# LABOR-BASED ROUTINE/PREVENTATIVE ROAD MAINTENANCE (BARANGAY ROADS)



Developing a Sustainable and Replicable System

Field Manual

#### WHY WE NEED GOOD ROADS

- BETTER ACCESS FOR FARM PRODUCE. -Farmers can market their crop more easily, cheaply and timely with less damage
- BETTER ACCESS FOR PEOPLE People can travel more easily, regularly and in more comfort.
- BETTER ACCESS FOR SOCIAL SERVICES. Easier for people to reach services such as clinics, as well as the services to come to them.
- BETTER ACCESS FOR CONSUMER GOODS. Goods for the sari sari stores can come in more easily and more cheaply.

#### WHAT IS A GOOD ROAD

ONE THAT IS WELL DESIGNED AND WELL CONSTRUCTED SO THAT IT CAN WITHSTAND ADVERSE WEATHER SUCH AS STORMS WITHOUT BEING WASHED AWAY.

IN THE UPLANDS THE CONDITIONS ARE MORE EXTREME SO FOR THE ROAD TO BE PROPERLY BUILT IS EVEN MORE IMPORTANT.

IT IS EASIER TO MAINTAIN A WELL BUILT ROAD.

THEY MUST STILL RECEIVE REGULAR MAINTENANCE TO ENSURE THEY STAY IN GOOD CONDITIONS. Eg:

- Keeping the side drains and turnouts open.
- Clearing debris from the culverts.

A ROAD THAT IS NOT PROPERLY DESIGNED AND BUILT CANNOT WITHSTAND THE ELEMENTS AND IS VIRTUALLY IMPOSSIBLE TO MAINTAIN.

#### THE PROBLEM

BARANGAY LEVEL ROADS ARE ALLOWED TO DETERIORATE DUE TO INADEQUATE, IRREGULAR MAINTENANCE CARRIED OUT OFTEN ONLY IN EMERGENCIES, IE MAJOR LANDSLIPS.

STRUCTURES SUCH AS CULVERT CROSSINGS ARE NOT MAINTAINED ON A REGULAR BASIS AND ARE ALLOWED TO BLOCK UP, LEADING TO FAILURE OF THE ROAD IN THE VICINITY.

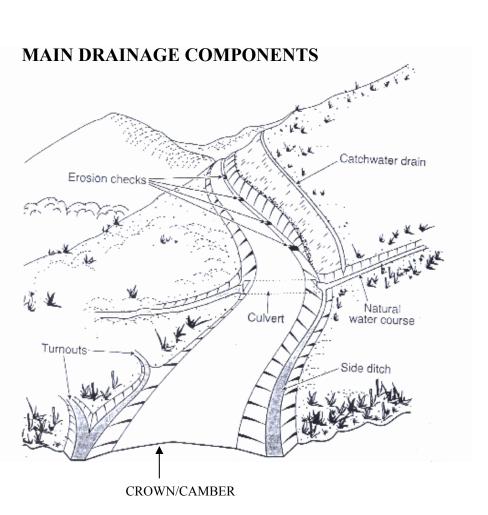
<u>RESULT</u>: FOR LONG PERIODS, PASSAGE ON THE ROAD IS RESTRICTED AND DIFFICULT AND EVERY FEW YEARS AN EXPENSIVE REHAB IS REQUIRED.

#### THE SOLUTION

ROAD MAINTENANCE SHOULD BE CARRIED OUT ON A CONTINUOUS REGULAR BASIS SO THAT THE ROAD STAYS IN GOOD CONDITION,

ie. THAT THE CRITICAL COMPONENTS OF THE ROAD, SUCH AS SIDE DRAINS, TURNOUTS AND CULVERTS ARE MAINTAINED IN WORKING ORDER SO THAT THERE IS NO MAJOR DAMAGE TO THE ROAD AFTER EACH STORM.

THIS IS CALLED ROUTINE/PREVENTATIVE MAINTENANCE



#### THE IMPORTANCE OF DRAINAGE

Keep water off the running surface and clear of the road by:

Preventing water getting on to the road (CATCHWATER DRAINS

Getting water off the road (SUITABLE CAMBER OR DIVERSIO BANKS)

Getting water away from the road (SIDE DRAINS & TURNOUTS

Getting water across the road (CROSS DRAINAGE egCULVERT

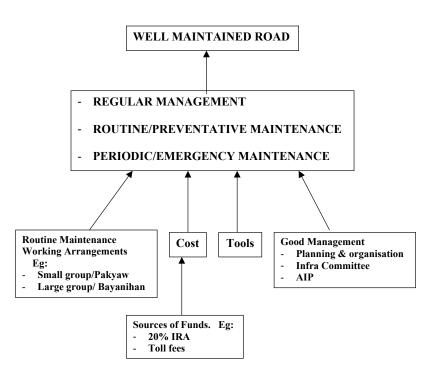
Control erosion: -of the road (eg SPEED CONTROL, HUMPS);

-of the ditches (eg SCOUR CHECKS);

of culverts and adjacent land (eg VEGETATION

Control siltation in ditches and culverts (MAINTENANCE).

#### **COMPONENTS IN MAINTAINING A GOOD ROAD**





#### REGULAR MANAGEMENT

- Much damage is done to the surface by vehicles in wet weather
- Certain practices can cause significant damage to the surface, ie wheel chains and carabau sleds
- Cultivating right up to the road side can cause severe erosion, esp at the turn-outs
- Reduced speeds reduce damage to the surface

<u>REGULAR MANAGEMENT</u> can help prevent unnecessary damage to the road EG-

**REGULATIONS/ORDINANCES** prepared by the barangay council outlining certain practices: EG:-

- in bad weather, closing the road or imposing fines on vehicles.
- discouraging damaging practices, ie carabao sleds, wheel chains imposing fines. (See example opposite)
- prohibiting cultivation within 2 m of the roadside

**INSTALLING SPEED BUMPS to slow vehicle speed** 

Republic of the Philippines Province of Davae del sur Municipality of Magsaysay Barangay of Tagaytay

Introduce by: Kagawad Cristita G. Constanting Seconded by: Kagawad Dorillo T. Luquisan

CRDINAMSA KABAHIN SA FAGMENTIKAR SA DALAN MGA GITAWAG UG LABOR BASE OF ROAD MAINTENAMOE (LBRM) DIIN ANG BARANGAY TAGAYTAY MAOY PI-LOT AREA SA PROJECT SA UPLAND DEVELOGADET PROGRAM ( ULF).

> BARAFGAY CRDINAPUE FO.05 SERRIES CF 2003

Ang tanan nga membro sa Purok 1 hangtud sa lurok 6 macy mcmintenar sa dalan o B arangay Road.

- Section 1.Ang kada purok adunay permeters nga ilang pagamentinahon, ang purok 1 ug 2 adunay 1,100 meters ang ilang mintenon, ug ang purok 3 hangtud sa purok 6 dunay 250 meters nga pagamintenon.
- Section 2. Pakyas sa ragtuman sa maong ordinance adunay penalty ang mga menoro sa maong purok ug ang district kagawad aduna poly multa **ng**a 100.00 ug ang purok leader pagamultahan ug 75.00 , didto kuhaon sa ilang hom.
- Section 3.Alang sa mga dagkong hayop, sama sa Karabaw, Kabayo, Baka kinahamlan nga dili moagi sa dakong dalan, kon dili didto paagiaon sa tagiya sa maong hayop sa gigahin nga dalan para sa mga hayop.
- Section 4.Kinsa kadtong mapakyas sa pastuman niini,adunay multa : premiro 720.00 .ikaduka 7 50.00 ug sa ikatulong opensa 7 100.00 ug ipatawag sa Barangay Captain.
- Section 5.Pagdili sa pag-agi sa mga dagkong sakyanan panahon sa ting-ulan kay makadaut sa karsada, ang mesupak niini ipatawag sa Barangay Kapitan urang opensa multa 20.00, ikaduhang opensa 50.00 ug ang ikatulong opensa 100.00 ug sa gihapon ipatawag sa Barangay Kapitan.

Prepared by:

Himbland ayan

CESANTO HAVAE

#### ROUTINE/PREVENTATIVE MAINTENANCE

#### PERIODIC/EMERGENCY MAINTENANCE

THIS IS THE NOT SO REGULAR TASKS, EG-

REPAIR/MAINTENANCE OF LARGER STRUCTURES,EG BRIDGES

REMOVAL OF LARGE LANDSLIPS,

REPAIR OF RUNNING SURFACE AFTER A PERIOD OF WEAR AND DAMAGE. EG GRADING

IT IS USUALLY EQUIPMENT BASED.

SOURCE OF EQUIPMENT- MLGU, PLGU

BASIS- FULL RENTAL OR BARANGAY SUPPLYING ONLY FUEL/OIL & DRIVER ALLOWANCE

THE REGULAR ON-GOING WORK AIMED AT MAINTAINING THE DESIGN ARRANGEMENTS IN WORKING ORDER SO THAT THE EFFECTS OF ADVERSE WEATHER ARE MINIMISED.

IT IS PREDOMINANTLY LABOR-BASED.

**EXAMPLES:-** MAINTAINING SIDE DITCHES & TURNOUTS,

FILLING POTHOLES, CLEANING CULVERTS,

**CUTTING BACK VEGETATION** 

#### **IMPORTANCE OF ROUTINE/PREVENTATIVE MAINTENANCE:**

IF EFFECTIVELY DONE, IT CAN:-

- KEEP THE ROAD IN A PASSABLE CONDITION.
- REDUCE THE LIKELIHOOD OF MAJOR DAMAGE & THEREFORE THE NEED FOR OUTSIDE ASSISTANCE IN THE FORM OF MACHINERY.
- ALLOWS THE UPKEEP TO BE WITHIN THE CAPACITY OF THE BARANGAY.
- ASSISTS THE LOCAL ECONOMY BY SPENDING THE FUNDS LOCALLY.

# TASKS INVOLVED IN ROUTINE/PREVENTATIVE ROAD MAINTENANCE):-

CONTROLLING SIDE VEGETATION [MONTHLY]

FILLING RUTS AND POTHOLES & MAINTAINING ROAD SURFACE [BI-MONTHLY OR AFTER HEAVY RAIN]

CLEARING AND REPAIRING SIDE DITCHES [BI-MONTHLY OR AFTER HEAVY RAIN]

CLEANING AND MAINTAINING CULVERTS [BI-MONTHLY OR AFTER HEAVY RAIN]

MAINTENANCE OF EROSION PREVENTIVE MEASURES (VEGETATIVE/SIMPLE STRUCTURES)

[MONTHLY OR WHEN NECESSARY]

#### TYPES OF WORK ARRANGEMENTS

#### **Options:**

SMALLER TEAMS, (the most efficient and practical arrangement) maintenance crews working full time, either as a group or with one man responsible for a set length of road (lengthman system). They will be earning wages, ie on a daily wage basis or individual contract. If an organised CBO is present, a group contract can be awarded. (See contract examples attached)

LARGE GROUPS, ie a representative from each family in a sitio, operating on a bayanihan basis, eg once per month or when required. It is common that Foodfor-Work is provided as an incentive.

Combination of above. [Eg large group (bayanihan) being used for the simpler tasks such as vegetation control, while paid labor or pakyaw for others such as drainage maintenance or clearing landslips]

# FOR ROUTINE/PREVENTATIVE MAINTENANCE TO WORK PROPERLY IT REQUIRES:-

#### i. COMPETENT WORKERS,

- properly supervised and trained (Foreman/Kapatas)
- properly equipped (tools)
- working on a regular (daily) basis.

#### ii. THE WORK IS PROPERLY PLANNED

#### **TOOLS REQUIRED**

#### I SET PER WORKER CONSISTING OF:-

#### NORMALLY PRIVATELY OWNED BY WORKER:-

BOLO/SCYTHE (x 1) AXE (x 1)

#### **NEEDING TO BE SUPPLIED:-**

SPADE/SHOVEL (x 1)
PICK MATTOCK (x 1)
DIGGING BAR (x 1)
RAKE (x 1)

#### ITEMS TO BE ISSUED PER TEAM (4/5 WORKERS):-

TAMPERS (USUALLY HOME-MADE WOODEN) (x 2) WHEEL BARROW (x 1) ROPE/ROD/BUCKET (FOR CLEANING CULVERTS)

#### **Implementation**

It is possible for a Barangay to implement a routine road maintenance programme for the roads within their boundaries.

However, it is likely to need support from other sources (MLGU, PLGU), both financially and technically

The MLGU Engineering office can organise the relevant training and institutional support in setting up the programme

#### THE LIKELY COST

A rule of thumb is 1 man/km

If the daily wage is = P125/day

= **P2500/month** 

= P30,000/year/km

#### Therefore 5 kilometres of road = P150,000/year

The number of men per Km may vary according to the situation. It is possible that more labour can be taken on in wet weather and for specific circumstances ie landslides

May need to add cost of capatas/foreman (P150-200/day)

Where the road network within the barangay is large, potential high cost can be reduced by combination with Bayanihan, ie permanent workers carrying out more critical tasks, with occasional tasks such as vegetation control carried out by bayanihan.

Can also be combined with regular periodic mechanised work such as annual grading.

#### **FUNDING**

#### POSSIBLE FUNDING SOURCES:-

- BARANGAY IRA (20% DEVELOPMENT FUND)
- MUNICIPAL & PROVINCIAL GRANTS
- TOLL FEES
- OTHER FUNDS, ie FEES FROM BARANGAY OPERATED INFRA EG DRYING FLOORS;
- GRANTS FROM CIVIC ORGANISATIONS

#### RESPONSIBILITIES IN RELATION TO ROAD MAINTENANCE

- The Barangay Councils are legally responsible for barangay level roads and have funds (eg 20% IRA)
- The Barangay Council Infra Committee are technically responsible for maintaining & managing the road,
- MLGUs often allocate funds annually specifically for barangay roads
- UBAs can manage the maintenance but they have no direct legal access to funds such as 20% IRA.

### Labor-based Routine/Preventative Road Maintenance

• RELEVANT SUB-BODY (Bgy Infra Committee):

#### **FACTORS:**

#### It's membership

- Chairman Kagawad
- Vice Chairman kagawad
- 2/3 members from Civil Societies (eg UBA) or Puroks

#### It's responsibilities:-

- Identifying requirements;
- Preparation of estimates;
- Management of infra activities, eg road maintenance

- PROCESS IN IMPLEMENTING A
   BARANGAY LEVEL LABOR-BASED
   ROUTINE ROAD MAINTENANCE
   PROGRAMME
- 1. Make a plan (3 years)
- 2. Organise funding
- 3. Make a specific implementation plan (eg 6 months or 1 year)
- 4. Manage the implementation

## Labor-based Routine/Preventative Road Maintenance BARANGAY ROAD MAINTENANCE PLAN

# The Barangay should prepare a 3 year BARANGAY ROAD MAINTENANCE PLAN (BRMP)

#### **PURPOSE**

To ensure that the Barangay roads are maintained in a passable condition by:-

- Effective planning and implementation of regular routine maintenance;
- Allocation of appropriate funding;
- Identification of what additional funds are required.

As well as being an effective means of organising the activities, it should also be effective in presenting to possible sources of assistance (MLGU, PLGU, NGOs)

The essential components of the plan should be:-

- a. Rationale
  - Barangay profile (population, area)
  - Agricultural potential (farming area, potential crops and total outputs, crop calendar, marketing requirements)
  - Weather pattern (Likely wet, wet/dry, dry months)
  - Likely types of vehicles and traffic levels
  - The present status of the roads (periods of impassability, season limits on types of vehicles, level of hindrance to economic and social activity)
  - Present road management arrangements (bayanihan etc)

#### b. Objective of plan

#### c. Planned activities

- Road management activities (ordinances etc)
- Road layout diagram and detail of required improvement and maintenance activities.
- Proposed timescale
- Fund raising activities (Toll fees etc)

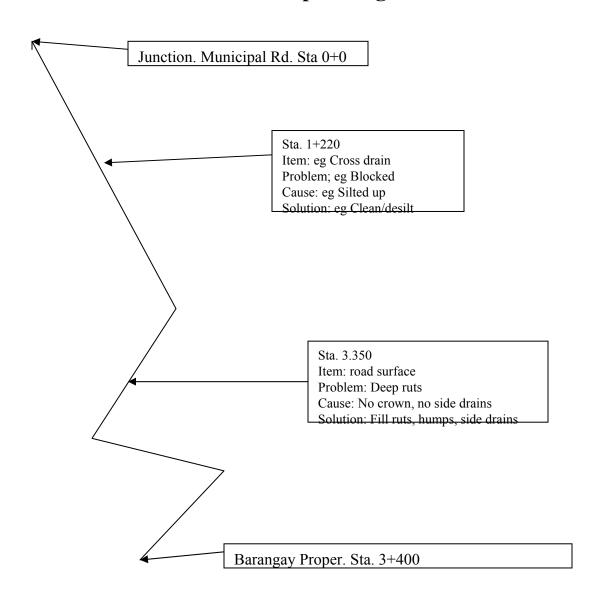
#### d. Proposed management

- Working arrangements (contracts/bayanihan etc)
- Management role of BLGU

#### e. Budget

- Likely annual cost
- Funds to be allocated by BLGU
- Funds likely to be available from elsewhere (MLGU, toll fees)
- Additional funds required

# Tools for Plan Preparation Example Diagram



# PLANNING TOOLS (Cont'd) Summary of Potential Interventions

This is complementary to the line diagram and both summarises the problems and potential interventions as well as concentrating the minds of the community on these problems and solutions

Component	Problems/ Issues	Causes	Units/Qty/ Stations	Actions
Road Surface	1. 2. 3.			
Cross Drainage	1. 2. 3.			
Box Culverts/ Bridges	1. 2.			
Ditches/Canals	1. 2. 3.			
Humps	1. 2.			
Erosion Control	1. 2. 3.			

#### **METHODOLOGIES FOR FUND GENERATION**

- MLGU FUNDING SYSTEM
  -BARANGAY & MUNICIPAL IRA (ANNUAL BUDGETS & AIP)
  [The Barangay AIP each year must reflect the planned activities]
- ACTIVE CONTACT/LIAISON WITH MUNICIPAL & PROVINCIAL GOVERNMENT IN TAPPING AVAILABLE FUNDS & ASSISTANCE
  - LODGING BARANGAY AIPS ON TIME WITH MLGU;
  - BEING AWARE OF AVAILABLE FUNDS AT MLGU & PLGU;
- IMPLEMENTATION OF INCOME GENERATING ACTIVITIES, eg road tolls (These can only usually raise supplementary income)

#### **SETTING UP A TOLL FEE SYSTEM** – Main factors:-

THE MOST SUITABLE SITUATION [ the road between Bgy proper and outside.]

WHAT SHOULD BE TAXED [eg Traders & passenger vehicles, skylabs:]

ORDINANCES [Drawn up by Bgy Council, endorsed by Municipal Council](See example)

HOW TO MANAGE IT [eg permanent manned gate or monthly arrangement with regular commercial users]

WHERE TO KEEP THE FUNDS [Usually in the general fund, possibly in a special account]

The income generated for one barangay road can be used for the maintenance of all the barangay roads within the barangay.

Republic of the Philippines Province of Dayao del sur Municipality of Magsayoay Barangay of Tagaytay

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Introduce by: Kagawad Cristita G. Constanting Seconded by: Kagawad Dorill: T. Luguisan

> ORDINANSA KABAHIN SA MGA SAKYAMAN NGA HOSULOD NYINING MAONG BARANGAY SAMA SA: SKYLAB, JEEP, UG TRUCK PAGAKOLEKTAHAN UG TOLL FEE.

> > BARANGAY CRDINANCE NO.06

SECRIFS OF 2003

Ang dili motuman sa maong ordinansa pagamultahan:ug ipatawag sa Sarangay Kapitan.

Unang opensa 20.00 Tkadubang opensa - 50.00 Tkatulong opensa - 100.00

Prepared by:

THE PARTY AND SERETARY

CESARTI SANAH

# LABOR-BASED ROUTINE/PREVENTATIVE MAINTENANCE Implementing a Maintenance Programme

#### **DETAILED PLAN**

- Organise method of working, eg contract, paid labour, bayanihan
- Prepare & issue contracts (if applicable)
  - Prepare implementation plan: eg

    Activity: Start Date: Period: No of Workers: Materials needed
- Clarify working and reporting arrangements eg daily supervision & recording, measurement of accomplishment, billing, payment arrangement

#### MANAGING THE PROGRAMME

- Record sheets (eg- a1 & a2) provide records of daily accomplishment & labour.
- Daily supervision & recording should normally be by a member of the Bgy Infra committee.
- Billing and payment is normally twice monthly. Those responsible for verifying the accomplishment & approving payments depends on the situation, Barangay Captain & MLGU Engineer
- It is useful at each ½ monthly verification to prepare a target sheet (example attached) for the next ½ month. This can aid effective management and be used to check accomplishment at the end of that half month.

#### **USE OF CBOS**

A major value of the labor-based road maintenance and rehab approach is that it can be used to build capacity among CBOs, notably through contracts

If a CBO is to be used, it should:

- Be registered (with eg CDA or Dept of Labor)
- Have legitimately elected officers
- Be competent in keeping financial records
- Approved by Bureau of Internal Revenue to issue receipts
- Have a bank account

# LABOR-BASED ROUTINE/PREVENTATIVE MAINTENANCE Implementing a Maintenance Programme

# **Guidelines for Effective Planning of Maintenance Activities**

- Address the most critical portions of the road first, ie the areas that most hinder transport and those most likely to be damaged in bad weather.
- In these critical areas:- (1) Don't just repair the symptom, ie the most obviously damaged component, but address the whole of the problem, and; (2) Start at the top. For example, if an embankment is being eroded by a large mass of water flowing over it, aim to reduce the amount of water by diverting it off the road further up, starting at the top. The embankment itself can be repaired when everything else is being addressed.
- Another example is gullies in a road. Don't just repack the gullies but also stop the water actually flowing in the road by crowning or humps.
- Repair damage such as land slips as soon as they occur, otherwise the damage will be magnified.
- When the use of a **grader** is included in the maintenance plan, if possible it should be scheduled at an early stage. The maintenance crew must work with it, finishing off its work, eg opening turnouts.

### Example Template of a contract between Barangay and UBA/CBO

	<ul> <li>Republic of the Philippines</li> <li>Province of</li></ul>	President/Chairma
•	Date	
•		(Peoples Organisation
•	Dear Sir,  • ROAD MAINTENANCE CONTRACT	
•	1. I am directed by the Barangay Council (Resolution) to offer you a contract to provide services for the maintenance of	
•	b. The general work specifications to be followed are attached, together with the Programme of Work. It is expected that a detailed work plan will be prepared prior to start implementation meeting). c. You will be provided with the required tools. You are personally responsible for their safekeeping and should any loss occur you are financially responsible for their replacement. d. Maintenance Component:	
•		
	>> 25% Admin. =	
:	TOTAL = e. The works will be inspected twice monthly. Should it be apparent that the work is not being carried out in a proper manner then payment shall be withheld until such time as I and the Baranga are satisfied that the work has been properly carried out. f. The contract is automatically cancelled should either party fail to carry out their obligations under the contract. If you wish to accept the contract on the terms and conditions set out above you should sign the acceptance below	Council Infra Committee
	Yours faithfully	
	Chairman	Barangay Counci
	Acceptance; I accept the contract on the terms and conditions set out in the above letter	
	. accept the contract on the terms and contained set out in the accept teles	
•	Date Signature	(Chairman/President
	PO Name & Address	10

Reg. No.

#### Example Template of a Contract between Barangay and a Road worker

	Republic of the Philippines
	• Province of
	Municipality of
	Barangay of
	Date Name
•	ID. No
•	Dear Sir,  • ROAD MAINTENANCE CONTRACT
•	I am directed by the Barangay Council (Resolution) to offer you a contract to provide services for the maintenance of From station
•	The terms and conditions of the contract are as follows:
•	You are expected to carry out the following road maintenance tasks:
	Vegetation Control
	<ul> <li>Filling of Rills, potholes, ruts and depressions (including stockpiling)</li> </ul>
	Restoration of Road Surface
	Cleaning/ repairing/ reshaping of side ditches
	Cleaning Culverts and other structures
	Erosion control measures
	<ul> <li>Report major damage to the Foreman/supervisor immediately</li> </ul>
•	You will be provided with the tools required for the work. You are personally responsible for their safekeeping and should any loss occur you will be financially responsible for their replacement.
•	You will be paid for providing services at the rate of
•	The contract will begin from the day of starting work which must be within five (5) days of your acceptance. The contract will run for from that date.
•	The works will be inspected twice monthly and should it be apparent that the work is not being carried out in a proper manner then payment shall be withheld until such
_	time as the Barangay Council Infra Committee is satisfied that the work has been properly carried out.
•	The contract is automatically cancelled should either party fail to carry out their obligations under the contract.  If you wish to accept the contract on the terms and conditions set out above you should sign the acceptance below.
•	If you wish to accept the contract on the terms and conditions set out above you should sign the acceptance below.
	Yours faithfully
	ChairmanBarangay council
•	Acceptance;
•	I accept the contract on the terms and conditions set out in the above letter
•	DateSignature

#### **ROUTINE ROAD MAINTENANCE PROGRAMME**

#### **ACTUAL DAILY ATTENDANCE SHEET**

eriod covered:-

repared by

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ame of Project:-  Location:-																				
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Submitted by Confirmed by

UDP Engineer **Bgy Captain** Munic. Engineer **Foreman UBA** Chairman

#### a2. LABOR BASED ROUTINE ROAD MAINTENANCE PROGRAMME

Semi-Monthly Work Assignment & Progress Report

Period From	_ to	,2004

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ocation:-

		Month of																			
			Month of													_	4.1				
Work Activity	Accompls hm't	1	2	3	4	5	6	7	8	9	1 0	1 1	1 2	1 3	1 4	1 5		10	otal	Remarks	
		1 6	1 7	1 8	1 9	2 0	2	2 2	2 3	2 4	2 5	2 6	2 7	2 8	2 9	3 0	3 1	Qty	Unit		
Vegetation Control	Ln.m of road																				
Road Surface Repair	Ln.m of road																				
Road reshaping	Ln.m of road																				
Sideditching/Turnouts	Ln.m																				
Cleaning culverts	Number																				
Erosion protection	No. of sites																				
Stockpiling	Cu.m																				
Other tasks																					

o be reported by:

Checked by

Noted by

Foreman UDP Engineer PPO Assigned Technical Staff Barangay Captain Municipal Engineer

#### AKSYONG PLANO SUBAY SA PROGRAM OF WORKS SULOD SA DUHA KA SEMANA (Period \_\_\_\_\_\_)

WORK ITEM	AKTIBIDADIS	TARGET	START-UP	MANPOWER	ACCOMPLISHMENT	REMARKS/ISSUES
Maintenance	Vegetation Control					
	Reshaping Side ditches					
	Cleaning ditches					
	Reshaping road surface					
	Filling potholes, ruts					
	Cleaning of structures					
	Erosion control					
Upgrading & Improvement	Installation of ditches					
inp.o. viivii	Installation of humps					
	Installation of Culverts					