

MODULE 2

CONCEPTS OF RURAL ROAD MAINTENANCE

Objectives

After fulfilling Module 2, you will be able to:

- Understand concepts of Rural Road Maintenance
- Distinguish Routine Maintenance 1, Routine Maintenance 2 and Periodic Maintenance.

Requirement

The participants are required to:

- *Understand the Local Road Network (district, commune road network), road structures and facilities.*
- *Understand components of road, bridge, culvert... and other road structures.*

Methodology

- The participants will be introduced the concepts and methods of road maintenance, the concept of Routine Maintenance 1 and Routine Maintenance 2.
- The participants distinguish between maintenance activities.
- Self-Assessment

Training Kit

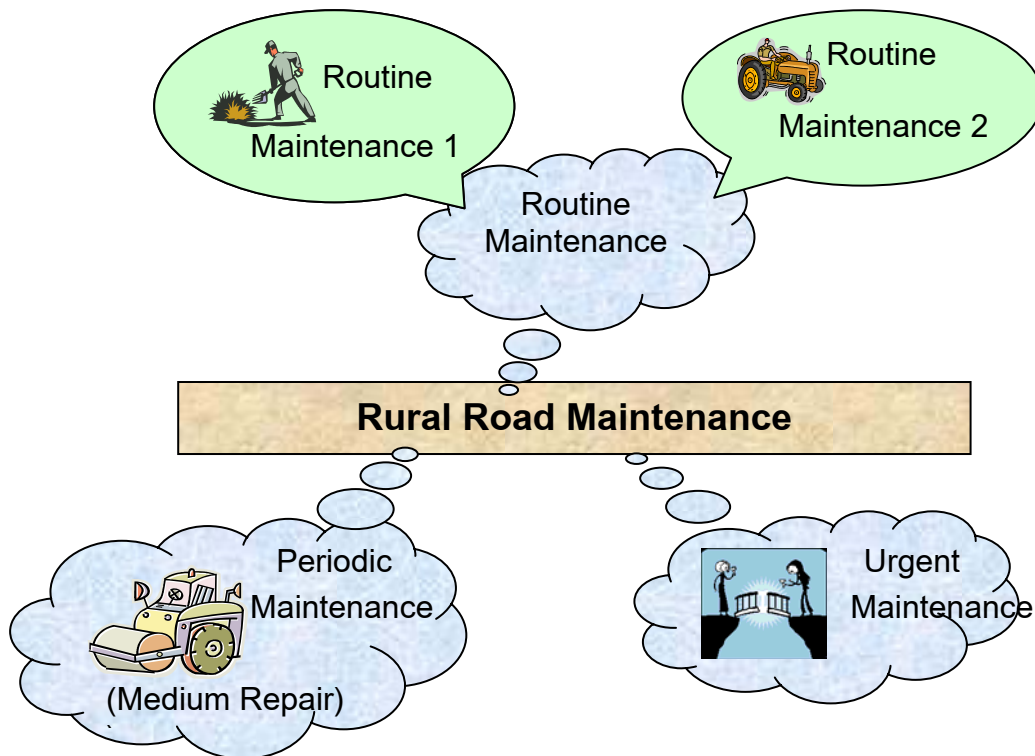
- The Rural Road Maintenance Handbook.
- Module 2: “*Concepts of Rural Road Maintenance*”

Studying Activities

1. Learn about methods of road maintenance & distinguish between maintenance activities.
2. Learn about the activities of road Routine Maintenance 1
3. Learn about the activities of road Routine Maintenance 2
4. Self - assessment

1. Learn about types of Rural Road Maintenance and differentiate them.

☞ Look at the below drawing and memorize *types of Rural Road Maintenance*



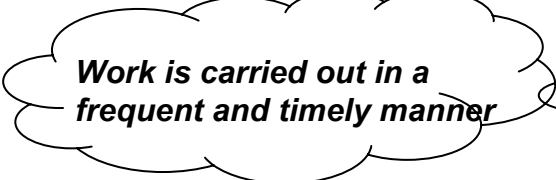



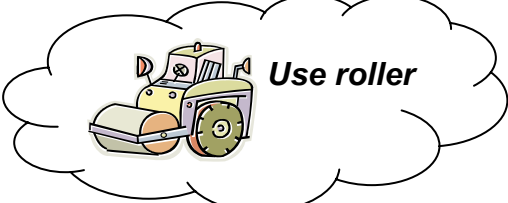
NOTES

There are two types of Routine Maintenance: Routine Maintenance 1 & Routine Maintenance 2
Undertaking Routine Maintenance does not require high cost and yields extensive benefits, maintains the road quality and extends road service life.



Differentiate types of Rural Road Maintenance

1. Tick (✓) in the appropriate boxes to indicate your choice.

 <p><i>Work is carried out in a frequent and timely manner</i></p>	Correct	<input type="checkbox"/>	ROUTINE MAINTENANCE 1
	Incorrect	<input type="checkbox"/>	
 <p><i>Simple labor is required</i></p>	Correct	<input type="checkbox"/>	
	Incorrect	<input type="checkbox"/>	
 <p><i>Use hand tools (knife, hoes, shovel,...)</i></p>	Correct	<input type="checkbox"/>	
	Incorrect	<input type="checkbox"/>	
 <p><i>Possibly use compulsory labor</i></p>	Correct	<input type="checkbox"/>	
	Incorrect	<input type="checkbox"/>	
 <p><i>Use roller</i></p>	Correct	<input type="checkbox"/>	
	Incorrect	<input type="checkbox"/>	

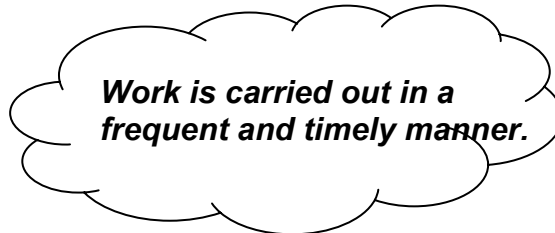



2. Fill in the lines below with three names of Routine Maintenance 1 Activities for Rural Road Network

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3. Tick (✓) in the appropriate boxes to indicate your choice

 <p><i>Work is carried out in a frequent and timely manner.</i></p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p><i>Need materials (soil, sand, stone...)</i></p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p><i>Laborers should have skills and expertise</i></p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p><i>Need equipment, facilities and machines...</i></p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>

ROUTINE MAINTENANCE 2





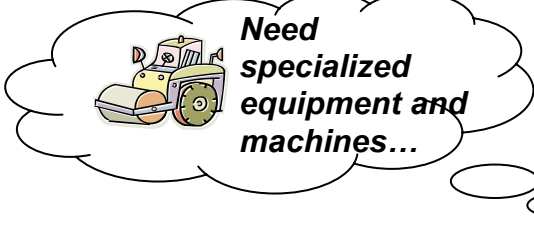
4. Fill in the lines below with three names of Rural Road Routine Maintenance 2 activities

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5. Tick (✓) in the appropriate boxes to indicate your choice

 <p>Work is carried out infrequently</p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p>Require more effort, higher costs and more planning</p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p>Require materials (soil, sand, stone, plastic...)</p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p>Laborers should have skills and expertise</p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>
 <p>Need specialized equipment and machines...</p>	Correct	<input type="checkbox"/>
	Incorrect	<input type="checkbox"/>




PERIODIC MAINTENANCE

Some Periodic Maintenance activities:

1. Reseal the bitumen pavement
2. Re-gravel the unpaved pavement, ...

6. Complete the following conclusion:
 "Routine maintenance means restoring the road's surface quality. Therefore, it requires high expenditures. However, if is carried out in a satisfactory manner, the periodic maintenance will be simpler with lower cost."

7. Tick (✓) in the appropriate boxes to indicate your choice

 Repair unforeseen Bridge's and Road's defects	<table border="1" style="width: 100%;"> <tr><td>Correct</td><td style="width: 20px;"></td></tr> <tr><td>Incorrect</td><td></td></tr> </table>	Correct		Incorrect		URGENT MAINTENANCE
Correct						
Incorrect						
 Bridge and road defects are mainly caused by natural disasters (flood, storm...) or by overloading vehicles.	<table border="1" style="width: 100%;"> <tr><td>Correct</td><td style="width: 20px;"></td></tr> <tr><td>Incorrect</td><td></td></tr> </table>	Correct		Incorrect		
Correct						
Incorrect						
 The objective is ensuring the road passable and timely repair of bridge & road defects	<table border="1" style="width: 100%;"> <tr><td>Correct</td><td style="width: 20px;"></td></tr> <tr><td>Incorrect</td><td></td></tr> </table>	Correct		Incorrect		
Correct						
Incorrect						

8. Fill in the following table with three names of urgent maintenance activities for the Rural Road Network



No.	Urgent maintenance activities	Causes
1	<i>Remove soil slide</i>	<i>Landslide of cutting slope by long-lasting rain</i>
2
3

2. Learn about Routine Maintenance 1



Look at following pictures and memorize *Routine Maintenance 1* for the Rural Road Network.

ROUTINE MAINTENANCE 1 ACTIVITIES

➔	Vegeta- tion	Bush/tree cleaning, grass cutting			
➔	Drainage System	Clean ditches/drains	Clean culverts	Lining & repair drains, culverts	Pile gravel, stone preventing waterway scour
➔	Road - bed	Remove small landslides	Refill slope gully	Reshape shoulder	Refill embankment slip
➔	Road Surface	Fill Potholes	Treat soft spots (earth, gravel road)	Grade corrugations	Reshape camber (primitive)
➔	Other work	Clean pavement or bridge surface	Remove debris from culverts or bridges	Spray water to reduce dusting	Clean road signs

3. Learn about Routine Maintenance 2



Look at following pictures and memorize *Routine Maintenance 2* for the Rural Road Network.

ROUTINE MAINTENANCE 2 ACTIVITIES

 Drainage System	Repair & stabilize culverts 	Drive nails on wooden bridge 	Replace bridge wooden planks 	Repair bridge quarter cones 	
 Road Surface	Fill potholes 	Treat soft spots or rutting (bituminous pavement) 	Seal cracking (bituminous pavement) 	Reshape road camber (by use of equipment) 	Repair concrete slab
 Road - bed	Remove large landslides 	Treat large soft spots 	Stabilize embankment slope 		
 Other work	Repair retaining walls 	Paint & repair traffic signs 	Repair concrete or steel guard rails 		



1. Fill in the following table with *features in each type of road maintenance*.

TYPES OF MAINTENANCE	FEATURES
<p style="text-align: center;"><i>Routine Maintenance</i></p> <p style="text-align: center;">1</p>	<p>- <i>Work is carried out in a frequent and timely manner.</i></p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>
<p style="text-align: center;"><i>Routine Maintenance</i></p> <p style="text-align: center;">2</p>	<p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>
<p style="text-align: center;"><i>Periodic Maintenance</i></p>	<p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>
<p style="text-align: center;"><i>Urgent Maintenance</i></p>	<p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>

Good

Not good

2. Fill in the following table with some of your local road maintenance activities. Determine the type of maintenance that these activities belong to?

No.	Maintenance Activities	Types of maintenance		Causes
		Routine Maintenance 1	Routine Maintenance 2	
1	<i>Clean drains</i>	✓		<i>Rubbish and silt deposition</i>
2
3
...
...
...

Good

Not good