

MODULE 15

USABLE NORMS FOR RURAL ROAD MAINTENANCE

Objectives

After fulfilling Module 15, you will be able to:

- Know some main usable norms for Rural Road Maintenance.
- Know how to use the norms
- Self- Assessment.

Requirement

The participants are required to have comprehended following modules:

- Module 2: "*The Concepts of Rural Road Maintenance*"
- Module 4: "*Rural Road Defects and Causes*"
- Module 11: "*Rural Road Maintenance Materials*"
- Module 12,13,14 : "*Rural Road Maintenance Techniques*"

Methodology

- The participants are introduced usable norms in maintaining rural road in Vietnam.
- The participants are explained how to use norms.
- The participants use norms by themselves to define resources (materials, labors & machines) for some maintenance items.
- Self-Assessment

Training Kit

- Rural Road Maintenance Handbook
- Module 15 "*Usable Norms for Rural Road Maintenance*"

Studying Activities

1. Learn about the norms that have been used for rural road maintenance
2. Learn about norm application in road maintenance - practise using the norms
3. Self - assessment

1. Learn about current norms for rural road maintenance

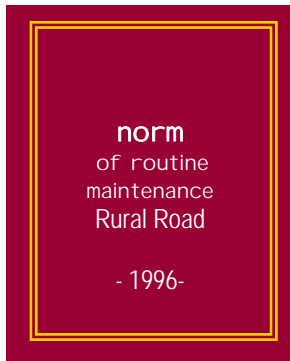


Read and memorize names of norms that are usable for rural road maintenance

- *Norm of Routine Maintenance Management* - Rural Road Maintenance, Ministry of Transport - 1996.
- *Norm of Routine Road Maintenance* - Enacted pursuant to Decision No.3479/2001/QŞ-BGTVT dated on 19, October 2001 by Ministry of Transport.
- *Norm for estimation of repairing works* - Enacted pursuant to Decision No.29/2000/QŞ-BXD dated on 25, December 2000 by Minister of Construction - Part II: Norm for estimation in bridge and road repair.



Read and memorize what *the norms can enable you to know*:



+ *Works and quantities of routine maintenance for different types of rural road maintenance (for 1km in a year based on local condition). This is the basis to make plan, budget allocation and estimation of rural road maintenance.*

+ *Average Labor Productivity to carry out rural road routine maintenance activities.*

Norm of Routine Maintenance - Rural Road Maintenance used to define the estimated annual maintenance demand for different types of rural road.

+ *Works and quantities of routine maintenance estimated for 1km in a year based on local condition for different types of road, bridge and culvert. This is the basis to make plan, budget allocation and estimation of rural road maintenance.*

+ *The way to calculate labor force and machine demand for routine maintenance items of road, bridge and culvert (depend on labor productivity and construction machine norm)*

Norm
of Road routine
maintenance

-2001-

Norm of Road Routine Maintenance is used to define maintenance demand for each km of road maintenance , including rural road.

norm
of repairing
works estimate
- 2000 -

+ *Give demand of material, machine and labor type and quantity, for each repairing item.*

+ *Used to make unit price of repairing items including rural road, such as pothole filling, bitumen sealing...*

Norm of repairing works estimate is used to define demand of material, labor force and machine for each maintenance items including rural road.



Norm of common rural road maintenance items *can be referred in Rural Road Maintenance Handbook*



- *Annex 6 (tables from page 154 to page 157) : give common activities and estimate routine maintenance demand of some types of rural road and labor productivity to carry out these activities - This content is taken from Norm of Routine Maintenance - Rural Road Network*

- *Annex 7: The columns 2,3,4 of the tables 18, 19, 21, 21 at page 159 and page 161 give type and quantity of material, labor and machine for pothole filling (for bituminous pavement, unbound aggregate and unpaved pavement). This content is taken from Norm of Capital Construction Estimate .*



note

- *Norm of Routine Maintenance gives maintenance demand of a kilometer in a year for different types of rural road.*
- *Norm of Repairing Works Estimate gives demand of material, labor and machine to carry out each item of repairing construction works*

2. Learn about usage of norms - practice using norms in Rural Road Maintenance Handbook



Look at the following presentation of maintenance demand estimating a Commune Road Network using *Rural Road Maintenance Handbook*



The Commune Road Network includes :

- + 1.6 km of 5.5 wide road with 3.5 m wide and bitumen sealing pavement
- + 3.2 km of 4 m wide gravel road with pavement width of 2.5 m
- + 4.2 km of 4 m wide earth road

The Norm give maintenance demand for midland area as follows:

- + take the value from the table for bituminous road, column for “Midland” to multiply with 1.6 km
- + take the value from the table for grave road column for “Midland” to multiply with 3.2 km
- + take the value from the table for earth road column for “Midland” to multiply with 4.2 km



Results of calculation for the bituminous road

maintenance demand of 1.6 km bituminous road

No.	Descriptions	Unit	Stipulated quantity	Road length	Maintenance demand
A	Management works				
1	Inspection, settlement of offences	Daywork	2	1.6	3.2
B	Traffic safety				
2	Paint and repair guide posts and signs	Daywork	1	1.6	1.6
C	Subgrade & drainage				0
3	Grass cutting	Daywork	3	1.6	4.8
4	Ditch cleaning in wet season	Daywork	2	1.6	3.2
5	Side drain clearing	m/daywork	500/16.67	1.6	800/26.67
6	Shoulder reshaping	m ²	400/26.67	1.6	640/26.67
7	Drain excavating	m ³	5/5	1.6	8/8
8	Embankment/ Shoulder replenishing	m ³	5/2.5	1.6	8/4
9	Small landslide removal	m ³	4/2	1.6	6.4/3.2
10	Clean tow section (if necessary)	Daywork	2	1.6	3.2
D	Pavement				
11	Pothole Filling	m ²	20	1.6	32
12	Crack sealing	m ²	60	1.6	96
13	Soft spot treatmen	m ³	2	1.6	3.2
E	Culvert & bridge (less than 10m span)				
14	Culvert clearing	Daywork	1	1.6	1.6
15	Bridge deck cleaning	Daywork	1	1.6	1.6



Make similar calculation for gravel road and earth road using Rural Road Maintenance Handbook, page 156, 157

maintenance demand of 3.2 km gravel road

No.	Descriptions	Unit	Stipulated quantity	Road length	Maintenance demand
A	Management works				
1	Inspection, settlement of offences	Daywork			
B	Traffic safety				
2	Paint and repair guide posts and signs	Daywork			
C	Subgrade & drainage				
3	Grass cutting	Daywork			
4	Ditch cleaning in wet season	Daywork			
5	Side drain clearing	m/daywork			
6	Shoulder reshaping	m ²			
7	Drain excavating	m ³			
8	Embankment/ Shoulder replenishing	m ³			
9	Small landslide removal	m ³			
10	Clean tow section (if necessary)	Daywork			
D	Pavement				
11	Pothole filling	m ²			
12	Corrugation grading	m ²			
13	Materials refilling	m ³			
14	Soft spot repair	m ³			
15	Pavement watering	Daywork			
E	Culvert & bridge (less than 10m span)				
14	Culvert clearing	Daywork			
15	Bridge deck cleaning	Daywork			

maintenance demand of 4.2 km earth road

No.	Descriptions	Unit	Stipulated quantity	Road length	Maintenance demand
A	Management works				
1	Inspection, settlement of offences	Daywork			
B	Traffic safety				
2	Paint and repair guide posts and signs	Daywork			
C	Subgrade & drainage				
3	Grass cutting	Daywork			
4	Ditch cleaning in wet season	Daywork			
5	Side drain clearing	m/daywork			
6	Shoulder reshaping	m ²			
7	Drain excavating	m ³			
8	Embankment/ Shoulder replenishing	m ³			
9	Small landslide removal	m ³			
10	Clean tow section (if necessary)	Daywork			
D	Pavement				
11	Pothole filling	m ²			
12	Corrugation grading	m ²			
13	Soft spot repair	m ³			
14	Pavement watering	Daywork			
E	Culvert & bridge (less than 10m span)				
14	Culvert clearing	Daywork			
15	Bridge deck cleaning	Daywork			



Look at the following figure to know the way to calculate unit price of a road maintenance item introduced in Rural Road Maintenance Handbook

1. Unit costs of some work items:

1.1. Pothole filling on gravel surface: Average depth of pothole is 10cm, calculated for 1m² of pothole.

Table 18

No	Consuming items	Unit	Quantity	Unit cost	Cost	Remark
1	<u>Material</u>					
	Gravel	m ³	0.1428	120000	17136.00	
	Clay	m ³	0.004	20000	80.00	
	Coarse sand	m ³	0.0102	54300	553.86	
2	<u>Labour</u>					
	grade 2,5/7	md	0.1429	11354.31	1622.5	
3	<u>Equipment</u>					
	Roller 8.5T	shift	0.012	266728.27	3200.74	
	Other equipment	%	5		160.04	
	Total				22753.14	

Material unit price is depended on locality and time

Necessary material and machine for an unit of road maintenance item - This figure is taken from **norm of capital construction estimate**

Necessary daywork for an unit of road maintenance item - This figure conforms to **labor productivity** from norm of rural road maintenance

Labor and machine unit price conforms to Government Regulation



Look at the following figure *to learn about usage of Norm of Repairing Works Estimate* - Part II: Bridge and Road Repair

- The figure below is a page in the Norm of Repairing Works Estimate. Some common items of road and bridge repair are presented in the Appendix of this module.

CHƯƠNG XII CÔNG TÁC SỬA CHỮA ĐƯỜNG BỘ

XR.1100 VÁ MẶT ĐƯỜNG BẰNG ĐẤT CẤP PHỐI TỰ NHIÊN

Thành phần công việc:

Đào ổ gà, san phẳng đáy, cắt vuông cạnh, rải đất cấp phối tự nhiên, tưới nước, đầm nén, bóc dỡ, vận chuyển vật liệu trong phạm vi 100m. Hoàn thiện mặt đường bảo đảm đúng yêu cầu kỹ thuật.

Đơn vị tính: 10m²

Mã hiệu	Công tác xây lắp	Thành phần hao phí	Đơn vị	Thi công bằng thủ công			
				Chiều dày mặt đường đã lên ép(cm)			
				10	15	20	25
XR.11	Vá mặt đường bằng đất cấp phối tự nhiên	<i>Vật liệu</i> Đất cấp phối tự nhiên	m ³	1,45	2,17	2,90	3,63
		<i>Nhân công</i> 4/7	công	2,38	3,61	4,77	6,47
		<i>Máy thi công</i> Ô tô chở nước 5m ³	ca	0,007	0,008	0,009	0,01
				11	12	13	14

This is necessary material, labour and machine for 10 m² pothole filling with thickness of 10 cm

134



Note

Usage of the norms is not difficult. The most importance is define which is the right issue that needs to refer.



1. Continue the following writing

a. Norm of routine maintenance for rural road is used to define.....

.....
.....
.....

b. Use norm of road routine maintenance for

.....
.....

c. Norm of repairing works estimate for Capital Construction is used to

.....
.....
.....

Good Not good

2. Complete unit price calculation for a maintenance item in the table below (using the Appendix of this module)

Fill 15cm thick pothole using macadam, 1 sqm.

No.	Description	Unit	Quantity	Rate (VND)	Cost (VND)	Note
<u>1</u>	<u>Material</u>					
	4 x 6 crushed stone	cu.m	.....	85 400	.....
	2 x 4 crushed stone	cu.m	.....	89 000	.....
	1 x 2 crushed stone	cu.m	.....	101 000	.....
	0.5 x 1 chipping	cu.m	.....	110 000	.....
	Gravel	cu.m	.....	110 000	.....
<u>2</u>	<u>Labour</u>					
	4/7 class	daywork	.....	13 529	.....
<u>3</u>	<u>Machine</u>					
	8.5 tons roller	daywork	.....	252 823	.....
	Water Truck	daywork	.....	343 052	.....
	Others	%	.....		.....
	Total				.....

Good Not good