

APPENDIX 2

MINUTES OF DISCUSSION

2-1. BASIC DESIGN STUDY IN THE PHILIPPINES

2-2. EXPLANATION AND DISCUSSION FOR THE DRAFT FINAL REPORT



BASIC DESIGN TEAM IN THE PHILIPPINES

MINUTES OF DISCUSSIONS  
OF  
THE BASIC DESIGN ON THE PROJECT FOR  
CONSTRUCTING BRIDGES ALONG RURAL ROADS (PHASE III)  
IN  
THE REPUBLIC OF THE PHILIPPINES

In response to the request by the Government of the Republic of the Philippines, the Government of Japan decided to conduct a basic design study on the project for constructing bridges along rural roads (Phase III) in the Philippines (hereinafter referred to as "the Project". The Japan International Cooperation Agency (JICA) sent the Basic Design Study Team headed by Mr. Michio Okahara, Chief of Foundation Engineering Division, Structure and Bridge Department, Public Works Research Institute, Ministry of Construction, from November 19 to December 29, 1989.

The Japanese Team held a series of discussions and exchanged views on the Project with the authorities concerned of the Government of the Philippines.

As a result of the study and discussions, both parties mutually agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined toward the realization of the Project.

November 28, 1989



MICHIO OKAHARA

Leader

Basic Design Study Team



TEODORO T. ENCARNACION

Undersecretary

Dept. of Public Works & Highways

Attachment

1. The scope of the Japan's Grant Aid for the Project (Phase III) is as follows.

- 1.1 Steel materials supply

To provide steel materials necessary for constructing bridges (Group I) listed in Annex I.

Steel materials consist of:

1. Steel Girder
2. Cross Beam
3. Shoe
4. Drainage Box
5. Torque Wrench

- 1.2 Construction of Bridges

To construct bridges (Group II) listed in Annex II.

2. The project sites of the bridges are as shown in the map of Annex II.
3. The Government agency in the Philippines responsible for implementation of the Project is the Department of Public Works Highways.
4. The Philippines side has understood the system of the Japan's Grant and the necessity of engaging the services of a Japanese consulting firm for the implementation of the Project.
5. The Government of the Philippines will undertake to provide necessary measures as listed in Annex IV on condition that Japan's Grant is extended to the Project.
6. The Government of the Philippines will provide the necessary budget and personnel for the proper and effective maintenance of the bridges to be constructed under the Japan's Grant Aid.
7. The Government of the Philippines assured that all bridges under Phase III will be completed by May 1990.
8. The Government of the Philippines has requested the Study Team to convey the desire for the realization of Parua Bridge.



## ANNEX I LIST OF BRIDGES (GROUP I) 1/3

Bridge No.	Name of Bridges	Location
03.01	Pangulisanin Bridge	Km. 149 + 910 Cabacaban Road Cabcaban, Mariveles, Bataan
03.04	Tigbe Bridge	Km. 77 + 520 Tigbe Barangay Road Norzagaray, Bulacan
03.06	Balasing Bridge	Km. 39 + 850 Balasing-Tigbe Brgy. Road Bulacan
03.08	Pias Bridge	Km. 90 + 470 Porac-Pias-Ebos Road Porac, Pampanga
03.11	Pulo Bridge	Km. 85 + 925 Sta. Catalina-Pulong Bayu Road Lubao, Pampanga
03.18	Sindol Bridge	Km. 172 + 350 Barangay-Sindol Road San Felipe, Zambales
04.01a	San Juan Bridge	Km. 25 + 500 Cavite-Zapote Road San Juan, Cavite
04.02a	Tabon-Batong Bridge	Km. 22 + 500 Cavite-Zapote Road Kawit, Cavite
04.04a	Caglate Bridge	Km. 027 + 180 Quezon-Alabat Perez Road Alabat, Quezon
04.06a	Buenavista Bridge	Km. 016 + 250 Quezon-Alabat-Perez Road Alabat, Quezon
04.09a	Isabang Bridge	Km. 127 + 399 MSR-Isabang-Rocohan-Domoit Lucena Diversion Road Lucena City, Quezon

ANNEX I LIST OF BRIDGES (GROUP I) 2/3

No.	Bridge No.	Name of Bridges	Location
12	04.10a	Pansipit Bridge	Km. 131 + 140 San Nicolas-Agoncillo and Vice Versa Brgy. Pansipit, Batangas
13	04.11a	San Diego Bridge	Km. 103 + 109.75 Nasugbu-Tagaytay Road Lian, Batangas
14	04.13a	Bagong Pook Bridge	Km. 95 + 90 Nasugbu-Tagaytay Road Bagong Pook, Lian Batangas
15	04.16a	Pingit Bridge	Km. 234 + 809 Baler-Baler Port Road Baler, Aurora
16	04.17a	Salay Bridge	Km. 238 + 108 Dipaculao-Aurora Road Brgy. Salay, Dipaculao Aurora
17	04.18a	Mijares Bridge	Km. 247 + 435 Baler-Casiguran Road Brgy. Mijares, Dipaculao Aurora
18	04.19a	Palayan Bridge	Km. 89 + 700 Calauan-Nagcarlan Road Nagcarlan, Laguna
19	04.21a	Tarak Bridge	Km. 85 + 144 San Pablo-Sta. Monica- Sta. Veronica Road Sta. Veronica, San Pablo City, Laguna
20	04.22a	Sto. Nino Bridge	Km. 0 + 550 Jct. City Road - Pinagbatan Road Brgy. Sto. Nino, Cainta, Rizal
21	04.23a	Del Pilar Bridge	Km. 0 + 100 Jct. Sumulong Highway - Del Pilar Jct. Road Del Pilar Ext., Antipolo, Rizal

ANNEX I LIST OF BRIDGES (GROUP I) 3/3

No.	Bridge No.	Name of Bridges	Location
22	04.03b	Maruyugon Bridge	Km. 50 + 320.50 Puerto Princesa North Road Brgy. Maruyugan, Puerto Princesa City, Palawan
23	04.04b	Dakoton Bridge	Km. 62 + 761.50 Puerto Princesa North Road Brgy. Babuyan, Puerto Princesa City, Palawan
24	04.06b	Madalag Bridge	Km. 34 + 900 Looc-Alcantara Road Madalag, Alcantara, Romblon
25	04.08b	Panique Bridge	Km. 8 + 000 San Andres-Odiongan Road Panique, Odiongan, Romblon
26	04.09b	Maranlig Bridge	Km. 56 + 637.80 Torrijos-Sibuyao Road Maranlig-Torrijos, Marinduque
27	04.10b-1	Daykitin Bridge	Km. 94 + 233 Buenvista-Gasan Road Daykitin, Buenvista Marinduque

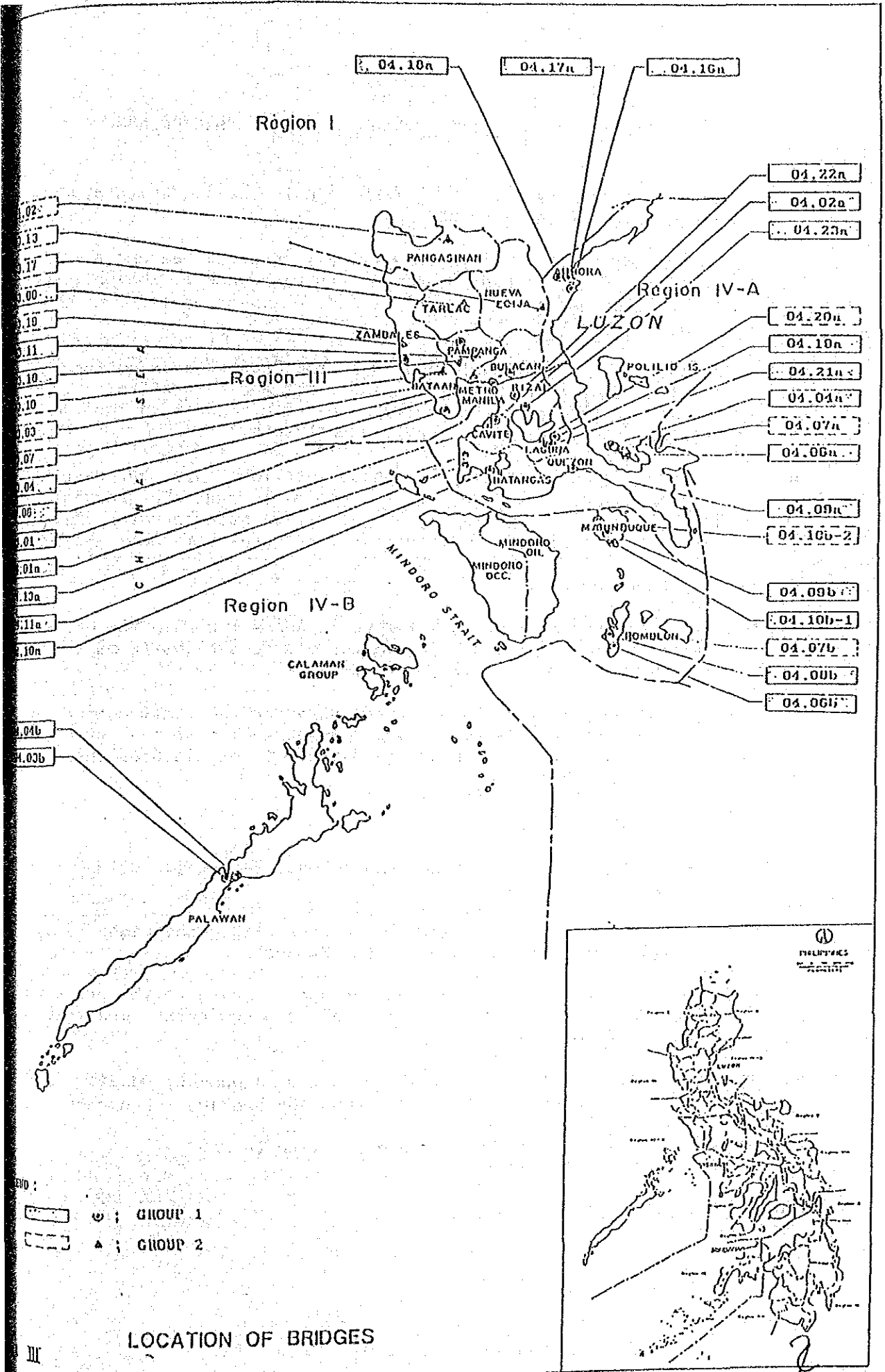
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ANNEX II LIST OF BRIDGES (GROUP II) 1/1

No.	Bridge No.	Name of Bridges	Location
1	01.02	Maphilindo Bridge	Km. 220 + 900 Biec-Lomboy Road Binmaley, Pangasinan
2	03.03	Bacong Bridge	Km. 105 + 360 Luacan-Bacong Road Bacong, Bataan
3	03.07	San Roque Bridge	Km. 57 + 284 San Roque Barangay Road Hagonoy, Bulacan
4	03.10	Dolores Bridge	Km. 076 + 870 Dolores-Del Rosario Road Dolores, Bacolor, Pampanga
5	03.13	Mangkuyog Bridge	Km. 169 + 000 Camachile-Bantug Road Nueva Ecija
6	03.17	Sula Bridge	Km. 150 + 000 Tarlac-Sula Road Sula, Tarlac, Tarlac
7	03.19	Laoag Bridge	Km. 177 + 722 Maloma-Laoag Road San Felipe, Zambales
8	04.07a	Camagong Bridge	Km. 023 + 700 Quezon-Alabat Perez Road Alabat, Quezon
9	04.20a	Paragusan Bridge	Km. 91 + 084 San Pablo-San Isidro Road San Isidro, San Pablo City Laguna
10	04.07b	Tan-Agan Bridge	Km. 11 + 100 Odiongán-San Andres Road Tan-Agan, San Andres Romblon
11	04.10b-2	Ihatub Bridge	Km. 116 + 832.85 Boac-Gasan Road Ihatub, Boac, Marinduque





(O) ; GROUP 1  
 (A) ; GROUP 2

LOCATION OF BRIDGES

Annex IV

UNDERTAKINGS BY THE GOVERNMENT OF THE PHILIPPINES

1. To provide necessary data and information for basic design study and implementation of the Project.
2. To ensure the exemption of custom duties, internal tax and other fiscal levies and prompt unloading and customs clearance at the port of entry in the Philippines of the materials and equipment provided under Japan's Grant Aid.
3. To exempt Japanese national engaged in the Project from customs duties, internal tax, other fiscal levies and other administrative requirements which may be imposed in the Philippines with respect to the supply of material and services under verified contracts.
4. To accord Japanese nationals whose services may be required in connection with the supply of the materials and the services under verified contracts such facilities as may be necessary for their entry into the Philippines and stay therein for the execution of the Project.
5. Bridges under Group I
  - 5.1 To construct the bridges listed in Annex I within the period of one year after delivery of steel materials at designated port of entry provided under the Japan's Grant Aid.
  - 5.2 To ensure all the expenses necessary for the construction of bridges as well as for inland transportation of the bridge steel materials provided under the Japan's Grant Aid from the port of entry to each bridge site.
6. Bridges under Group II
  - 6.1 To acquire the right-of-way and to provide necessary land area for the construction works.
  - 6.2 To demolish obstacles including houses within the right-of-way that affects the implementation of the Project.
  - 6.3 To make passable all roads and bridges leading to the project site for the transportation of materials and equipment provided under Japan's Grant Aid.
7. To bear the following commissions to the Japanese foreign exchange bank/for the banking services based upon the Banking Arrangement.
  - Advising commission of Authorization to Pay
  - Payment commission

EXPLANATION AND DISCUSSION FOR THE DRAFT FINAL REPORT

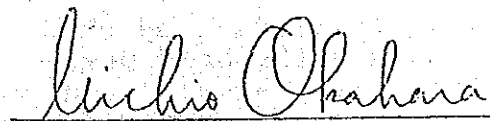
MINUTES OF DISCUSSIONS  
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In response to the request by the Government of the Republic of the Philippines, the Government of Japan decided to conduct a basic design study on the project for constructing bridges along rural roads (Phase III) (hereinafter referred to as the "Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent the Basic Design Study Team headed by Mr. Michio Okahara, Chief of Foundation Engineering Division, Structure and Bridge Department, Public Works Research Institute, Ministry of Construction, from December 19 to 31, 1989.

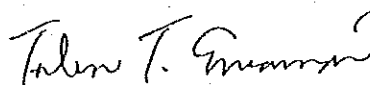
Based on the study, JICA prepared a Draft Final Report and dispatched a team headed by Mr. Michio Okahara, to explain and discuss it with the officials concerned of the Government of the Republic of the Philippines from March 1 to 8, 1990.

As a result of the discussions and clarification on the contents of the draft Final Report, both parties agreed to commend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined and pursued towards the realization of the Project.

Manila, March 6, 1990.

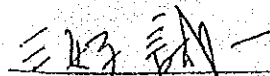


MICHIO OKAHARA  
Leader  
Basic Design Study Team

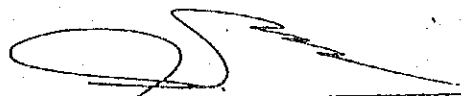


TEODORO T. ENCARNACION  
Undersecretary  
Dept. of Public Works and  
Highways

WITNESSED BY:



SEIICHI MIYOSHI  
Mission Member



MANUEL M. BONOAN  
Asst. Secretary for Planning  
Dept. of Public Works and  
Highways

ATTACHMENT

1. The Philippine side has agreed to the basic design proposed in the Draft Final Report.
2. The Philippine side has understood Japan's Grant Aid System and reconfirmed the necessary measures to be taken by the Government of the Philippines as agreed in the "Minutes of Discussions" on the Project signed on November 28, 1989, on condition that the Grant Aid from the Government of Japan will be extended to the Project.
3. The Philippine side has confirmed that necessary budget and personnel will be appropriately allocated and assigned for proper and effective maintenance of the bridge constructed under the Grant Aid.
4. Bearing in mind the problems of implementation of construction works of Phase I, the Philippines side will especially give due consideration to the matter of detailed engineering, tender process, selection of contractors, repair/maintenance of bridges/roads leading to construction sites, acquisition of right of way, construction supervision, etc. so to ensure the completion of bridges under Group I of Phase III within one (1) year after delivery of the steel materials for the bridges at the designated ports of entry into the Philippines.

The Philippines side will periodically furnish the JICA with reports on the progress and status of the implementation of the projects under Group I.

In those cases where some of bridges will be expected to fail to meet the completion within the said period, the Philippine side will inform JICA about said delay clarifying reasons therefor, together with a revised completion date and corrective measures to minimize such delay.

5. The DPWH is responsible for storing properly the steel materials of Group I bridges supplied under the Grant Aid in appropriate places with necessary protection such as:
  - a. Security fence
  - b. Shelters
  - c. Warehouse
  - d. Temporary house for watchmen
6. The DPWH has agreed to secure proper right of way to provide necessary land area for the construction work and to remove and transfer obstacles such as houses and electricity poles, etc.

7. The present status of construction of Phase I bridges are confirmed as follows:

a) Completed/On Schedule (16 Bridges)  
Projects No. 02.03, 02.04, 04.07b, 04.08b, 05.02,  
06.02, 06.04, 08.05, 09.01, 10.02, 10.03, 10.04,  
10.05, 11.01, 11.03, 12.03

b) On-going (3 bridges)

Under Construction of Substructures (3 bridges)  
Projects No. 09.02, 09.03, 09.04

Under Construction by DPWH Administration (3 bridges)  
Projects No. 07.03, 07.04, 07.05

Under pile driving (2 bridges)  
Projects No. 08.01, 08.02

After intensive discussions with Regional Directors and Project Officers concerned and scrutiny of the programs of work as well as setting of realistic targets for project completion, the Philippine side is unequivocally committed to making utmost efforts to complete all the on-going bridges under Phase I by the end of May 1990, except for Projects No. 08.01, 08.02 and 09.03 which will be finished by end of July 1990.

8. The Final Report (15 copies in English) on the Project will be submitted to the Philippine side within April 1990.



**APPENDIX 3**

- 3-1 ORIGINAL LIST OF PROPOSED BRIDGES**
- 3-2 REVISED LIST OF PROPOSED BRIDGES**
- 3-3 LETTER OF REQUEST FOR DELETION (ONE BRIDGE)**





3-1 ORIGINAL LIST OF PROPOSED BRIDGES

## LIST OF BRIDGES FOR PHASES III

(1/8)

Bridge No.	Name of Bridges	Location	Group
01.01	Sobol Bridge	Km. 225 + 600 Sobol-San Fabian Road San Fabian, Pangasinan	Group
01.02	Maphilindo Bridge	Km. 201 + 300 Biec-Lomboy Road Binmaley, Pangasinan	Group
03.01	Pangulisanin Bridge	Km. 149 + 899 Jct. Layac-Bal.-Mariveles Road Cabcaban, Mariveles, Bataan	Group
03.02	Aeta-Kinarangan Bridge	Km. 143 + 654 Aeta-Kinarangan Road Limay, Bataan	Group
03.03	Mariveles Bridge	Km. 164 + 420 Mariveles-Epza Road Mariveles, Bataan	Group
03.04	Tigbe Bridge	Km. 53 + 000 Norzagaray-Tigbe Provincial Road Norzagaray, Bulacan	Group
03.05	Dagat-Dagatan Bridge	Km. 55 + 000 San Rafael-Bustos Road San Rafael, Bulacan	Group

## LIST OF BRIDGES FOR PHASES III

(2/8)

Bridge No.	Name of Bridges	Location	Grouping
0.06	Sta. Ana Bridge	Km. 35 + 000 Bulacan-Paombong Road Sta. Ana, Bulacan	Group-1
0.07	San Roque Bridge	Km. 55 + 000, Hagonoy-Paombong Road Hagonoy, Bulacan	Group-2
0.08	Plas Bridge	Km. 50 + 000 Plas-Ebos Road Porac, Pampanga	Group-1
0.09	San Miguel-San Simon Bridge	Km. 61 + 000 San Luis-Baliwag Road San Simon, Pampanga	Group-2
0.10	Talba Bridge	Km. 076 + 150 Bacolor - Sto. Tomas - Minalin Road Bacoor, Pampanga	Group-2
0.11	Pulo Bridge	Km. 85 + 000 Sta. Catalina-Sapang Bayu Road Lubao, Pampanga	Group-1
0.12	Nabao Bridge	Km. 167 + 000 Bantug-Poblacion Road Gabaldon, Nueva Ecija	Group-1

## LIST OF BRIDGES FOR PHASES III

(3/8)

Bridge No.	Name of Bridge	Location	Group
03.13	Mangkuyog Bridge	Km. 169 + 000 Camachile-Bantug Road Gabaldon, Nueva Ecija	Group
03.14	Barangobong Bridge	Km. 152 + 585 Paniqui-Camiling Road Paniqui, Tarlac	Group
03.15	Paura Bridge	Km. 126 + 650 Sta. Rita-San Antonio Road Concepcion, Tarlac	Group
03.16	Iba Bridge	Km. 121 + 104 Iba-Botolan Road Iba, Tarlac	Group
03.17	Sula Bridge	Km. 143 + 104 Tarlac-Sula Road Sula, Tarlac, Tarlac	Group
03.18	Sindol Bridge	Km. 172 + 350 San Felipe-Sindol Road San Felipe, Zambales	Group
03.19	Laoag Bridge	Km. 177 + 722 San Felipe-Laoag Road San Felipe, Zambales	Group

## LIST OF BRIDGES FOR PHASES III

(4/8)

Bridge No.	Name of Bridges	Location	Grouping
4.01a	San Juan Bridge	Km. 26 + 020 San Juan Brgy. Road San Juan, Cavite	Group-1
4.02a	Tabon-Batong Bridge	Km. 24 + 800 Tabon via Cavite-Zapote Road Kawit, Cavite	Group-1
4.03a	Paurungan Bridge	Km. 029 + 110 Zapote-Zalawag-Salitran Road Dasmariñas, Cavite	Group-2
4.04a	Caglate Bridge	Km. 027 + 180 Quezon - Alabat Perez Road Alabat, Quezon	Group-1
4.05a	Balik-Balik Bridge	Km. 032 + 100 Quezon - Alabat Perez Road Perez, Quezon	Group-1
4.06a	Buenavista Bridge	Km. 016 + 250 Quezon - Alabat - Perez Road Alabat, Quezon	Group-1
4.07a	Camagong Bridge	Km. 023 + 700 Quezon-Alabat Perez Road Alabat, Quezon	Group-1

## LIST OF BRIDGES FOR PHASES III

(5/8)

Bridge No.	Name of Bridges	Location	Group
04.08a	Market View Bridge	Km. 136 + 800 Jct. Juarez Street-Market View Road Brgy. Market View, Lucena City	Group
04.09a	Isabang Bridge	Km. 126 + 450 Jct. Manila South Road-Talim Road Brgy. Isabang, Lucena City	Group
04.10a	Pansipit Bridge	Km. 136 + 475 San Nicolas- Agoncillo Road Brgy. Pansipit, Batangas	Group
04.11a	San Diego Bridge	Km. 103 + 145 Lian-San Diego-Prenza Road Lian, Batangas	Group
04.12a	Tumalin Bridge	Km. 91 + 750 Banlad-Tumalin - M. Indang Road Nasugbu, Batangas	Group
04.13a	Bagong Pook Bridge	Km. 96 + 170 Palico - B. Pook - Lian Pob. Road Bagong Pook, Lian Batangas	Group
04.14a	San Francisco Bridge	Km. 93 + 700 Padre Garcia-Tiaong Road San Francisco, Lipa City, Batangas	Group

## LIST OF BRIDGES FOR PHASES III

(6/8)

Bridge No.	Name of Bridges	Location	Grouping
15a	Kinalapan Bridge	Km. 233 + 033 Baler-Aurora Road Brgy. Pingit, Baler, Aurora	Group-2
16a	Pingit Bridge	Km. 233 + 033 Baler - Casiguran Road Baler, Aurora	Group-2
17a	Salay Bridge	Km. 142 + 000 Dipaculao-Aurora Road Brgy. Salay, Dipaculao, Aurora	Group-1
18a	Mijares Bridge	Km. 246 + 171 Dipaculao-Aurora Road Brgy. Mijarez, Dipaculao, Aurora	Group-1
19a	Palayan Bridge	Km. 103 + 700 Calauan-Nagcarlan Road Nagcarlan, Laguna	Group-1
20a	Paragusan Bridge	Km. 93 + 800 San Pablo-San Isidro Road San Isidro, San Pablo City	Group-2
21a	Tarak Bridge	Km. 02 + 600 San Pablo-Sta. Veronica Road Sta. Veronica, San Pablo City	Group-1

## LIST OF BRIDGES FOR PHASES III

(7/8)

Bridge No.	Name of Bridges	Location	Group
04.22a	Sto. Nino Bridge	Km. 22 + 300 Jct. City Road - Pinagbatan Road Brgy. Sto. Nino, Cainta, Rizal	Group
04.23a	Del Pilar Bridge	Km. 27 + 100 Jct. Sumulong Highway - Del Pilar Jct. Road Del Pilar Ext., Antipolo, Rizal	Group
04.01b	Arutayan Bridge	Km. 147 + 000 Puerto Princesa North Road Roxas-Taytay Section, Palawan	Group
04.02b	Binuan Bridge	Km. 189 + 922 Puerto Princesa North Road Roxas-Taytay Section, Palawan	Group
04.03b	Haruyugon Bridge	Km. 50 + 320.50 Puerto Princesa North Road Brgy. Haruyugon, Puerto Princesa City	Group
04.04b	Dakoton Bridge	Km. 62 + 761.50 Puerto Princesa North Road Brgy. Babuyan, Puerto Princesa City	Group
04.05b	Linawan Bridge	Km. 30 + 972 San Andres-Calatrava Road Linawan, San Andres, Romblon	Group



## LIST OF BRIDGES FOR PHASES III

(8/8)

Bridge No.	Name of Bridges	Location	Grouping
1.06b	Madalag Bridge	Km. 84 + 595 Looc-Alcantara Road Madalag, Alcantara, Romblon	Group-1
1.07b	Tan-Agan Bridge	Km. 38 + 791 Odiongán-San Andres Road Tan-agan, San Andres, Romblon	Group-1
1.08b	Panique Bridge	Km. 41 + 618 Odiongán-Looc Road Panique, Odiongán, Romblon	Group-1
1.09b	Maranlig Bridge	Km. 43 + 000 Torrijos-Sibuyao Road Maranlig-Torrijos, Marinduque	Group-1
1.10b	Kasay Bridge	Km. 7 + 490 Dr. Damian Reyes Memorial Road Mogpog, Marinduque	Group-1
1.11b	Baroc Bridge	Km. 145 + 360 Jct. Calapan South Road - Baroc Road Baroc, Oriental Mindoro	Group-2



**3-2 REVISED LIST OF PROPOSED BRIDGES**





REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
OFFICE OF THE SECRETARY  
MANILA

13 November 1989

Mr. KOJI KAMINAGA  
First Secretary  
Embassy of Japan  
Makati, Metro-Manila

Sir :

SUBJECT : JICA BRIDGE GRANT-AID PROJECT  
TO THE PHILIPPINES

First of all, we wish to express our gratitude to the JICA and the Government of Japan for having generously agreed to continue and provide for the Phase III of the above mentioned Project. This JICA-assisted Bridge Grant-Aid Project will indeed go a long way in our efforts to improve the road network of the country in particular and the socio-economic conditions in the countryside in general.

However, we would like to request a revision on the list of the bridges in our original proposal. Based on the data/information submitted by our Regional Offices we would like to request for the replacement of four bridges in Region III and one bridge in Region IV-B. Our evaluation shows that these five bridges could already be undertaken by the Philippine Government out of the local funds even without the grant aid. On the other hand, the bridges being proposed for replacement are in need of the grant-aid on the basis of the technical data for the said bridges.

Attached is a detail on the list of bridges being requested for revision for your perusal:

Once more, we look forward to your favorable consideration and continued assistance to our development efforts.

With best regards,

Very truly yours,

TEODORO T. ENCARNACION  
Undersecretary

REVISED REQUEST OF PROPOSED BRIDGES

Proposed

Original Request		Revised Request							
Bridge No.	Name of Bridge	Location	Existing Bridge	Proposed Bridge					
			Type	Length (m)					
03.03	Mariveles Bridge	Ka. 164 + 420 Mariveles-Epza Road Mariveles, Bataan	Tiiber	Baion Bridge	Ka. 105 + 360 Luacan-Bacong Road Bacong, Dinalupihan Bataan	Bailey	46.00	25+25	Group-2
03.06	Sta. Ana Bridge	Ka. 35 + 000 Bulacan-Paohong Road Sta. Ana, Bulacan	Tiiber	Balasing Bridge	Ka. 39 + 850 Balasing-Tigbe Brgy. Road, Balasing, Sta. Maria, Bulacan	Bailey	31.20	22+22	Group-1
03.01	Talba Bridge	Ka. 076 + 150 Bacolor-Sto. Tozas-Minalin Road Bacolor, Pampanga	Bailey	Dolores Bridge	Ka. 76 + 870 Dolores-Del Rosario Road (Collapsed) Dolores, Bacolor Pampanga	Tiiber	24.65	24+24	Group-2
03.12	Xabao Bridge	Ka. 159 + 200 Poblacion-Caxachile Rd. Sabaldon, Nueva Ecija	Tiiber	Baqong Sibat-Santur Bridge	Ka. 139 + 453 Baqong Sibat-Buznan Road Baqong Sibat, Sabaldon Nueva Ecija	No Existing	-	80	Group-2
04.10b	Kassy Bridge	Ka. 7 + 416.80 Bosc-Mabinhin Road Magpog, Marinduque	Tiiber	Bungway Bridge	Ka. 113 + 780.35 Bosan-Bosc Road Bungway, Bosc Marinduque	Spillway	20.75	25	Group-1
				Ihatub Bridge	Ka. 116 + 832.85 Bosc-Gasan Road Ihatub, Bosc	Spillway	19.65	25	Group-1

LIST OF PROPOSED BRIDGES (1/8)

Bridge No.	Name of Bridges	Location
01.01	Sobol Bridge	Km. 225 + 551.12 Sobol-Tempra Road San Fabian, Pangasinan
01.02	Maphilindo Bridge	Km. 220 + 900 Biec-Lomboy Road Binmaley, Pangasinan
03.01	Pangulisanin Bridge	Km. 149 + 910 Cababan Road Cababenen, Mariveles, Bataan
03.02	Aeta-Kinarangan Bridge	Km. 143 + 654 Duale Vicinal Road Limay, Bataan
03.03*	Bacong Bridge	Km. 105 + 360 Luacan-Bacong Road Bacong, Bataan
03.04	Tigbe Bridge	Km. 77 + 520 Tigbe Barangay Road Norzagaray, Bulacan
03.05	Dagat-Dagatan Bridge	Km. 62 + 500 Dagat-Dagatan Road San Rafael, Bulacan

\* Revised Request

LIST OF PROPOSED BRIDGES (2/8)

Bridge No.	Name of Bridges	Location
03.06 <sup>*</sup>	Balasing Bridge	Km. 39 + 850 Balasing-Tigbe Barangay Road Balasing, Sta. Maria, Bulacan
03.07	San Roque Bridge	Km. 57 + 284 San Roque Barangay Road Hagonoy, Bulacan
03.08	Pias Bridge	Km. 90 + 470 Porac-Pias-Ebos Road Porac, Pampanga
03.09	San Miguel-San Simon Bridge	Km. 61 + 225 San Miguel-Simon Road San Simon, Pampanga
03.10 <sup>*</sup>	Dolores Bridge	Km. 076 + 870 Dolores - Del Rosario Road Dolores, Bacolor, Pampanga
03.11	Pulo Bridge	Km. 85 + 925 Sta. Catalina-Pulong Dayu Road Lubao, Pampanga
03.12 <sup>*</sup>	Bagong Sikat Santur Bridge	Km. 159 + 463 Bagong Sikat-Bugnan Road Bagong Sikat, Gobaldon Nueva Ecija

<sup>\*</sup>Revised Request



LIST OF PROPOSED BRIDGES (3/8)

Bridge No.	Name of Bridge	Location
03.13	Mangkuyog Bridge	Km. 169 + 000 Camachile-Bantug Road Gabaldon, Nueva Ecija
03.14	Barangobong Bridge	Km. 152 + 585 Paniqui-Camiling Road Paniqui, Tarlac
03.15	Parua Bridge	Km. 117 + 980 Sta. Rita-San Antonio Road Concepcion, Tarlac
03.16	Iba Bridge	Km. 149 + 000 San Pedro Road Iba, Tarlac
03.17	Sula Bridge	Km. 150 + 000 Tarlac-Sula Road Sula, Tarlac, Tarlac
03.18	Sindol Bridge	Km. 172 + 350 Barangay-Sindol Road San Felipe, Zambales
03.19	Laoag Bridge	Km. 177 + 722 Maloma-Laoag Road San Felipe, Zambales

LIST OF PROPOSED BRIDGES (4/8)

Bridge No.	Name of Bridges	Location
04.01a	San Juan Bridge	Km. 25 + 500 Cavite-Zapote Road San Juan, Cavite
04.02a	Tabon-Batong Bridge	Km. 22 + 500 Cavite-Zapote Road Kawit, Cavite
04.03a	Paurungan Bridge	Km. 029 + 118 Zapote-Salawag-Salitran Road Dasmarias, Cavite
04.04a	Caglate Bridge	Km. 027 + 180 Quezon - Alabat Perez Road Alabat, Quezon
04.05a	Balik-Balik Bridge	Km. 032 + 100 Quezon - Alabat Perez Road Perez, Quezon
04.06a	Buenavista Bridge	Km. 016 + 250 Quezon - Alabat - Perez Road Alabat, Quezon
04.07a	Camagong Bridge	Km. 023 + 700 Quezon-Alabat Perez Road Alabat, Quezon

LIST OF PROPOSED BRIDGES (5/8)

Bridge No.	Name of Bridges	Location
04.08a	Market View Bridge	Km. 132 + 718.78 City Proper-Pagbilao-Dalahican Fish Port Road Brgy. Market View, Lucena City
04.09a	Isabang Bridge	Km. 127 + 399 MSR-Isabang-Bocohan-Domoit, Lucena Diversion Road Brgy. Isabang, Lucena City
04.10a	Pansipit Bridge	Km. 131 + 140 San Nicolas- Agoncillo Road Brgy. Pansipit, Batangas
04.11a	San Diego Bridge	Km. 103 + 109.75 Nasugbu-Tagaytay Road Lian, Batangas
04.12a	Tumalin Bridge	Km. 91 + 198 Nasugbu-Tagaytay Road Nasugbu, Batangas
04.13a	Bagong Pook Bridge	Km. 95 + 90 Nasugbu-Tagaytay Road Bagong Pook, Lian Batangas
04.14a	San Francisco Bridge	Km. 93 + 700 Lipa-Tiaong Road Via Cuatro Santos, Lipa City Batangas

LIST OF PROPOSED BRIDGES (6/8)

Bridge No.	Name of Bridges	Location
04.15a	Kinalapan Bridge	Km. 231 + 893 Baler-Baler Port Road Brgy. Pingit, Baler, Aurora
04.16a	Pingit Bridge	Km. 234 + 809 Baler-Baler Port Road Baler, Aurora
04.17a	Salay Bridge	Km. 238 + 108 Dipaculao-Aurora Road Brgy. Salay, Dipaculao, Aurora
04.18a	Mijares Bridge	Km. 247 + 435 Baler-Casiguran Road Brgy. Mijarez, Dipaculao, Aurora
04.19a	Palayan Bridge	Km. 89 + 700 Calauan-Nagcarlan Road Nagcarlan, Laguna
04.20a	Paragusan Bridge	Km. 91 + 084 San Pablo-San Isidro Road San Isidro, San Pablo City
04.21a	Tarak Bridge	Km. 85 + 144 San Pablo-Sta. Monica - Sta. Veronica Road Sta. Veronica, San Pablo City

LIST OF PROPOSED BRIDGES (7/8)

Bridge No.	Name of Bridges	Location
04.22a	Sto. Nino Bridge	Km. 0 + 550 Jct. City Road - Pinagbatan Road Brgy. Sto. Nino, Cainta, Rizal
04.23a	Del Pilar Bridge	Km. 0 + 100 Jct. Sumulong Highway - Del Pilar Jct. Road Del Pilar Ext., Antipolo, Rizal
04.01b	Arutayan Bridge	Km. 147 + 011 Roxas-Taytay Road Sandoval, Roxas Palawan
04.02b	Binuan Bridge	Km. 190 + 224.76 Roxas-Taytay Road Binuan, Taytay Palawan
04.03b	Maruyugon Bridge	Km. 50 + 320.50 Puerto Princesa North Road Brgy. Maruyugan, Puerto Princesa City
04.04b	Dakoton Bridge	Km. 62 + 761.50 Puerto Princesa North Road Brgy. Babuyan, Puerto Princesa City
04.05b	Linawan Bridge	Km. 19 + 175 San Andres-Calatrava Road Linawan, San Andres, Romblon

LIST OF PROPOSED BRIDGES (8/8)

Bridge No.	Name of Bridges	Location
04.06b	Madalag Bridge	Km. 34 + 900 Looc-Alcantara Road Madalag, Alcantara, Romblon
04.07b	Tan-Agan Bridge	Km. 11 + 100 Odiongán-San Andres Road Tan-agan, San Andres, Romblon
04.08b	Panique Bridge	Km. 8 + 000 San Andres-Odiongán Road Panique, Odiongán, Romblon
04.09b	Maranlig Bridge	Km. 56 + 637.80 Torrijos-Sibuyao Road Maranlig-Torrijos, Marinduque
04.10b* -1	Daykitin Bridge	Km. 94 + 233 Buenavista-Gasan Road Daykitin, Buenavista Marinduque
04.10b* -2	Ihatub Bridge	Km. 116 + 832.85 Boac-Gasan Road Ihatub, Boac, Marinduque
04.10b* -3	Bunganay Bridge	Km. 113 + 780.55 Gasan-Boac Road Bunganay, Boac, Marinduque
04.11b	Baroc Bridge	Km. 145 + 360 Bulalacao-Roxas Road Baroc, Oriental Mindoro

\*Revised Request

**3-3 LETTER OF REQUEST FOR DELETION (ONE BRIDGE)**





Republic of the Philippines  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
OFFICE OF THE SECRETARY  
Bonifacio Drive, Port Area, Manila

21 December 1989

Mr. Michio Okahara  
Leader, Basic Design Study Team  
Japan International Cooperation Agency  
Tokyo, Japan

S i r :

Subject: The Project for Constructing Bridges  
Along Rural Roads (Phase III)

We wish to express our gratitude to the JICA and the Government of Japan for having generously agreed to continue and provide assistance for Phase III of the above mentioned project. This JICA-assisted Bridge Grant Aid Project will certainly go a long way in our efforts to provide basic transport and road facilities to accelerate development in the country particularly in the rural areas where these bridges are being constructed.

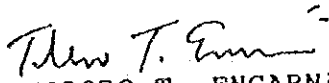
However, in our further review of the projects included under the Phase III list as we have initially agreed, one bridge under the Group II - No. 03.19 Laoag Bridge, San Felipe, Zambales (Region III) would pose some technical problems since this would require extensive river protection works.

In view of the above situation may we, therefore, request for the deletion of the said bridge from the list.

Once more, we look forward to your favorable consideration and continued assistance to our development efforts.

With best regards.

Very truly yours,

  
TEODORO T. ENCARNACION  
Undersecretary



**APPENDIX 4**

**BASIC DATA OF PROPOSED BRIDGES  
AND SELECTION OF BRIDGES**



## Basic Data of Bridges

The Government of the Philippines through the Department of Public Works and highways (DPWH) conducted a survey of the proposed bridges, covering the following items:

- (a) Present conditions of bridge
  - o Location
  - o Type of structure
  - o Degree of deterioration
  - o Present load limit
  
- (b) Socio-economic data
  - o Population of influence areas
  - o Main products
  - o Development plans
  
- (c) Traffic data
  - o Traffic volume
  - o Traffic composition
  - o Trip purposes
  - o Design traffic load
  
- (d) Topographic Survey
  - o Topographic map Scale: 1:200
  - o Profile map Scale: 1:200
  - o Cross sections Scale: 1:200
  
- (e) Hydrological Data
  - o Dry and wet seasons
  - o Highest, lowest and average water elevations
  
- (f) Construction Data
  - o Availability of equipment, especially for steel girder erection
  - o Availability of material locally
  - o Roads and their condition for transportation of steel girders
  
- (g) Pictures

All data and information investigated by the DPWH were compiled in tables for review and evaluation.

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (1/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information							Engineering Information				Construction Equipment Local Material	
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition		Condition of Access Road
1 01, 01	.Sobol Bridge Km.255+600 Sobol-San Fabian Road, San Fabian Pangasinan	92.05	Bailey	Deteriorated Lumber Material and Bailey Panels.	1	1,218	.Rice .Fish .Livestock	Agro Business	—	Light Vehicles	Only Access Road Going to Brgy .Sobol	5	Flat Terrain	Sandy 16M Depth	.MHWE=20.60 .HWL=19.93 .LWL=19.15 .OWL=18.92	.Gravel Road (good) .Proposed Width for Improvement 10,000 m	.Crane .Cement .Lumber & wave .Course Agg .Fine Agg.
2 01, 02	.Maphilindo Bridge Km.220+900 Biec-Lomboy Road, Binmaley, Pangasinan	128.35	Bailey	Deteriorated Lumber Material, and Rusty Bailey Panels	18	22,221	.Rice .Corn .Fish .Livestock	Agro Business	4,741	Light Vehicles	Alternate Road Leading to Western Pang.	5	Flat Terrain	Sandy 16M Depth	.MFL=21.34 .OWL=18.67	.Asphalt Pavement good .Proposed width for Improvement 10.0 m	.Crane .Cement .Lumber and Hard ware .Course Agg .Fine Agg.
3 03,01	.Pangulisanin Bridge Km.149+910 Cabcaban Road Cabcaban, Mariveles, Bataan	21.65	Bailey Bridge	Dilapidated Bridge	10	29,000	.Palay .Corn .Livestock .Garments Products	—	200	.Bus .Jeepney .Mini-bus .Tricycles .Cars	Industrial & Commercial Purposes	6	Rolling Terrain	—	.MFL=47.50 .OWL=44.10	.Passable .Proposed Width for Improvement 7.32 m	.Cement .Gravel .Boulder .Steel Bars .Lumbers
4 03,02	.Aeta-Kinarangan Bridge Km.143+654 Aeta-Kinarangan Road, Limay, Bataan	18.40	Bailey Bridge	Dilapidated Bridge	8	13,872	.Palay .Corn .Livestock	—	30	.Tricycles .Jeepney .Truck .Cars	Agricultural & Industrial Purposes	5	Rolling Terrain	—	—	.Passable .Proposed Width for Improvement 6.0 m	.Cement .Gravel .Boulder .Steel Bars .Lumber
5 03,03	.Bacong Bridge Km.105+360 Luacan-Bacong Road, Bacong Bataan	46.00	Bailey Bridge	Dilapidated Bridge	9	16,600	.Palay .Corn .Livestock	—	50	.Jeepneys .Tricycles .Trucks .Cars	Agricultural Industrial Purposes	6	Rolling Terrain	—	.MFL=50.01 .OWL=46.45	.Passable .Proposed Width for Improvement 6.0 m	.Cement .Gravel .Boulders .Steel Bars .Boulders .Lumbers
6 03,04	.Tigbe Bridge Km.77+520 Tigbe Barangay Road, Norzagaray Bulacon	18.90	Bailey Bridge	Deteriorating and Non-Passable for Heavy Vehicles	1	4,500	.Fruits .Palay .Vegetables .Poultry .Piggery	—	345	.Tricycles .Jeepneys .Trucks	For transportation and food transport	20	Down hill approaches	—	.HWL=7.80 .OWL=5.9 .LWL=3.7	.Fair unpaved roads .Proposed Width for Improvement 5 m wide	.Available all const. Equipment .Cement .Gravel .Lumber etc.

LECTION FOR PROPOSED BRIDGES (1/10)

No. of Brangay	Population Affected	Socio-Economic and Traffic Information				Engineering Information				Construction Information				
		Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road	Erection Equipment Local Material	Transportation of Steel Girder Road/Condition	Evaluation Selection
1	1,218	.Rice .Fish .Livestock	Agro Business	—	Light Vehicles	Only Access Road Going to Brgy .Sobol	5	Flat Terrain	Sandy 16M Depth	.MHW=20.60 .HWL=19.93 .LWL=19.15 .OWL=18.92	.Gravel Road (good) .Proposed Width for Improvement 10,000 m	.Crane .Cement .Lumber & Head wave .Course Agg. .Fine Agg. RSB	.Accessible .Good	—
18	22,221	.Rice .Corn .Fish .Livestock	Agro Business	4,741	Light Vehicles	Alternate Road Leading to Western Pang.	5	Flat Terrain	Sandy 16M Depth	.MFL=21.34 .OWL=18.67	.Asphalt Pavement good .Proposed width for Improvement 10.0 m	.Crane .Cement .Lumber and Hard ware .Course Agg. .Fine Agg. RSB	.Accessible .Good	Selected
10	29,000	.Palay .Corn .Livestock .Garments Products	—	200	.Bus .Jeepney .Mini-bus .Tricycles .Cars	Industrial & Commercial Purposes	6	Rolling Terrain	—	.MFL=47.50 .OWL=44.10	.Passable .Proposed Width for Improvement 7.32 m	.Cement .Gravel .Boulder .Steel Bars .Lumbers	—	Selected
8	13,872	.Palay .Corn .Livestock	—	30	.Tricycles .Jeepney .Truck .Cars	Agricultural & Industrial Purposes	5	Rolling Terrain	—	—	.Passable .Proposed Width for Improvement 6.0 m	.Cement .Gravel .Boulder .Steel Bars .Lumber	—	—
9	16,600	.Palay .Corn .Livestock	—	50	.Jeepneys .Tricycles .Trucks .Cars	Agricultural Industrial Purposes	6	Rolling Terrain	—	.MFL=50.01 .OWL=46.45	.Passable .Proposed Width for Improvement 6.0 m	.Cement .Gravel .Boulders .Steel Bars .Lumbers	—	Selected
1	4,500	.Fruits .Palay .Vegetables .Poultry .Piggery	—	345	.Tricycles .Jeepneys .Trucks	For transportation and food transport	20	Down hill approaches	—	.HWL=7.80 .OWL=5.9 .LWL=3.7	.Fair unpaved roads .Proposed Width for Improvement 5 m wide	.Available all const. Equipment .Cement .Gravel .Lumber etc.	Good Condition	Selected

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (2/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information						Engineering Information				Coor En Eq Loca		
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition		River/ Hydrological Condition	Condition of Access Road
7 03,05	.Dagat-Dagaton Bridge Km.62+500 San-Rafael-Buston Road, San-Rafael, Bulacan	46.00	Bailey Bridge	Good Newly repaired Non- Passable for heavy vehicles	5	8,000	.Palay .Vegetables .Duck-raising .Garment	---	550	.Light Trucks .Tricycles .Jeepneys	For transpor- tation and transporting products	20	Flat, curve ter- rain app- roached	---	.HWL=1.0 .OWL=5.5 .LWL=7.65	.Good Condi- tion .Proposed width for Improvement 5 m wide	.Ava con .Cen .Gra .Lur
8 03,06	.Balasing Bridge Km.39+850 Balasing-Tigbe Brgy Road, Bulacan	31.20	Bailey Bridge	Newly Repaired Unpassable to Heavy Vehicles	4	2,500	.Palay .Vegetables .Fruits .Piggery and .Poultry	---	200	.Tricycles .Jeepneys .Jeeps .Trucks	Product and food trans- port	20	Almost flat ter- rain curved approaches	---	.HWL=14.20 .OWL=10.20	.Fair un- paved and paved road .Proposed Width for Improvement 6.7 m	.All .Cen .Gra .Lur
9 03,07	.San Roque Bridge Km.57+284 San Roque Barangay Road, Hagonoy Bulacan	63.60	Timber	Dilapilated -Passable to Tricycles only	1	3,431	.Bangus .Prawns .Other Sea- foods, etc.	---	200	.Tricycles only	Product trans- port (only bridge linking bry to Pobla (tion)	20	Flat Terrain	---	.MFL=21.26 .OWL=19.01	Good to very good Concrete Paved-Road	.Av .Ce .Ba .Lu .Gr .Re
10 03,08	.Pias Bridge Km.90+470 Porac-Pias-Ebos Road, Porac, Pampanga	---	Bailey Bridge	---	2	3,845	.Palay .Sugar Corne .Vegetable .Poultry	---	0	.Jeepneys .Tricycles	Business Com- mercial Dome- stic Purposes	---	Hilly	---	.HWL=46.61 .OWL=44.11	Good con- dition	.G .T .C .M .D .O .S .L
11 03,09	.San Miguel-San Simon Bridge Km 61+225 San Luis-Baliwag Road, San-Simon Pampanga	158.00	Bailey Bridge	Good Condition	3	4,802	.Palay .Vegetable	---	87	.Jeepneys .Trycicles .Cars .Trucks	Domestic Busi- siness and Commercial Pur- poses	11.0- 13.5	Flat Terrain	---	---	Good con- dition	.C .D .L .T .C .S .L



Socio-Economic and Traffic Information						Engineering Information				Construction Information			
Population	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road	Erection Equipment Local Material	Transportation of Steel Girder Road/Condition	Evaluation Selection
8,000	.Palay .Vegetables .Duck-raising .Garment	---	550	.Light Trucks .Tricycles .Jeepneys	For transportation and transporting products	20	Flat, curve terrain approached	---	.HWL=1.0 .OWL=5.5 .LWL=7.65	.Good Condition .Proposed width for Improvement 5 m wide	.Available all const. Equip. .Cement .Gravel .Lumber, etc.	Good Condition	---
2,500	.Palay .Vegetables .Fruits .Piggery and .Poultry	---	200	.Tricycles .Jeepneys .Jeeps .Trucks	Product and food transport	20	Almost flat terrain curved approaches	---	.HWL=14.20 .OWL=10.20	.Fair unpaved and paved road .Proposed Width for Improvement 6.7 m	.All available .Cement .Gravel .Lumber, etc.	Good Condition	Selected
3,431	.Bangus .Prawns .Other Seafoods, etc.	---	200	.Tricycles only	Product transport (only bridge linking brgy to Poblacion)	20	Flat Terrain	---	.MFL=21.26 .OWL=19.01	Good to very good Concrete Paved-Road	.Available .Cement .Bars .Sand .Lumber .Gravel .Reint	Good Condition	Selected
3,845	.Palay .Sugar Corne .Vegetable .Poultry	---	0	.Jeepneys .Tricycles	Business Commercial Domestic Purposes	---	Hilly	---	.HWL=46.61 .OWL=44.11	Good condition	.Grader .Trailer .Crane .Mixer .Dumptruck .Cement .Steel Bars .Lumber	.Gapan-Sn. Fdo. Olongapo, Porac-Pias-Ebus Road .Good condition	Selected
4,802	.Palay .Vegetable	---	87	.Jeepneys .Tricycles .Cars .Trucks	Domestic Business and Commercial Purposes	11.0-13.5	Flat Terrain	---	---	Good condition	.Crane .Dumptrucks .Loader Mixer .Trailer .Cement .Steel Bars .Lumber	.Hacarthur Highway-San Miguel, San Simon Road .Good Condition	---

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (3/10)

No.	Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information						Engineering Information					
			Length (m)	Type	Present Condition	No. of Barangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	Hydrological Condition	Condition of Access Road
12	03,10	.Dolores Bridge Km 76+870 Dolores-Del Rosario Road, Dolores, Bacolor Pampanga	24.65	Timber Bridge	Collapsed	4	8,152	.Palay .Sugarcorne .Poultry	---	95	.Dump trucks .Trucks .Jeepneys .Cars .Tricycles .Pickups	Business Domestic and Commercial Purposes	5	Flat Terrain	---	.MFL=19.70 .OWL=-----	Good condition
13	03,11	.Pulo Bridge Km 85+925 Sta. Catalina-Pulong Bayu Road, Lubao, Pampanga	11.85	Timber Bridge	Bad Condition	2	3,778	.Palay .Fish .Nipa .Vinegar	---	35	.Tricycles .Jeepneys .Auto-motives	Commercial Business and Domestic Purposes	55	Flat Terrain	---	.HWL=8.14 .OWL=6.09	Good condition
14	03,12	.Bagong Sikat-Santor Bridge Km.159+463 Bagong Sikat-Buanan Road, Bagong Sikat, Gobaldon, Nueva Ecija	---	No Bridge	---	2	2,500	.Palay .Corn .Vegetables	---	---	---	Business and Commercial Purposes	---	Flat Terrain	---	---	Good condition
15	03,13	.Mangkuyog Bridge Km.169+000 Camachile-Bantug Road Nuera Ecija	60.00	No Existing Bridge	---	2	3,300	.Palay .Corn .other agricultural produce	---	---	---	Business and Commercial Purposes	---	Flat Terrain	---	.HWL=99.60 .DWL=97.34	Good condition
16	03,14	.Barangobong Bridge Km.152+585 Paniqui-Camiling Road Paniqui, Tarlac	---	No Existing Bridge (80LM)	---	14	42,000	.Rice .Corn camote .Peanuts .Sugar Corne .Turnips	---	300	.Trucks .Jeepneys .Cars .Heavy equipment vehicles	Business and Commercial Purpose	---	Flat	---	.HWL=52.0 .LWL=45.0	Paved

PROPOSED BRIDGES (3/10)

Station	Socio-Economic and Traffic Information					Engineering Information				Construction Information			
	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/Hydrological Condition	Condition of Access Road	Erection Equipment Local Material	Transportation of Steel Girder Road/Condition	Evaluation Selection
152	.Palay .Sugarcoorne .Poultry	---	95	.Dump trucks .Trucks .Jeepneys .Cars .Tricycles .Pickups	Business Domestic and Commercial Purposes	5	Flat Terrain	---	.MFL=19.70 .OWL=-----	Good condition	.Dump truck .Loader .Crane .Mixer .Trailer .Dozer	.Old Macarthur Highway Del Rosario-Dolores Road .Good condition	Selected
778	.Palay .Fish .Nipa .Vinegar	---	35	.Tricycles .Jeepneys .Auto-motives	Commercial Business and Domestic Purposes	55	Flat Terrain	---	.HWL=8.14 .OWL=6.09	Good condition	.Crane .Dump trucks .Loader .Trailer .Mixer .Cement .Steel bars .Lumber	.Gapan-Sn Fdo Olongapo Rd. -Lubao-Sta. Catalina Pulong Bayo Road .Good	Selected
500	.Palay .Corn .Vegetables	---	---	---	Business and Commercial Purposes	---	Flat Terrain	---	---	Good condition	.Crane .Delmag .Dump tracks	Good Condition	---
300	.Palay .Corn .other agricultural produce	---	---	---	Business and Commercial Purposes	---	Flat Terrain	---	.HWL=99.60 .DWL=97.34	Good condition	.Crane .Delmag .Dumptracks	Good Condition	Selected
000	.Rice .Corn camote .Peanuts .Sugar Corne .Turnips	---	300	.Trucks .Jeepneys .Cars .Heavy equipment vehicles	Business and Commercial Purpose	---	Flat	---	.HWL=52.0 .LWL=45.0	Paved	.Rd.Grader .Payloader	.Manila-Tarlac Paniqui-Camilling Road .Passable	---

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (4/10)

Bridge No.	Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information						Engineering Information					
			Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road
17	03,15	.Paura Bridge Km.126+650 Sta. Rita-San Antonio Rd., Concepcion Tarlac	(320L.M)	No Exis- ting Bridge	---	13	52,000	.Rice .Fruits .Vegetables .Livelihood products	---	100	.Heavy trucks .Vehicles	Business and Commercial Purpose	---	Flat	---	.HWL=49.50 .LWL=46.80	.Unpaved .Proposed Width for Improvement 8 m
18	03,16	.Iba Bridge Km.121+104 Iba-San Pedro Kba.Tarlac	(200L.M)	No Exis- ting Bridge	---	8	24,000	---	---	70	.Jeepney .Trucks .Vehicles	Business and Commercial Purposes	---	Flat	---	.HWL=51.20 .LWL=47.22	Unpaved
19	03,17	.Sula Bridge Km.143+104 Tarlac-Sula Road Sula, Tarlac, Tarla	(50L.M)	No Exis- ting Bridge	---	8	32,000	---	---	70	.Jeepney .Trucks .Vehicles	Business and Commercial Purposes	---	Flat	---	.MFL=20.75 .LWL=19.31	.Unpaved .Proposed Width for Improvement 8.0 m
20	03,18	.Sindol Bridge Km.172+350 San Felipe-Sindol Road, San Felipe, Zambales	24.00	Timber Bridge	Dilapidated Bridge	2	2,800	Agricultural and Fishing	---	53	.Jeep .Motor cicle	.Transport Product .People to Market	---	Flat	Sandy Soil	.MFL=9.03 .OWL=6.84	.Paved Road =170.65 km .Gravel Road =1.7 km .Proposed Width for Improvement 5 m
21	03,19	.Laoag Bridge Km.177+722 Malona-Laoag Road, San Felipe, Zambales	65.00	Bailey Bridge	Dilapidated Bridge	2	733	.Agricul- tural .Fishing	---	60	.Jeeps .Cars .Motor- cycle	.Transport Product .People to Market	H-15	Flat	Sandy Soil	.MFL=21.36 .OWL=4.10	.Paved Road =170.65 km .Gravel Rd. =1.7 km .Proposed Width for Improvement 5 m .Fair

ON FOR PROPOSED BRIDGES (4/10)

Socio-Economic and Traffic Information							Engineering Information				Construction Information			
Day	Population Affected	Main Product	Development Plan	Traffic	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/	Condition of Access Road	Erection	Transportation	Evaluation	
				Volume (ADT)					Traffic Composition		Hydrological Condition	Equipment		of Steel Girder Road/Condition
	52,000	.Rice .Fruits .Vegetables .Livelihood products	---	100	.Heavy trucks .Vehicles	Business and Commercial Purpose	---	Flat	---	.HWL=49.50 .LWL=46.80	.Unpaved .Proposed Width for Improvement 8 m	.Road Crader .Payloader .Dump Trucks	.Manila-Bamban Conception .Passable	---
	24,000	---	---	70	.Jeepney .Trucks .Vehicles	Business and Commercial Purposes	---	Flat	---	.HWL=51.20 .LWL=47.22	Unpaved	.Rd,Grader .Payloader .Dump trucks	.Manila Tarlac Iba Road .Passable	---
	32,000	---	---	70	.Jeepney .Trucks .Vehicles	Business and Commercial Purposes	---	Flat	---	.MFL=20.75 .LWL=19.31	.Unpaved .Proposed Width for Improvement 8.0 m	.Rd.Grader .Payloader .Dump Trucks	.Manila Tarlac Road .Passable	Selected
	2,800	Agricultural and Fishing	---	53	.Jeep .Motor cicle	.Transport Product .People to Market	---	Flat	Sandy Soil	.MWL=9.03 .OWL=6.84	.Paved Road =170.65 km .Gravel Road =1.7 km .Proposed Width for Improvement 5 m	.Crane .Hamnor .Cement .Lumber .Stool	.Olangapo San Felipe Sindol Road .Good Condition	Selected
	733	.Agricul-tural .Fishing	---	60	.Jeeps .Cars .Motor-cycle	.Transport Product .People to Market	H-15	Flat	Sandy Soil	.MFL=21.36 .OWL=4.10	.Paved Road =170.65 km .Gravel Rd. =1.7 km .Proposed Width for Improvement 5 m .Fair	.Crane .Hamnor .Cement .Lumber .Stool	.Olangapo-San Felipe Lauag Rd. .Good Condition	Selected

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (5/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information						Engineering Information				Condition of Access Road	Location	
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition			Hydrological Condition
22 04,01a	.San Juan Bridge Km.26+020 San Juan, Cavite	19.20	Bailey Bridge	Dilapidated Bridge	2	2,800	.Salt .Fish .Rice .Corn .Fruits	.Residential and agricultural site	100-200	.Tricycle .Jeepneys .Dump trucks	.Transport Commuter and Agricultural Products	8	Flat	Sandy Clayey Soil	.MWL=24.20 .OWL=20.80	.Fair .Proposed Width for Improvement 5 m	.Canal local
23 04,02a	.Tabon-Batong Bridge Km.24+800 Cavite-Zapote Road, Kawit, Cavite	13.80	Bailey Bridge	Dilapidated Bridge	3	8,556	.Rice .Vegetable .Fish	Residential	100-200	.Tricycles .Jeepneys .Light trucks	.Transport Commuter and Agricultural Products	8	Flat	Sandy Clayey Soil	.MWL=24.78 .OWL=23.00	.Fair .Proposed Width for Improvement 5 m	Canal local
24 04,03a	.Paurungan Bridge km.29+118 Zapote-Zalawag-Salitran Road. Dasmarinas, Cavite	61.55	Bailey Bridge	Dilapidated Bridge	10	10,000	.Vegetable .Fruits .Sugar cane	Residential	150-200	.Light trucks .Heavy trucks .Jeepneys .Cars .Dump trucks	.Transport agricultural Products, Community Construction material	—	Rolling Terrain	Sandy Clayey Soil	—	.Fair .Proposed Width for Improvement 6.1 m	Canal local
25 04,04a	.Caglate Bridge km.27 + 180 Quezon-Alabat Perez Road, Alabat, Quezon	18.42	Bailey Bridge	Dilapidated Bridge	45	120,000	.Copra .Rice .Fruits .Vegetable .Fish	—	100	—	Commercial & Agriculture Purpose	5	Rolling Terrain	Rock	.HWL=3.60 .OHWL=0.00	Unpaved	.Gravel .Sand
26 04,05a	.Balik-Balik Bridge km.32 + 100 Quezon-Alabat Perez Road, Perez, Quezon	15.72	Bailey Bridge	Dilapidated Bridge	45	120,000	.Copra	—	90	.Trucks .Cars .Jeeps .Heavy Equipment	Commercial Agricultured Products	5	Flat Terrain	Rock	.HWL=2.70 .OHWL=1.90 .OWL=0.00	.Gravel Rd.	.Gravel .Sand

Socio-Economic and Traffic Information					Engineering Information				Construction Information			
Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road	Erection Equipment Local Material	Transportation of Steel Girder Road/Condition	Evaluation Selection
.Salt .Fish .Rice .Corn .Fruits	.Residential and agricultural site	100-200	.Tricycle .Jeepneys .Dump trucks	.Transport Commuter and Agricultural Products	8	Flat	Sandy Clayey Soil	.MWL=24.20 .OWL=20.80	.Fair Proposed Width for Improvement 5 m	.Can Purchase local Materials	.Cavite-Zapote Rd., Via San Juan Brgy. Rd .Fair accessible	Selected
.Rice .Vegetable .Fish	Residential	100-200	.Tricycles .Jeepneys .Light trucks	.Transport Commuter and Agricultural Products	8	Flat	Sandy Clayey Soil	.MWL=24.78 .OWL=23.00	.Fair Proposed Width for Improvement 5 m	Can Purchase local Materials	.Carite-Zapote Rd., Via Tabon-Batang .Dalig/Putol Kwit .Fair	Selected
.Vegetable .Fruits .Sugar cane	Residential	150-200	.Light trucks .Heavy trucks .Jeepneys .Cars .Dump trucks	.Transport agricultural Products, Community Construction material	—	Rolling Terrain	Sandy Clayey Soil	—	.Fair Proposed Width for Improvement 6.1 m	Can Purchase local materials	.Zapote-Zalawag-Salitran Road .Fair	—
.Copra .Rice .Fruits .Vegetable .Fish	—	100	—	Commercial & Agriculture Purpose	5	Rolling Terrain	Rock	.HWL=3.60 .OHWL=0.00	Unpaved	.Gravel .Sand, etc.	.Atimonan-Alabat .Quezon-Gumaca by Boat .Passable	Selected
.Copra	—	90	.Trucks .Cars .Jeeps .Heavy Equipment	Commercial Agricultured Products	5	Flat Terrain	Rock	.HWL=2.70 .OHWL=1.90 .OWL=0.00	.Gravel Rd.	.Gravel .Sand, etc.	.Atimoran-Albat by Boat	—

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (6/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information							Engineering Information				
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road
27	04,06a Buenavista Bridge km.16 + 250 Guezon-Alabat- Perez Road. Alabat Quezon	17.26	Bailey Bridge	Dilapidated Bailey Panel	45	120,000	.Copra .Rice .Fruits .Vegetable .Fish	—	95	.Trucks .Dump Truck .Jeeps .Heavy Equipment	Commercial Agricultural Products	5	Rolling Terrain	Rock	.HWL=3.90 .OWL=0.00	.Gravel Rd.
28	04,07a Camagong Bridge km.23 + 700 Quezon-Alabat Perez Road, Alabat, Quezon	15.36	Bailey Bridge	Dilapidated Bailey Panel	45	120,000	.Copra .Rice .Fruits .Vegetable .Fish	—	100	.Trucks .Dump Trucks .Jeeps .Heavy Equipments	Commercial Agricultural Products	5	Rolling Terrain	Rock	.MFL=21.97 .OWL=-----	.Gravel Rd.
29	04,08a Market View Bridge km.132 + 718, 78 Jct. Juarez Street -Market View Road Brgy. Market View Lucena City	—	Hanging Foot Bridge	Dilapidated	8	29,672	.All ag- riculture .Fruits	Commercial Site	—	—	Commercial Agricultural Products	—	—	Hard Clay	—	Fair
30	04,09a Isabang Bridge km.126 + 450 Jct. Manila South Road-Talim Road, Brigy. Isabang. Lucena City	15.0	Timber	Minor Damage	3	4,034	.Coco Nuts .Agricul- tural	—	150	.Light Trucks .Jeepney	Agricultural Product	10	—	Sand and Clay	.MFL=51.50 .OWL=49.80	Fair
31	04,10a Pansipit Bridge km.131 + 140 San Nicolas-Agoncillo and Vice Versa Brgy. Pansipit, Batangas	—	No Bridge	—	9	9,500	.Rice .Coco Nuts .Fish	Tourist Spot	—	—	—	—	—	—	.HWL=6.84 .OWL=4.97	Good
32	04,11a San Diego Bridge km.103 + 109,75 Nasugbu-Tagaytay Road, Llan, Batangas	18.60	Bailey Bridge	Dilapidated	2	4,968	.Fish Farm	.Prawn .Hatchery .Tourist spot .Agricultural	200	.Trucks .Jeep	.Hauling of Products	15	Flat	—	.MFL=1.50 .OWL=0.02	.Rough Rd. .Proposed Width for Improvemen 6 m



Socio-Economic and Traffic Information					Engineering Information					Construction Information		
Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road	Erection Equipment Local Material	Transportation of Steel Girder Road/Condition	Evaluation Selection
Orange fruits, vegetable, fish	---	95	.Trucks .Dump Truck .Jeeps .Heavy Equipment	Commercial Agricultural Products	5	Rolling Terrain	Rock	.HWL=3.90 .OWL=0.00	.Gravel Rd.	.Gravel .Sand, etc.	.Atimonan-Alabat, Quezon-Gumaca by Goat	Selected
Orange fruits, vegetable, fish	---	100	.Trucks .Dump Trucks .Jeeps .Heavy Equipments	Commercial Agricultural Products	5	Rolling Terrain	Rock	.MFL=21.97 .OWL=----	.Gravel Rd.	.Gravel .Sand, etc.	.Atimonan-Alabat, Quezon-Gumaca by Boat	Selected
Commercial Site	Commercial Site	---	---	Commercial Agricultural Products	---	---	Hard Clay	---	Fair	.Truck crane .Cement .Steel Bars .Lumber	.Manila South Rd. .Fair	---
Coconut	---	150	.Light Trucks .Jeepney	Agricultural Product	10	---	Sand and Clay	.MFL=51.50 .OWL=49.80	Fair	.Truck Crane .Cement .Agg. .Steel Bars .Lumber	---	Selected
Coconut	Tourist Spot	---	---	---	---	---	---	.HWL=6.84 .OWL=4.97	Good	---	.Manila-Lipa-Cuenca-Fall-San Nicolas .Good	Selected
Shrimp	.Prawn Hatchery .Tourist spot .Agricultural	200	.Trucks .Jeep	.Hauling of Products	15	Flat	---	.MWL=1.50 .OWL=0.02	.Rough Rd. .Proposed Width for Improvement 6 m	.Sand .Gravel	.Nasugbu Tqaytay Rd. .Smooth	Selected

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (7/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information							Engineering Information				
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road
33	04,12a .Tumalim Bridge km.91 + 750 Ganilad-Tumalim -M Indang Road, Nasugbu, Batangas	53.10	Bailey Bridge	Dilapidated	3	2,630	.Sugar Cane	.Livestock	500	.Truck .Jeep	.Agricultural Products	10	---	---	---	.Rough Rd. .Proposed Width for Improvement 6 m
34	04,13a .Bagong Pook Bridge km.95 + 90 Nasugbu-Tagaytay Road, Bagong Pook, Lian, Batangas	26.80	Timber Bridge	Dilapidated	1	1,261	.Sugar Cane .Distillery	.Livestock	120	.Trucks .Jeep	.Agricultural Products	20	---	---	.MWL=42.20 .OWL=40.76	.Deteriorated Asphalt Rd. .Proposed Width for Improvement 6 m
35	04,14a .San Francisco Bridge km.93 + 700 Padre Garcia-Tiaong Road San Francisco, Lipa City, Batangas	25.00	Hanging Foot Bridge	Dilapidated	10	15,000	.Coco Nuts .Coffee .Grain .Crops	.Short distance to and from the Market site	---	---	Agricultural Product	---	Rolling Terrain	Rock	.HWL=97.00 .LWL=85.00	---
36	04,15a .Kinalapan Bridge km.233 + 033 Baler-Aurora Rd. Brgy. Pingit. Baler. Aurora	60.00	Timber Bridge	Dilapidated	3	2,000	.Vegetable Coco nuts .Rice	Commercial Port	30	.Cars .Jeep .Truck .Tricycles .Animal Driving	Transport Products and People to Market	1	Flat	---	---	Good
37	04,16a .Pingit Bridge km.234 + 809 Baler-Baler Port Road, Baler, Aurora	---	No Bridge	---	3	2,000	.Vegetable .Coco nuts .Rice	Commercial Port	30	.Cars .Jeep .Trucks .Tricycles .Animals Driving	Transport Products and People to Market	1	Flat	---	.MFL=51.50 .OWL=51.20	Good
38	04,17a .Salay Bridge km.238 + 108 Dipaculao-Aurora Road, Brgy. Salay, Dipaculao, Aurora	23.42	Timber Bridge	Dilapidated	15	8,000	.Copra .Rice .Livestock	---	90	.Cars .Jeep .Tricycles .Animals Driving	Transport Products and People to Market	1	Flat	---	.MFL=45.80 .OWL=42.60	Good

Socio-Economic and Traffic Information					Engineering Information					Construction Information			
Location	Main Product	Development Plan	Traffic	Trip	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/	Condition of Access Road	Erection	Transportation	Evaluation Selection	
			Volume (ADT)	Composition				Product		Hydrological Condition	Equipment Local Material		of Steel Girder Road/Condition
00	.Sugar Cane	.Livestock	500	.Truck .Jeep	.Agricultural Products	10	—	—	—	.Rough Rd. .Proposed Width for Improvement 6 m	.Sand .Gravel .Timber	.Nasugbu-Tgaytay Rd. .Smooth	—
51	.Sugar Cane .Distillery	.Livestock	120	.Trucks .Jeep	.Agricultural Products	20	—	—	.MWL=42.20 .OWL=40.76	.Deteriorated Asphalt Rd. .Proposed Width for Improvement 6 m	.Sand .Gravel		Selected
00	.Coco Nuts .Coffee .Grain .Crops	.Short distance to and from the Market site	—	—	Agricultural Product	—	Rolling Terrain	Rock	.HWL=97.00 .LWL=85.00	—	—	—	—
00	.Vegetable .Coco nuts .Rice	Commercial Port	30	.Cars .Jeep .Truck .Tricycles .Animal Driving	Transport Products and People to Market	1	Flat	—	—	Good	.Can Purchase local Materials	.Nueva Ecija-Aurora Rd. .Good	—
00	.Vegetable .Coco nuts .Rice	Commercial Port	30	.Cars .Jeep .Trucks .Tricycles .Animals Driving	Transport Products and People to Market	1	Flat	—	.MFL=51.50 .OWL=51.20	Good	.Can Purchase local Materials	.Nueva Ecija-Aurora Rd. .Good	Selected
00	.Copra .Rice .Livestock	—	90	.Cars .Jeep .Tricycles .Animals Driving	Transport Products and People to Market	1	Flat	—	.MFL=45.80 .OWL=42.60	Good	.Can Purchase local Materials	.Nueva Ecija-Aurora Rd. .Good	Selected

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (8/10)

No.	Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information						Engineering Information							
			Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road		
39	04, 18a	.Mijares Bridge km.247 + 435 Baler-Casiguran Road, Bygy. Mijares Dipaculao. Aurora	12.3	Timber Bridge	Dilapidated	15	8,000	.Coco nuts .Vegetable .Rice			100	.Cars .Jeep .Trucks .Animals Driving	Transport Products and People to Market	3	Flat		.MFL=49.00 .OWL=48.30	Good	.C l a
40	04,19a	.Palayan Bridge km.89 + 700 Calayan-Nagcarlan Road, Nagcarlan Laguna	18.40	Bailey Bridge	Dilapidated	14	8,000	.Copra .Rice .Livestock	Livestock		63	.Cars .Jeep .Trucks .Animals Driving	Transport Products and People to Market	3	Rolling Terrain	Sandy Clay Soil	.HWL=160.00 .LWL=158.3	Some sec- tion is from fair to bad condi- tion	.C .E .E .C .S .C .I
41	04,20a	.Paragusan Bridge km.93 + 800 San Pablo-San Isidro Road, San Isidro, San Pablo City	40.00	Bailey Bridge	Dilapidated	6	3,500	.Rice .Coco nuts .Vegetable	.Fish Farm		50- 100	.Jeepney .Light Trucks	Transport Products and People to Market	---	Rolling Terrain	Sandy	.MFL=45.90 .OWL=-----	.Paved to Earth Rd. .Rough Rd.	.I
42	04,21a	.Tarak Bridge km.85 + 144 San Pablo-Sta. Monica-Sta. Veronica Road Sta. Veronica, San Pablo City Laguna	22.00	Bailey Bridge	Dilapidated	8	4,000	.Rice .Coco nuts .Vegetable .Fruits	.Fish Farm		50- 100	.Jeepney .Light Trucks	Transport Products and People to Market	---	Rolling Terrain	.Rock and .Sundy	.HWL=----- .DWL=0.50	.Paved to Earth Rd. .Rough Rd.	Lu
43	04,22a	.Sto. Nino Bridge km.0 + 550 Jct. City Road- Brgy. Sto Nino, Cainta, Rizal	18.00	Bailey Bridge	Dilapidated	5	75,000	.Fruits .Vegetable			50	.Cars .Jeepney .Jeep .Trailer	Transport Products and People to Market	3	Flat	.Rock .Clay .Sand	.MFL=----- .OWL=16.50	Good	C l r

PROPOSED BRIDGES (8/10)

Socio-Economic and Traffic Information					Engineering Information					Construction Information		Evaluation	Selection	
Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/ Hydrological Condition	Condition of Access Road	Erection Equipment			Local Material
8,000	.Coco nuts .Vegetable .Rice		100	.Cars .Jeep .Trucks .Animals Driving	Transport Products and People to Market		Flat		.MFL=49.00 .OWL=48.30	Good	.Can Purchase local Materials		.Nueva Ecija- Aurora Rd. .Fair	Selected
8,000	.Copra .Rice .Livestock	Livestock	63	.Cars .Jeep .Trucks .Animals Driving	Transport Products and People to Market	3	Rolling Terrain	Sandy Clay Soil	.HWL=160.00 .LWL=158.3	Some section is from fair to bad condition	.Crane .Delwag Hummer .Backhoe .Cement .Sand .Gravel .Lumber		.Calavan- Nagcavlan Rd. .Fair	Selected
3,500	.Rice .Coco nuts .Vegetable	.Fish Farm	50- 100	.Jeepney .Light Trucks	Transport Products and People to Market	---	Rolling Terrain	Sandy	.MFL=45.90 .OWL=----	.Paved to Earth Rd. .Rough Rd.	.Lumber			Selected
4,000	.Rice .Coco nuts .Vegetable .Fruits	.Fish Farm	50- 100	.Jeepney .Light Trucks	Transport Products and People to Market	---	Rolling Terrain	.Rock and .Sandy	.HWL=---- .DWL=0.50	.Paved to Earth Rd. .Rough Rd.	Lumber			Selected
75,000	.Fruits .Vegetable		50	.Cars .Jeepney .Jeep .Trailer	Transport Products and People to Market	3	Flat	.Rock .Clay .Sand	.MFL=---- .OWL=16.50	Good	Can Purchase local material		Good	Selected

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (9/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information						Engineering Information				Condition of Access Road	Loc	
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition			River/ Hydrological Condition
4 04,23a	.Del Pilar Bridge km.0 + 100 Jct. Summulong H/W Del Pilar Jet Road Del Pilar Ext. Antipolo, Rizal	18.50	Bailey Bridge	Dilapidated	4	68,000	.Cashiew Nut .Livestock .Fruits	Residential	50	.Cars .Jeepney .Tricycles .Trailer .Jeep	Transport Products and People to Market	3	Rolling Terrain	.Rock .Clay .Sand	.MFL=---- .OWL=23.35	Good	Can loc ria
5 04, 01b	.Arutayan Bridge km.147 + 000 Puerto Princesa North Road Roxas-Taytay Section, Palawan	17.00	Timber Bridge	Dilapidated	13	17,800	.Rice .Silica mining	Construction of more Barangay Roads and Water Works Project	38	.Jeepney .Mining Truck .Tricycle	Hauling Silica Road Repair	10	Rolling Terrain	Clay	---	Fair	.Cr .Ot de ra .Ca lo al
5 04,02b	.Binuan Bridge km.189 + 922 Puerto Princesa North Road Roxas-Taytay Section Palawan	18.36	Timber	Dilapidated	11	14,900	.Coco nuts .Rice .Lumber	Construction of more Barangay Road and Water Works Project	38	.Trucks .Jeepney .Tricycles	Hauling Logs and Agrucultu-ral	6	Rolling Terrain	Clay	---	Fair	.Cr .Ot de ra .Ca lo al
7 04,03b	.Maruyagon Bridge km.50 + 320.50 Puerto Princesa North Road, Brgy. Maruyagan Puerto Princesa City Palawan	15.00	Timber	Dilapidated	1	2,222	.Copra .Rice .Corn .Fish .Chrocoal .Logging	---	88	.Bus .Trucks .Jeepney .Heavy Equipment	Transport Products and Hauling Logs	---	---	Sandy	.MFL=14.40 .OWL=15.10	Good Condition (Due to Rainy Season)	.Ce .Sa .Gr .St .Lu
8 04,04b	.Dakoton Bridge km.62 + 761.50 Puerto Princesa North Road Brgy. Babuyan, Puerto Princesa City Palawan	30.00	Bailey Bridge	Dilapidated	1	2,286	.Fishing .Copra .Corn .Chaccoal .Rice .Logging	---	88	.Bus .Truck .Jeepney .Heavy Equipment	Transport Products and Houling Logs	---	Flat	Sandy	.MFL=20.60 .OWL=19.30	Bad Condition	.Ce .Sa .Gr .St .Lu

Socio-Economic and Traffic Information					Engineering Information					Construction Information		Evaluation	Selection
Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition	River/Hydrological Condition	Condition of Access Road	Erection Equipment	Transportation of Steel Girder Road/Condition		
.Cashew .Nut .Livestock .Fruits	Residential	50	.Cars .Jeepney .Tricycles .Trailer .Jeep	Transport Products and People to Market	3	Rolling Terrain	.Rock .Clay .Sand	.MFL=----- .OWL=23.35	Good	Can Purchase local material	Good	Selected	
.Rice .Silica mining	Construction of more Barangay Roads and Water Works Project	38	.Jeepney .Mining Truck .Tricycle	Hauling Silica Road Repair	10	Rolling Terrain	Clay	---	Fair	.Crane .Other provided by contractor .Can Purchase local Material	Fair	---	
.Coco nuts .Rice .Lumber	Construction of more Barangay Road and Water Works Project	38	.Trucks .Jeepney .Tricycles	Hauling Logs and Agrucultural	6	Rolling Terrain	Clay	---	Fair	.Crane .Other provided by contractor .Can Purchase local Material	.Manila to Calawag Port to Binvan	---	
.Copra .Rice .Corn .Fish .Chrocoal .Logging	---	88	.Bus .Trucks .Jeepney .Heavy Equipment	Transport Products and Hauling Logs	---	---	Sandy	.MFL=14.40 .OWL=15.10	Good Condition (Due to Rainy Season)	.Cement .Sand .Gravel .Steel Bars .Lumber	.Anilawan to Site .Bad Condition	Selected	
.Fishing .Copra .Corn .Chacoal .Rice .Logging	---	88	.Bus .Truck .Jeepney .Heavy Equipment	Transport Products and Houling Logs	---	Flat	Sandy	.MFL=20.60 .OWL=19.30	Bad Condition	.Cement .Sand .Gravel .Steel bars .Lumber	.Bad Condition	Selected	

TABLE 4.2.2 SELECTION FOR PROPOSED BRIDGES (10/10)

Bridge No.	Name and Location of Bridge	Present Condition of Bridge			Socio-Economic and Traffic Information					Engineering Information				Cons Erec Equip Local			
		Length (m)	Type	Present Condition	No. of Brangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition		Geological Condition	River/ Hydrological Condition	Condition of Access Road
04,05b	.Linawan Bridge km.30 + 972 San Andres-Calatrouc Road, Linawan, San Andres, Romblon	28.00	Timber	Dilapidated	4	6,700	Agricultural and Fishing	---	490	.Jeepney .Light Truck .Light Heavy Equipment .Tricycles	Transport Product	6	---	---	---	Fair	.Crane .Can P local rial
04,06b	.Madalag Bridge km.84 + 595 Locc. Alcantara Road, Madalag, Alcantra, Romblon	19.00	Bailey Bridge	Dilapidated	5	10,200	Agricultural and Fishing	---	310	.Jeepney .Light Tracks	Transport Product	5	---	---	.MFL=9.60 .OWL=7.4	Fair	.Crane .Can P local rial
04, 07b	.Tan-Agan Bridge km.11 + 100 Odiong-an-San Andres Road, Tan-Agan San Andres Romblon	19.00	Timber Bridge		4	5,814	Agricultural and Fishing		485	.Jeepney .Light Trucks .Light Heavy Equipment .Tricycles	Transport Product	5	---	---	.MFL=10.50 .OWL=----	Fair	.Crane .Can P local rial
04,08b	.Panique Bridge km.8 + 000 San Andres-Odiong-an Road, Panique, Odiong-an Romblon	21.34	Timber Bridge	Dilapidated	5	18,520	.Fishing .Fruits .Vegetable	---	490	.Jeepney .Light Trucks .Light Heavy Equipment	Agricultural Products	6	---	---	.MFL=9.00 .OWL=6.50	Fair	.Crane .Can P local rial
04,09b	.Maranlig Bridge km.56 + 637.80 Torrijos-Sibuyao Road, Maranlig-Torrijos Marinduque	18.86	Bailey Bridge	Dilapidated	3	2,787	.Garlic .Copra .Banana .Coco nuts .Rice	---	30	.Jeep .Truck .Weapon Carrier	.Hauling of Const .Agricultural Products	4	Mounte-nous-area	.Clay .Rock	.MFL=36.48 .OWL=30.50	.Gravel Rd.	.Suffi .Can P local rial



LOCATION FOR PROPOSED BRIDGES (10/10)

Socio-Economic and Traffic Information				Engineering Information				Construction Information		Evaluation	Selection			
Number of Barangay	Population Affected	Main Product	Development Plan	Traffic Volume (ADT)	Traffic Composition	Trip Product	Design Traffic Load (t)	TOPO Condition	Geological Condition			River/Hydrological Condition	Condition of Access Road	Erection Equipment Local Material
4	6,700	Agricultural and Fishing	---	490	.Jeepney .Light Truck .Light Heavy Equipment .Tricycles	Transport Product	6	---	---	---	Fair	.Crane .Can Purchase local Material	Fair	---
5	10,200	Agricultural and Fishing	---	310	.Jeepney .Light Trucks	Transport Product	5	---	---	.MFL=9.60 .OWL=7.4	Fair	.Crane .Can Purchase local Material	Fair	Selected
4	5,814	Agricultural and Fishing	---	485	.Jeepney .Light Trucks .Light Heavy Equipment .Tricycles	Transport Product	5	---	---	.MFL=10.50 .OWL=-----	Fair	.Crane .Can Purchase local Material	Fair	Selected
5	18,520	.Fishing .Fruits .Vegetable	---	490	.Jeepney .Light Trucks .Light Heavy Equipment	Agricultural Products	6	---	---	.MFL=9.00 .OWL=6.50	Fair	.Crane .Can Purchase local Material	Fair	Selected
3	2,787	.Garlic .Copra .Banana .Coco nuts .Rice	---	30	.Jeep .Truck .Weapon Carrier	.Hauling of Const .Agricultural Products	4	Mounte-nous-area	.Clay .Rock	.MFL=36.48 .OWL=30.50	.Gravel Rd.	.Sufficient .Can Purchase local Material	.Jia Buyabad by Boat .Good	Selected



**APPENDIX 5**

**HYDROGRAPHIC ANALYSIS  
OF BRIDGE OPENINGS**



## Open Channel Hydraulics

The hydraulic design component of this Study is concerned with the determination of the different flood levels that might occur in a channel due to a given flood and of the minimum waterway opening under a structure. The different flood levels were determined by the rating curve computation which is based on Manning's Formula (in metric units):

$$Q = \frac{1}{n} AR^2 S$$

where:

Q = discharge, m<sup>3</sup>/s

n = Manning's roughness coefficient

A = cross-sectional area, m<sup>2</sup>

R = hydraulic radius

(equals  $\frac{\text{cross sectional area}}{\text{wetted perimeter}}$  )

S = hydraulic gradient

The value of the coefficient, n, was estimated based on information. Assuming uniform to nearly uniform flow, the value of the hydraulic gradient, S, can be considered equal to the average slope of the stream.

For each site, three channel cross sections were considered: upstream section, bridge point section and downstream section. The selection of the upstream and downstream sections depended on their representativeness to the channel reach under study. Using the energy equation and the results of the rating curve computation, the water depth at the bridge point was obtained. The computation is contained in a computer program named BAK RAT.

The results of the hydraulic computation are given Table 1, while the supporting computer print-outs are reported separately.

From Table 1, it can be observed that the computed maximum flood level, MFL (computed), and the maximum flood level obtained by field interview, MFL (interview), are not too different, except for Dolores Bridge and Paragusan Bridge.

TABLE 1 RESULTS OF HYDRAULIC (AND HYDROLOGICAL) INVESTIGATIONS

BRIDGE NO.	NAME OF BRIDGE	D A (Km <sup>2</sup> )	Q (Design) (m <sup>3</sup> /s)	V (Ave.) (m/s)	MFL (Computed) (Elev.)	MFL (Interview) (Elev.)	MFL (Design) (Elev.)
01.02	MAPHILINDO	—	—	—	21.34	20.85	21.34
03.03	BACONG	119.6	2,247.47	8.38	51.72	50.95	50.95
03.07	SAN ROQUE	—	—	—	21.26	20.79	20.79
03.10	DOLORES	65.21	598.37	4.51	18.22	19.28	18.22
03.13	MANGKUYOG	8.32	101.254	6.82	99.51	99.60	99.60
03.17	SULA	51.79	534.59	3.79	22.17	21.31	21.31
04.07a	CAMAGONG	10.56	393.41	3.61	21.26	20.07	21.60
04.20a	PARAGUSAN	181.93	2,571.47	6.13	44.89	45.70	45.70
04.07b	TAN-AGAN	16.22	422.66	6.05	10.18	10.53	10.53
04.10b-2	IHATUB	4.16	155.72	2.86	2.11	2.11	2.40

Note :

- D A — Drainage Area
- Q (Design) — Design Discharge
- V (Ave.) — Average Velocity under the Bridge
- MFL (Computed) — Maximum Flood Level (50-year frequency)
- MFL (Interview) — Maximum Flood Level on Field Interview
- MFL (Design) — Maximum Flood Level for Design of Bridge

TABLE 2 HYDROLOGICAL DATA

BRIDGE No.	NAME OF BRIDGE	LOCATION OF BRIDGE	HWL/MPL (m)		LWL/OWL (m)		HIGH TIDE (m)	DIFFERENCE IN HEIGHT TEMPORARY BENCH MARKS (m) (STUDY TEAM)
			D P W H (1)	STUDY TEAM (2)	D P W H (1)	STUDY TEAM (2)		
01.02	MAPHILINDO BRIDGE	km 220+900 Biec-Lombo Rad, Binmaley, Pangasinan	20.85	20.85	18.68	18.67	-	(+) 0.49
03.03	BACONG BRIDGE	km 105+360 Luacan-Bacong Road, Bacong Bataan	-	50.95	-	46.45	-	-
03.07	SAN ROQUE BRIDGE	km 57+284 San Roque Barangay Road, Hagonoy, Bulacan	2.00	20.79	1.00	19.01	-	(+) 18.79
03.10	DOLORES BRIDGE	km 76+870 Dolores-Del Rosario Road, Dolores, Bacolor Pampanga	-	19.28	-	18.31	-	-
03.13	MANGKUYOG BRIDGE	km 169+000 Camachile- Bantug Road, Nueva Ecija	-	99.60	97.34	-	-	-
03.17	SULA BRIDGE	km 150+000 Tarlac-Sula Road Sula, Tarlac, Tarlac	49.10	21.31	47.20	19.31	-	(-) 27.79
04.07a	CAMAGONG BRIDGE	km 23+700 Quezon-Alabat Perez Road, Alabat, Quezon	3.48	20.07	0.75	0	-	(+) 18.12
04.20a	PARAGUSAN BRIDGE	km 91+84 San Pablo-San Isidro, San Pablo City, Laguna	8.00	45.70	0.50	39.00	-	(+) 37.70
04.07b	TAN-AGAN BRIDGE	km 11+100 Odiongan-San Andres Road, Tan-Agan San Andres, Romblon	-	10.53	-	0	-	-
04.10b-2	IHATUB BRIDGE	km 116+832.85 Boac-Gasan Road Ihatub, Boac, Marinduque	-	2.11	-	0	-	-

Note : (1) Data furnished by DPWH (2) MPL = maximum flood level.