

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ກະຊວງ ໂຍທາທິການ ແລະ ຂົນສົ່ງ

ໂຄງການປ້ອງກັນຕະຝັ່ງເຈື່ອນ (ໄລຍະ II)

ບົດລາຍງານຜົນສໍາເລັດໂຄງການ

ຜົນງານການຮ່ວມມືດ້ານວິຊາການ 4

ຄູ່ມື

ການກວດກາ-ສ້ອມແປງເຄື່ອງມື

ສໍາລັບການສໍາຫຼວດ-ວັດແທກ

ວຽກກໍ່ສ້າງປ້ອງກັນຕະຝັ່ງ

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ອົງການຮ່ວມມືສາກົນຍີ່ປຸ່ນ (JICA)

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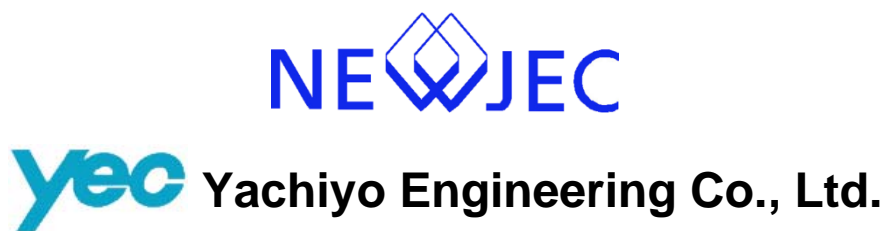
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THE PROJECT
ON RIVERBANK PROTECTION WORKS PHASE II
MAINTENANCE MANUAL ON SURVEY EQUIPMENT
FOR RIVERBANK PROTECTION WORKS



**THE PROJECT ON RIVERBANK PROTECTION WORKS
PHASE II**

**MAINTENANCE MANUAL ON SURVEY EQUIPMENT
FOR RIVERBANK PROTECTION WORKS**

CONTENTS

1	General	1
	1.1Objective	1
	1.2Responsibility of Maintenance Work	1
	1.3List of Granted Equipment for Survey Work	1
2	Method for Maintenance	3
3	Schedule on Maintenance Work of Survey Equipment	3

1 General

1.1 Objective

Maintenance manual on survey equipment that were donated in this “Phase II” Project and surveying tools, that have been donated in “Development Study” and “Phase I” is developed. Manual is prepared regarding when and how periodic inspection should be carried out, and how maintenance should be outsourced, if necessary, using photos under instruction of consultants so that C/P officials can play the main role in maintenance and utilize equipment effectively during the Project and after the Project termination. Previous equipment list, manuals for maintenance if any, list of donated surveying tools and other equipment to finalize integrated maintenance manuals will be reviewed and reorganized.

1.2 Responsibility of Maintenance Work

Responsibility of maintenance work is beared to C/P agency in the corresponding projects, that is, DoW, MPWT and provincial DPWTs, in principle.

1.3 List of Granted Equipment for Survey Work

(1) Phase II Project

For executing the project, the following equipment for survey were supplied by JICA.

Table 1 Supplied equipment for survey in Phase II

Ref No.	Name of Equipment	Quantity	Remarks
P2-1	Echo Sounder	1 unit	
P2-2	Portable GPS	4 units	Procured in Japan and taken along by the experts
P2-3	Digital Camera	3 units	Generalized equipment is procured in Lao P.D.R.
P2-4	Total Station	1 unit	Procured in Japan and taken along by the experts
P2-5	Portable Propeller-Type Current Meter ²	1 unit	Procured in Japan and taken along by the experts

(2) Phase I Project

During Phase I project, equipment for survey were supplied by JICA as shown in Table 2.

Table 2 Supplied equipment for survey in Phase I

Ref No.	Name of Equipment	Quantity	Remarks
P1-1	Echo Sounder	1	
P1-2	Rubber Boat	1	
P1-3	Outboard Motor for Rubber Boat	1	6PS
P1-4	Theodolite	1	
P1-5	Level	1	
P1-6	Transceiver	2	
P1-7	Sextant	1	
P1-8	Laser Rangefinder	2	
P1-9	Life Jacket	10	
P1-10	Wave Current Meter, ADCP	1	Ultrasonic Doppler Method

(3) JICA development study

No equipment for survey work was supplied by JICA.

2 Method for Maintenance

The following items are to be prepared for maintenance of survey equipment;

1) Directory of survey equipment granted to Lao P.D.R., in the project of Phase II and Phase I.

Items to be described in a sheet of directory for each equipment are:

- Name of equipment, number, specification, etc. for each equipment, accessories, spare parts
- Photographs of equipment
- Responsible agency/person for maintenance work
- Location of storage
- Granted year/month for each equipment
- Specific maintenance item, if any.

Example of directory sheet is as shown in Table 3.

2) Recording sheet of periodical maintenance work

According to maintenance schedule as shown later, periodical maintenance work for survey equipment, described in Table 1 and Table 2 shall be done and fill-in a recording sheet as shown in Table 4.

The following items are included in the recording sheet:

- Date of checking and name of person who dose the work.
- Condition of equipment including accessories: Yes or no (found or not found), condition is expressed as “good”, “bad”, if “bad”, specify details with sketch / photographs.
- To be checked by responsible person of maintenance work for survey equipment.

3 Schedule on Maintenance Work of Survey Equipment

Schedule of maintenance work of survey equipment is as shown in Table 5.

Table 3.1 Example of Directory of survey equipment

Ver:0

Date: May 20, 2011


Ref. No.	Name of equipment:		Responsible organization:	Responsible person, position:
P2-1	Echo sounder		Department of Waterway, MPWT	Mr. Souksavanh
Item No.	Item	pcs	Description	Photography and specific remark
1	TDM9000B (Recorder)	1	Dimension:363x256x120mm(HxWxD)	
2	Transducer	1	ART-009A10 φ 120x50mm, cable(10m)	
3	Outboard pipe	1	φ 27x800mm	
4	Boardside fixture	1	ARG-009A120	
5	Charger	1	TDM-9000A 60x110x188mm (220V)	
6	Thermal chart paper	3		
7	Canvas cover	1		
8	Manual	1	English manual / Japanese	
Spare parts	Fuse	5	3A	
S1	Thermal paper	3 roll		
S2				
Granted year(date)	2011/03/03		Location of storage: Project office	Checked by:

Table 3.2 Example of Directory of survey equipment

Ver:0

Date: May 20, 2011


<i>Ref. No.</i>	<i>Name of equipment:</i>		<i>Responsible organization:</i>	<i>Responsible person, position:</i>
P2-2	Portable GPS		Department of Waterway, MPWT	Mr. Souksavanh
<i>Item No.</i>	<i>Item</i>	<i>pcs</i>	<i>Description</i>	<i>Photography and specific remark</i>
1	Handy GPS	4	Handheld GPS eTrex H Size:4.4”Hx2.0”Wx1.2”D(11.3x5.1x3.0cm) Weight: 150gr with batteries Display: 5.4cmHx2.7cmW high-contrast LCD with bright backlighting	
<i>Granted year(date)</i>	2011/03/03		Location of storage: Project office	<i>Checked by:</i>

Table 3.3 Example of Directory of survey equipment

Ver:0

Date: May 20, 2011


Ref. No. P2-3	Name of equipment: Digital Camera		Responsible organization: Department of Waterway, MPWT	Responsible person, position: Mr. Souksavanh
Item No.	Item	pcs	Description	Photography and specific remark
1	Digital Camera	3		
Granted year(date)	2011/03/03		Location of storage: Project office	Checked by:

Table 3.4 Example of Directory of survey equipment

Ver:0

Date: May 20, 2011


Ref. No. P2-4	Name of equipment: Total Station		Responsible organization: Department of Waterway, MPWT	Responsible person, position: Mr. Souksavanh
Item No.	Item	pcs	Description	Photography and specific remark
1	Leica FlexLine	1	TS02	 <p>-Storage: Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to “14 Technical Data” for information about temperature limits.</p> <p>-Remove batteries from the product and the charger before storing.</p> <p>-Dry the product, the transport container, the foam insets and the accessories at a temperature not greater than 40deg.C and clean them. Do not repack until everything is completely dry. Always close the transport container when using in the field.</p>
2	Battert charger	1	GKL211	
3	Protective cover/Lens hood	1	With Lens cleaning cloth	
4	Data cable	1	GEV223(USB leica)	
5	Adjustment tool	2		
6	Battery	2	GEB211	
7	User manual and quick guide	1	English only	
8	Tri pod	2		
9	Reflector pole	2		
10	Reflector	2		
11	Reflector support	1		
12	CD driver	1		
13	Accessory bag	11	Made of yellow color cloth	
Granted year(date)	2011/03/03		Location of storage: Project office	Checked by:

Table 3.5 Example of Directory of survey equipment

Ver:0

Date: May 20, 2011


Ref. No.	Name of equipment:		Responsible organization:	Responsible person, position:
P2-5	Current meter		Department of Waterway, MPWT	Mr. Souksavanh
Item No.	Item	pcs	Description	Photography and specific remark
1	Current meter	1	Meter MCM-1, Product code: Sensor S/N 90295	 <p>After measuring: Sensor:1)Wash well with clean fresh water, 2) Dry with a clean cloth, 3) Remove any rubbish, seaweed tangled into the propeller with a pair of tweezers. Otherwise it affect the revolving of propeller and cause inaccurate measured data, 4) Store into the case. Although Sensor is designed to be water-resistant, it is recommended the component to be dried out completely under indirect sunshine before storing. Counter: Counter is also designed water resistant but to keep dry with cloth after using. Counter is also to be dried out completely under indirect sunshine before storing. Current meter has to be calibrated every year by the current meter calibration center to keep its high standard performance for especially hydropower planning and survey. If not available to be calibrated, to keep the propeller part not damaged nor deformed.</p>
2	Data display box	1	Counter S/N 55097, Counter (MTC-2)	
3	Weight	1	2.8 kg	
4	Cable	1	15m	
5	Rod	1	1m	
6	Manual	1	English	
Granted year(date)	2011/03/03		Location of storage: Project office	Checked by:

Table 4.1 Example of Record of Maintenance Work Directory of survey equipment

Date: May 20, 2011

Ref. No. P2-1	Name of equipment: Echo sounder		Responsible organization: Department of Waterway, MPWT		Responsible person, position: Mr. Souksavanh
Item No.	Item	pcs	Check(Y/N)	Condition(Goodl, Bad, N/A)	If condition is bad or N/A, specify the condition with photograph or estimated reason here.
1	TDM9000B	1			
2	(Recorder)	1			
3	Transducer	1			
4	Outboard pipe	1			
5	Boardside fixture	1			
6	Charger	3			
7	Thermal chart paper	1			
8	Canvas cover	1			
	Manual				
Spare parts		5			
S1	Fuse	3			
S2	Thermal paper	roll			
Granted year(date)	2011/03/03		Location of storage: Project office		Checked by:

Table 4.2 Example of Record of Maintenance Work Directory of survey equipment

Date: May 20, 2011

<i>Ref. No.</i> P2-2	<i>Name of equipment:</i> GPS		<i>Responsible organization:</i> Department of Waterway, MPWT		<i>Responsible person, position:</i> Mr. Souksavanh
<i>Item No.</i>	<i>Item</i>	<i>pcs</i>	<i>Check(Y/N)</i>	<i>Condition(Goodl, Bad, N/A)</i>	<i>If condition is bad or N/A, specify the condition with photograph or estimated reason here.</i>
1	Handy GPS	4			
<i>Granted year(date)</i>	2011/03/03		Location of storage: Project office		<i>Checked by:</i>

Table 4.3 Example of Record of Maintenance Work Directory of survey equipment

Date: May 20, 2011

Ref. No. P2-5	Name of equipment: Current meter		Responsible organization: Department of Waterway, MPWT		Responsible person, position: Mr. Souksavanh
Item No.	Item	pcs	Check(Y/N)	Condition(Goodl, Bad, N/A)	If condition is bad or N/A, specify the condition with photograph or estimated reason here.
1	Current meter	1			
2	Data display box	1			
3	Weight	1			
4	Cable	1			
5	Rod	1			
6	Manual	1			
Granted year(date)	2011/03/03		Location of storage: Project office		Checked by:

Table 4.4 Example of Record of Maintenance Work Directory of survey equipment

Date: May 20, 2011

Ref. No. P2-4	Name of equipment: Total Station		Responsible organization: Department of Waterway, MPWT		Responsible person, position: Mr. Souksavanh
Item No.	Item	pcs	Check(Y/N)	Condition(Goodl, Bad, N/A)	If condition is bad or N/A, specify the condition with photograph or estimated reason here.
1	Leica FlexLine	1			
2	Battert charger	1			
3	Protective cover/Lens	1			
4	hood	1			
5	Data cable	2			
6	Adjustment tool	2			
7	Battery	1			
8	User manual and quick	2			
9	guide	2			
10	Tri pod	2			
11	Reflector pole	1			
12	Reflector	1			
13	Reflector support	11			
	CD driver				
	Accessory bag				
Granted year(date)	2011/03/03		Location of storage: Project office		Checked by:

Table 4.5 Example of Record of Maintenance Work Directory of survey equipment

Date: May 20, 2011

Ref. No. P2-5	Name of equipment: Current meter		Responsible organization: Department of Waterway, MPWT		Responsible person, position: Mr. Souksavanh
Item No.	Item	pcs	Check(Y/N)	Condition(Goodl, Bad, N/A)	If condition is bad or N/A, specify the condition with photograph or estimated reason here.
1	Current meter	1			
2	Data display box	1			
3	Weight	1			
4	Cable	1			
5	Rod	1			
6	Manual	1			
Granted year(date)	2011/03/03		Location of storage: Project office		Checked by:

Table 5 Schedule of maintenance work for survey equipment granted by Japan through Riverbank Protection work Project Phase II and Phase I

	2011												2012												2013												2014												
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Item																																																	
Preparation of Maintenance manual							▼																																										
Periodical checking						▼										▼															▼																		