min.30 magnification, with accessory	for road construction	8
9	Auto Level	min.20 magnification, with accessory	for road construction	8

Specifications

(1) Bulldozers

By considering the necessity to pull out trees or the use of the equipment in the areas of soft ground or sharp hilly areas, the bulldozers must have the minimum weight of 20 tons and the power of 160 to 180 HP, and of tilt blade type that can cut into deep with the tips of the blades having different height for each blade to the level surface, which is most appropriate for the road construction. In order to reduce the number of times to bulldoze earth and to increase the work efficiency, the bulldozers must have rippers, and by considering the safety when they are overturned, they must be of ROPS canopy specifications

(2) Wheel loaders

By considering the road situations at site (such as the allowable weight of bridge and so on), the total weight of wheel loader must be less than 15 tons. In relation to the loading of dump trucks, the bucket capacity must be 1.6 to 1.8 m3. For the purpose of handling the loading of rocks or ballasts, wheel loaders must have general bucket teeth. In addition, by considering the safety when the wheel loaders are overturned, they must be of ROPS canopy specifications.

(3) Dump trucks

In consideration of the road situations at site (allowable weight of bridge and so on), the dump trucks must be of sand transportation type (4 x 2) with the total vehicle weight of less than 15 tons. The capacity of the load-carrying platform must be 4 to 5 m3 so that the three times of loading of a wheel loader used for the loading of sands can fill up a dump truck. The maximum loading capacity must be 6 to 7.5 tons because the specific gravity of sand per 1 m3 is about 1.5 tons. By considering the loading height of the wheel loader (about 2,600 mm), the height of load-carrying platform must

be examined.

(4) Motor graders

Since the width of the planned roads is about 4 to 5 m, the width of grader must be less than 2.5 m, the width of blade must be approximately 3.7 m, and the power of the motor must be 135 HP. By considering the safety when the graders are overturned, they must be of ROPS canopy specifications.

(5) Vibratory rollers

Since the width of the planned roads is about 4 to 5 m, the width of compaction must be approximately 2.5 m and the dead load must be 10 tons by considering the road situations at site (such as the allowable weight of bridge and so on).

(6) Excavators

By considering the soft ground, the excavators must be of crawler type. For the purpose of digging the side ditches, the excavators must be of hoe bucket specifications having the bucket width of less than 1 m and the bucket capacity of 0.4 to 0.5 m3.

(7) Trailer trucks

The trailer trucks must be the left hand drive type with semi-trailer specifications. The trucks must be those used for the transportation of construction machines with the maximum loadage of less than 25 tons.

(8) Surveying instruments

The minimum necessary surveying instruments will be procured including Theodolite and Auto level.

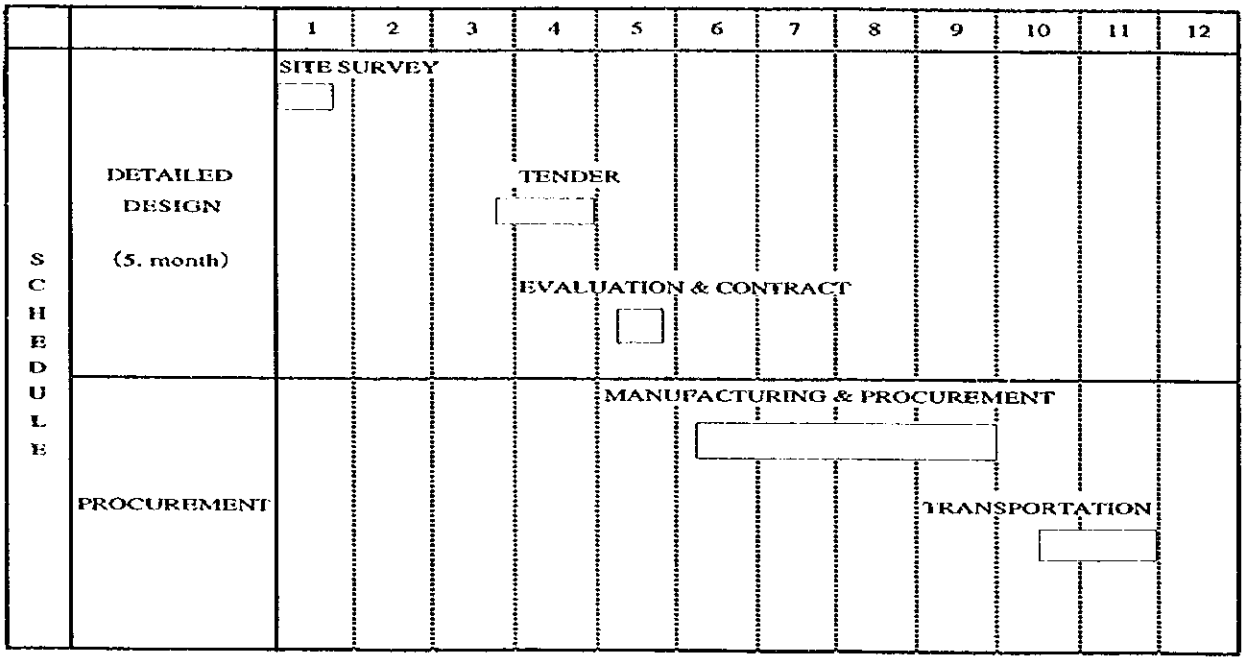
Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Schedule

The project will be implemented in a period of 11 months as detailed in table-8

Table-8: Project implementation schedule



3-1-2. Obligations of Recipient Country

The recipient country is required to take necessary measures as follows:

(1) Banking arrangements (B/A)

To open an account with an authorized foreign exchange bank in Japan and issue an A/P (authorization to pay). The recipient country will also bear fees related to these arrangements.

(2) To ensure prompt customs clearance of the equipment to be procured under the grant aid and bear expenses related to the domestic transport of these equipment.

(3) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Philippines with respect to the products and services provided under the verified contracts.

(4) To accord Japanese nationals, whose services are to be provided under the verified contracts, such facilities as may be necessary for their entry into Philippines and stay therein for the performance of their work.

(5) To properly and effectively maintain and operate the equipment to be procured under the grant aid and secure the necessary personnel for the implementation of the project. The recipient country will also bear all the expenses for maintenance and management needed for the implementation of the project other than those covered under the grant aid.

3-2 Operation and Maintenance Plan

The budget for the maintenance expenses of equipment necessary for the annual standard working hours which are expected to incur with the introduction of new equipment for this time can be calculated by referencing to the "Construction Machine Depreciation Manual" of Japan and considering the environment of the Philippines as approximately 2.7 million peso a year as shown in Table 9. The maintenance expenses shown below account for 6 to 26% of the annual budget of each municipality. However because each municipality is renting most of the equipment at present, the rent will to be reduced. In addition, the recipient country is planning to appropriate 20% of the internal revenue allotment and the Barangay allotment to the maintenance expenses of this Project as the budgetary measure, and the budgetary measure is considered to be securely conducted.

Table-9: Expenses for Maintenance and Management of Equipment

Expense Item	Amount (peso)
Management	327,300
Maintenance and repair	967,300
Personnel	436,400
Fuel	885,200
Oil	42,700
Total	2,658,900

* 3.3 Japanese yen / Philippine peso (as of January, 1998)

The method of calculating the expenses for the maintenance and management of the equipment is explained below.

(1) Management expenses

Management expenses consist of taxes and other levies, insurance premiums, garage maintenance expenses, record keeping expenses and other expenses associated with the maintenance of equipment. This amount is calculated by multiplying the basic price of each equipment by the annual maintenance cost factor (1%). Table 10 shows the breakdown of management expenses by the type of equipment.

Table 10: Breakdown of Management Expenses by Type of Equipment

(Unit : thousand peso)

Equipment	Basic Price	Annual maintenance cost factor	No. of units	Total
Bulldozer	7,270	1%	1	72.7
Wheel Loader	2,940	1%	1	29.4
Dump Truck	1,980	1%	3	59.4
Motor Grader	4,240	1%	1	42.4
Vibratory Roller	4,730	1%	1	47.3
Excavator	3,020	1%	1	30.2
Trailer Truck	4,610	1%	1	46.1
Grand Total	–	–	9	327.5

Notes: Basic price is the current standard value of the equipments manufactured using standard specifications. Annual maintenance cost factor is the percentage applied to the machines lent by the government free of charge.

(2) Maintenance and repair expenses

Maintenance and repair expenses are those expenses needed to keep the utility of the equipments other than operating expenses. These expenses have been calculated using the formula: (basic price x maintenance and repair cost factor x number of units - expenses for parts provided) ÷ 10 (service life is assumed to be 10 years). Table-11 shows the breakdown of maintenance and repair expenses.

Table-11: Breakdown of Maintenance and Repair Expenses

Equipment	Basic Price (Thousand peso)	Maintenance and repair cost factor (%)	No. of units	Expenses for parts provided (Thousand peso)	Service life (Years)	Total (Thousand peso)
Bulldozer	7,270	35	1	509	10	204
Wheel Loader	2,940	35	1	206	10	82
Dump Truck	1,980	50	3	416	10	255
Motor Grader	4,240	35	1	297	10	119
Vibratory Roller	4,730	30	1	331	10	109
Excavator	3,020	30	1	211	10	69
Trailer Truck	4,610	35	1	322	10	129
Grand Total	–	–	9	–	–	967

Notes: Maintenance and repair cost factor has been calculated in reference to the "Construction Machine Depreciation Manual" assuming that service life is 10 years. Expenses for part provided have been calculated in basic price multiply 7%.

(3) Personnel expenses

The project can be sufficiently implemented by the present engineers and mechanics, but the operators of the equipment must be supplemented. If a maximum of twelve operators are employed, the personal expenses will be:

¥3,030/month x 12 (operators) x 12 (months) = P436,320, which must be added.

(4) Fuel expenses

Fuel expenses have been calculated using the formula: fuel consumption x annual run time x number of units x diesel oil. Table-12 shows the breakdown of fuel consumption.

Table-12: Breakdown of Fuel Consumption

Equipment	Fuel consumption (liter / hour)	Annual run hours	No. of units	Annual fuel consumption (liters)
Bulldozer	16.5	1440	1	23,760
Wheel Loader	10.5	1440	1	15,120
Dump Truck	7.2	1440	3	31,104
Motor Grader	6.5	1440	1	9,360
Vibratory Roller	5.85	1440	1	8,424
Excavator	9.2	1440	1	13,248
Trailer Truck	11.0	1440	1	15,840
Grand Total	–	–	–	116,856
Calculation formula and expense amount	116,856liters ×7.6peso (unit price) =888,106peso			

(5) Oil expenses

Oil expenses include only engine oil and have been calculated using the formula: engine oil capacity x frequency of oil replacement x number of units x oil price per liter. Table-13 shows the breakdown of oil expenses.

Table-13: Breakdown of Oil Expenses

Equipment	Engine oil capacity (liter)	Frequency of replacement	No. of units	Total
Bulldozer	30	3	1	90
Wheel Loader	20	3	1	60
Dump Truck	20	2	3	120
Motor Grader	20	3	1	60
Vibratory Roller	20	2	1	40
Excavator	20	3	1	60
Trailer Truck	20	2	1	40
Total oil Quantity	-			470
Calculation formula and total oil quantity	470liters×90.9peso (Unit price) =42,723peso			

Chapter 4 Project Evaluation and Recommendation

4-1 Project Effect

(1) Verification method of aptness

Verification will be conducted based on the plan of T'boli municipality to which the site study was conducted. The road construction and improvement plan and the section of planned roads are shown in Table 14 and Figure 1.

Table-14: The road construction and improvement plan of T'boli (Unit : km)

Years	Road length (proposed)	Municipal road construction	Municipal road improvement	Barangay road construction	Barangay road improvement
1st	80	0	80	0	0
2nd	79	0	0	0	79
3rd	66	66	0	0	0
4th	56	0	0	56	0
5th	68	0	0	68	0
6th after	108	0	0	108	0
Total	457	66	80	232	79

Source: T'boli municipality

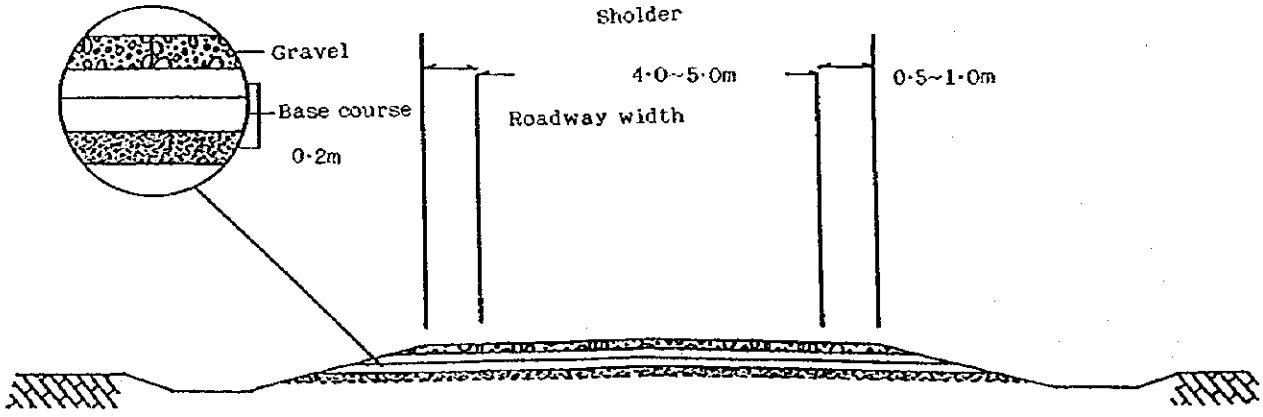


Fig-1: Sectional plan of proposed road

The estimated amount of soil to be hauled in a year will be calculated from the section of planned roads and compared with the work load of the equipment to be procured.

The estimated sectional area of road will be 1.2 m2 based on the road width of approximately 6 m including the shoulder and the base course thickness of 0.2 m. The standard working hours in a year are assumed as the average of twenty days a month, which makes 1,440 hours a year with the working hour of six hours a day. Based on the working ability of the vibratory roller, which has the

least working ability among the equipment in a cycle, of 40 m2/h, the working ability in a year can be calculated as follows: 40 m2/h x 1,440 hours = 57,600 m2

Dividing the result by the estimated sectional area of road, the road length can be calculated as follows: 57,600 m2 /1.2 m2 = 48,000 m

Thus a construction of about 50 km can be assumed possible with the equipment to be procured. From this estimation, approximately 250 km of roads will be prepared in five years, which will improve more than 50% of the planned roads in T'boli. The road construction and improvement plan (first 2-5years) of other municipalities except for T'boli are shown in Table-15.

Table-15 Plan of road construction and improvement in each municipality

(Unit : km)

Municipality	Upi	Maimbung	Kalamansig	Wao	Lamitan	Languyan	Taytay
Road construction	385.50	71.50	96.00	55.00	20.00	68.10	-
Road Improvement	134.50	30.50	178.00	74.00	100.75	44.15	-
Total	520.00	102.00	274.00	129.00	120.75	112.25	350.00

If this Project is implemented, the road networks of eight municipalities will be prepared with the procurement of road construction equipment. The effects expected from this Project can be summarized as follows:

(1) Access to the neighboring main cities and the movement within the community will become smooth, which will enable the transportation in going to school and commuting to office as well as the urgent situation of transporting emergency patients.

(2) If the roads from farmland to the market is prepared, farmers will be able to transport their products to the market at low price, which will increase the cash income to the farmers.

Implementation of this Project will promote the economical development of not only eight municipalities but the entire SZOPAD from long-term standpoint and is expected to contribute to the stabilization of peace in the area.

In addition, it was confirmed by the Philippines side that the equipment to be procured by this Project would be able to be operated by the government of Philippines itself because sufficient budgetary measures for the necessary expenses for the maintenance and operation of the equipment is possible and there is no problem in securing the staffs. From the above mentioned reasons, this Project is determined apt as the grant aid cooperation of Japan.

4-2 Recommendation

Because with the implementation of this Project, enormous effects such as mentioned above can be expected, as well as this Project will contribute to the improvement of the basic human needs (BHN) of the residents, the aptness to implement this Project under the grant aid cooperation is

determined high. However if the following points can be improved or prepared, this Project could be implemented more smoothly and effectively.

(1) The SPCPD and eight municipalities will conduct by themselves or under the cooperation of manufacturers the instruction of operation on the proper use of the equipment and the technical instruction on the maintenance of the equipment to the engineers of municipalities.

(2) Operation and maintenance of the equipment will be conducted by each municipality, but a steering committee will be established for the proper operation and management of the equipment to conduct regular monitoring of the equipment and submit reports.

1.Member List of the Survey Team

1 Akira Nakamura
Leader
Philippine Office
Japan International Cooperation Agency

2. Tomisaku Hirano
Equipment Planner
Grant Aid Management Department
Japan International Corporation System

3. Masahiro Tanaka
Procurement Planner
Grant Aid Management Department
Japan International Corporation System

2. Survey Schedule

No.	Date		Mr.NAKAMURA	Mr.HIRANO Mr.TANAKA	Stay
1	Jan.12	Mon.	[redacted]	Narita→(JL741)→Manila, Courtesy call to JICA office	Manila
2	Jan.13	Tue.	Courtesy call to DILG and SPCPD		Manila
3	Jan.14	Wed.	Team Meeting		Manila
4	Jan.15	Thu.	Manila(PR453)→General Santos, Discussion with DILG,SPCPD,Municiparity		General Santos
5	Jan.16	Fri.	Discussion with DILG,SPCPD, Municiparity		General Santos
6	Jan.17	Sat.	General Santos (PR454)→Manila	Discussion with SPCPD	General Santos
7	Jan.18	Sun.	[redacted]	Team Meeting	General Santos
8	Jan.19	Mon.	[redacted]	Market Survey in Davao	General Santos
9	Jan.20	Tue.	[redacted]	Site Survey (T'boli in South Cotabato)	General Santos
10	Jan.21	Wed.	[redacted]	Site Survey (T'boli in South Cotabato)	General Santos
11	Jan.22	Thu.	[redacted]	Market Survey in General Santos	General Santos
12	Jan.23	Fri.	[redacted]	Market Survey in General Santos	General Santos
13	Jan.24	Sat.	[redacted]	General Santos (CD883)→ Zamboanga	Zamboanga
14	Jan.25	Sun.	Manila(PR453)→Zamboanga	Team Meeting	Zamboanga
15	Jan.26	Mon.	Zamboanga(PR493)→TawiTawi, Site Survey		Languyan
16	Jan.27	Tue.	TawiTawi (PR494)→Zamboanga(PR128)→Manila		Manila
17	Jan.28	Wed.	Discussion with DILG,SPCPD		Manila
18	Jan.29	Thu.	Discussion with Taytay mayor, Signing of Minutes		Manila
19	Jan.30	Fri.	Report to JICA office		Manila
20	Jan.31	Sat.		Manila(JL742)→Narita	

3. List of Party Concerned in the Recipient Country

1) DILG		
	Mr.Manuel R.Sanchez	Undersecretary
	Mr.Roland M.Acosta	Director
2) SPCPD	Mr.Nur Misuari	Chairman
	Mr.Mai Tuan	Deputy Chairman
	Mr.Edmundo T Lim	Adviser on Economic Affairs
	Ms.Majal Aguirre	Project officer
	Mr.Atanasio Vercide	CA member (General Santos)
	Mr.Felix V. Rosario	CA member((Zamboanga)
3) NEDA	Ms.C.Santiago	
4) Municipality (Mayor)	Ms.Rosalita Nunez	General Santos City
	Mr.Dad D.Tuan	T'boli
	Ms.Remedios Gaalutera Guiab	Wao
	Mr.Michael P. Sinsuat	Upi
	Mr.Inocentes J. Ramos	Lamitan
	Mr.Abduhasan I. Sali	Languyan
	Mr.Meinardo E.Concha	Kalamansig
	Ms.Evelyn V. Rodriguez	TayTay

MINUTES OF DISCUSSIONS
THE STUDY
ON
THE SZOPAD MUNICIPAL ROAD BUILDING PROJECT
IN
THE REPUBLIC OF THE PHILIPPINES

In response to the request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct a study on the SZOPAD Municipal Road Building Project (herein after referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Republic of the Philippines a study team (herein after referred to as "the Team") which is headed by Mr.Akira NAKAMURA, Assistant Resident Representative, JICA Philippines office from January 12 to January 31,1998.

The team held discussions with the officials concerned with the Project and conducted field surveys at the study area.

In the course of discussions and field surveys, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and prepare the study report

Manila, January 29, 1998

Akira NAKAMURA
Study Team Leader
JICA

Manuel Sanchez
Under Secretary
DILG

for Reverend Absalom Cerveza
Deputy Chairman
SPCPD

ATTACHMENT

1.Objective

The objective of the Project is to develop the Municipal and Barangay roads thereby improving the delivery of basic human needs and economic well-being of the SZOPAD rural population.

2.Project Sites

The sites of the Project are eight (8) municipalities in the SZOPAD area shown in Annex- I .

1. T'boli, South Cotabato (RegionXI)
2. Upi, Maguindanao (ARMM)
3. Maimbung, Sulu (ARMM)
4. Kalamansig, Sultan Kudarat (RegionXII)
5. Wao, Lanao del Sur (ARMM)
6. Lamitan Basilan (RegionIX)
7. Languyan, Tawi-Tawi (ARMM)
8. Taytay, Palawan (RegionIV)

3.Responsible and Implementing Agencies

(1) Responsible Agency is the Department of Interior and Local Government (DILG).

(2) Coordinating Agency is the Southern Philippines Council for Peace and Development (SPCPD).

(3) Implementing Agencies are the Eight (8) Municipalities. (See Annex II .)

4.Items requested by the Government of the Republic of the Philippines

After discussions with the Team, the items shown in Annex-III were requested by the Philippines side. However, the final components of the Project will be decided after further studies.

5.Japan's Grant Aid system

(1) The Government of the Republic of the Philippines has understood the system of Japanese Grant Aid (Annex-IV) as explained by the team.

(2) The Government of the Republic of the Philippines will take the necessary measures, described in Annex- V , for smooth implementation of the Project on the condition that the Government of Japan's Grant Aid is extended to the Project.

6.Schedule of the study

Based on the result of the study, JICA will finalize the study report and send it to the Government of the Republic of the Philippines by the end of March, 1998.

7.Other Relevant Issues

(1) Banking Arrangement (B/A) will be arranged by DILG.
N.B.: The commission for B/A will be shouldered by LGU.

(2) JICA will recommend a Japanese consulting firm to the Philippine side for the implementation of the Project.

(3) DILG will finalize the contract with JICA's recommended consultant.

(4) DILG will conduct the tendering and contracting for supplier.

(5) DILG will organize the Project Steering Committee(PSC) that will monitor the progress of the Project. The PSC will consist of DILG as chairman, SPCPD, NEDA and JICA as members.

(6) The Operation and Maintenance(O/M) of the equipment will be managed by each municipality, The budget for O/M and the equipment of road construction will be allocated from municipal and barangay development fund, as well as from other funded sources with high priority.

(7) All local costs including storage, internal transportation and custom duties shall be the responsibility of each municipality. Eight(8) municipalities have already concluded the resolution for the said matter.

(8) The Japanese side explained that based on Japan's Grant Aid Policy, the municipalities are not allowed to lease the equipment to private firms for the purpose of profit generation.

(9) The municipalities shall secure a garage space for the equipment and the storage of spare parts prior to the arrival of the equipment.

(10) Each municipality shall assign the necessary personnel for O/M and create the Municipal Project Management Committee (MPMC) for effective and efficient operation and management. MPMC will report the status of the Project to the Project Monitoring Coordinating Unit (PMCU), which will be created by the PSC with personnel assignment from DILG, NEDA, SPCPD and the municipalities. The operation of PMCU shall be funded from the contribution of all municipalities. PMCU will be based in General Santos City, South Cotabato.

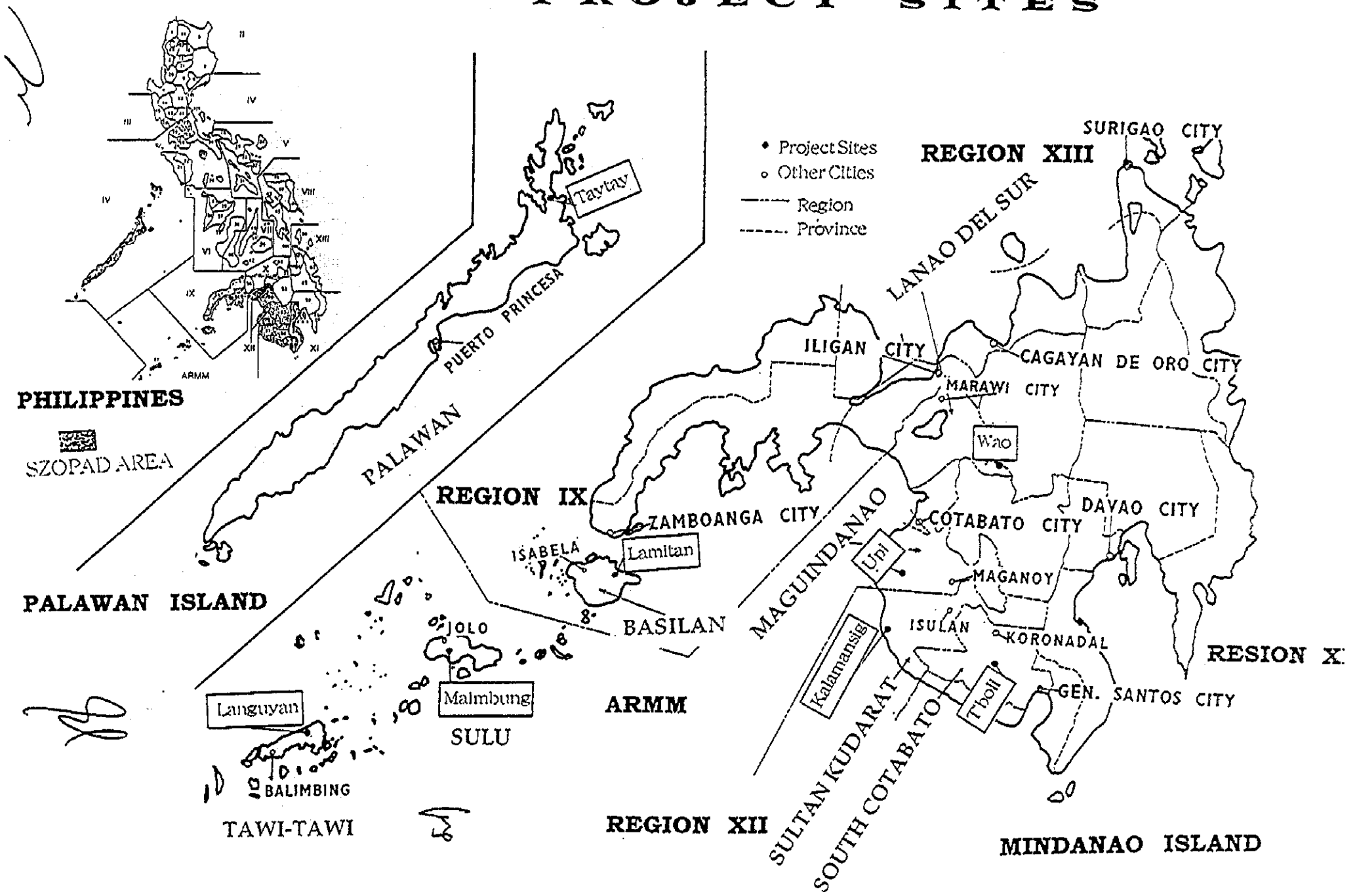
(11) The Japanese side requested the municipalities to submit a detailed road development plan for five(5) years to JICA by the end of February.

(12) The Philippine side requested that the equipment be unloaded at the nearest international port from each municipality as follows.

Location of international port		Municipality
General Santos	→	T'boli, Upi, Kalamansig
Zamboanga	→	Lamitan, Maimbung, Languyan
Manila	→	TayTay
Cagayan de Oro	→	Wao

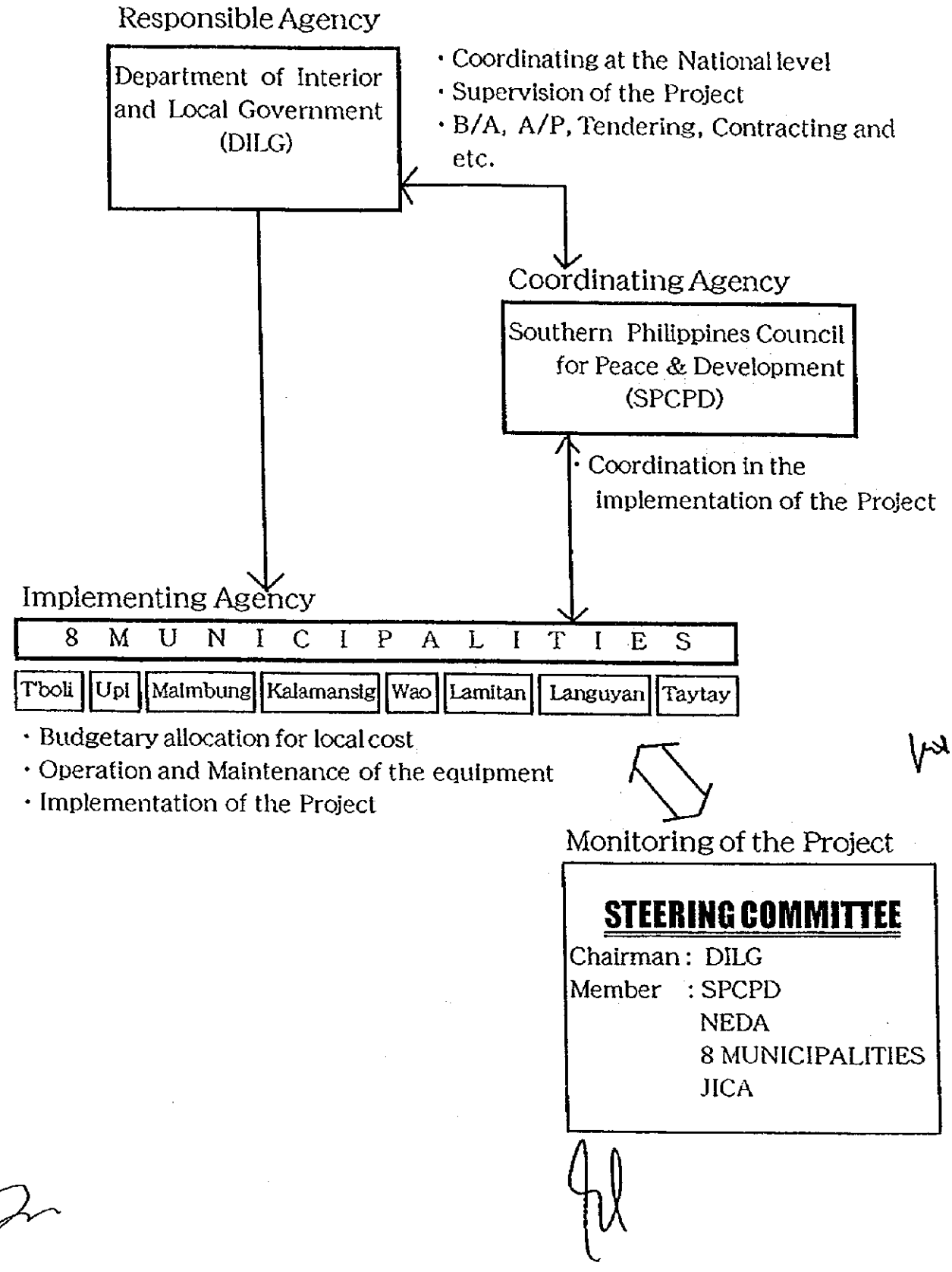
ANNEX I

PROJECT SITES



ANNEX II

Responsible and Implementing Organization



ANNEX-III

Items Requested by the Government of Republic of Philippines

(units)

	Municipality / Description	T'boli	Upi	Maimbung	Kalamansig	Wao	Lamitan	Languyan	Taytay	
1	Bulldozer, 160-180HP	*2	*2	*2	*2	*2	*2	*2	*2	*16
2	Wheel Loader, 110-130HP	1	1	1	1	1	1	1	1	8
3	Dump Truck, 4-6cub	*4	*4	*4	*4	*4	*4	*4	*4	*32
4	Motor Grader, 135 HP	*2	*2	*2	*2	*2	*2	*2	*2	*16
5	Vibration Roller, 10 Ton	1	1	1	1	1	1	1	1	8
6	Excavator 0.4-0.5m3	1	1	1	1	1	1	1	1	8
7	Low-bed Trailer with Loading weight 25 Ton	1	1	1	1	1	1	1	1	8
8	Surveying equipment	1	1	1	1	1	1	1	1	8
	Total	13	13	13	13	13	13	13	13	104

Notes) Priority A → 1st priority
Priority B → 2nd priority
Item No.1(Bulldozer);1 unit is priority A and other 1 unit is priority B
Item No.3(Dump truck);3 units are priority A and other 1 unit is priority B
Item No.4(Moter Grader);1unit is priority A and other 1 unit is priority B
Item No.2,5,6,7,8 are all priority A

ANNEX-IV

Japan's Grant Aid Scheme

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 Governments 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 Governments 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 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 the 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 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 the smooth implementation of the study, JICA uses (a) registered consultant firm(s). JICA selects (a) firms(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.

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, 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:

(1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.

(2) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.

(3) To secure buildings prior to the procurement in case the installation of the equipment.

(4) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.

(5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.

(6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

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

(8) "Re-export"
The products purchased under the Grant Aid should not be re-exported from the recipient country.

(9) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in 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.

b) 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.

Annex- V

Measures to be taken by the Government of the Republic of the Philippines when Japan's Grant Aid is extended.

1.Bear commissions to the Japanese foreign exchange bank for the execution of the banking services based upon the banking arrangement.

2.Ensure prompt unloading and custom clearances at port of disembarkation in the Republic of the Philippines and to facilitate the internal transportation of the products.

3.Ensure and bear the expense of the custom clearances at the port, inland transportation from the port to each municipality , as well as the cost for bonded storage at the port.

4.Exempt the Project's Japanese nationals from custom duties, internal taxes and other fiscal levies which may be imposed in the Republic of the Philippines with respect to the supply of the products and services under the verified contracts, and to take the necessary measures for such tax exemptions.

5.Accord Japanese nationals, whose services may be required in connection with the supply of products and services under the verified contracts, such facilities as may be necessary for their entry into the Republic of the Philippines and stay therein for the performance of their work.

6.Use and maintain properly and effectively all the equipment purchased under the Grant.

7.Bear all the expenses other than those covered by the Grant, necessary for the execution of the Project.

8.Provide necessary data and information for the execution of the project.

9.Assign the exclusive counterpart engineers and technicians for the Project.