



Ministry of
Forests

Office of the Minister

MEMORANDUM

File: 280-20

May 30, 2003

To: Regional Managers - Interior

From: The Honourable Michael de Jong
Minister of Forests

Re: Amendment No. 6 to the *Interior Appraisal Manual*

I hereby approve Amendment No. 6 to the *Interior Appraisal Manual*, and attach a copy for your use.

Section 4.3.2.3, Subgrade Cost Estimate has been amended. The formula for road group 2 (Bulkley, Lillooet and Kispiox) incorrectly contained a variable for the sub boreal spruce biogeoclimatic zone. The formula has been corrected to remove that variable.

This amendment will come into force on June 1, 2003. Further amendments or revisions to this manual require my approval.

fa 
Michael de Jong
Minister

Attachment

pc: Bill Howard, Director, Revenue Branch

All Subscribers, *Interior Appraisal Manual*





FOR FURTHER INFORMATION CONTACT:

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MANUAL TITLE

Interior Appraisal Manual

REVISION No.

Amendment No.6

ISSUE DATE

June 1, 2003

MANUAL CO-ORDINATOR

Judy Laton
Revenue Branch

AUTHORIZATION (Name, Title)

W. Howard
Director, Revenue Branch

Please make the following changes to your copy of the above Ministry manual. Please insert the following specified pages and **file this notice** immediately after the Amendments Tab.

ACTION (Remove/Insert)	(VOL.) CHAPTER-SECTION-SUBJECT	PAGE(S)	COMMENTS
	TABLE OF CONTENTS		
REMOVE	Chapter 4	13 - 14	After Chapter 4 Tab
INSERT	Chapter 4	13 - 14	
INSERT	Minister's Letter and Manual Revision Transmittal		After Amendments Tab

- Snow Roads (WINTER): - snow roads are a form of overland construction that uses clean snow and ice as fill. Suitability of materials is not an issue as all are frozen. Stripping is limited to large stumps that cannot be easily covered with snow or ice. Cuts into mineral or organic soil must not exceed 0.3 m in depth for sustained distances or 0.5 m in depth for distances up to 5 m. This road type includes operational and block road categories. Stabilizing costs are not applicable. Snow (winter) roads constructed on side slopes of greater than 15% are appraised as block roads.

3. Uphill Side Slope: (SLOPE %)

Uphill side slope percent may show a variation (+/- 15% about the average) within any section length and represents the average of all slopes in the section to a maximum of 50%. To derive an average for uphill side slope percent, several representative cross-section measurements are taken along the section length and the sum of one-half of the distance on each side of the measurement is applied as a weight against the measurement at that cross-section. The uphill side slope percent is measured at right angles to the road centreline and is recorded to the nearest integer. Where the road is located on a bench, the uphill side slope of the bench is used.

4. Percent Rock: (ROCK %)

Rock includes bedrock and large boulders. It may be rippable or may require drilling and blasting. Rock percent may show a variation (+/- 15% about the average) within any section length and represents the average of all rock percents in the section to a maximum of 50%. To derive an average percent rock, several representative cross-section measurements are taken along the section length and the percent rock calculated. The sum of one-half of the distance on each side of where the measurements were taken is applied as a weight against the percent rock calculated at that cross-section. The percent rock is determined as follows:

$$\text{ROCK \%} = \frac{h^2}{H^2} * 100$$

Where:

h = the vertical cut height of all rock measured from the bottom of the ditch

H = the total vertical cut height of all materials above the bottom of the ditch

To determine the percent rock for roads not yet constructed, constructed roads on similar land/rock forms are used as a guide. Alternately, where estimates of rock volume from commercial road design programs are available for tabular sections, that information may be used to estimate the rock percent.

5. Soil Moisture Regime (SMR):

Those biogeoclimatic zones/subzones with site series identified as “M”, “VM” or “W” in the shaded area of the table in Appendix IV are considered “Wet” for appraisal purposes.

6. Biogeoclimatic Zones

CWH/MH	-	Coastal Western Hemlock/Mountain Hemlock
BWBS	-	Boreal White and Black Spruce
ICH	-	Interior Cedar Hemlock
SBS	-	Sub Boreal Spruce
SBPS	-	Sub Boreal Pine/Spruce
ESSF	-	Engelmann Spruce - Subalpine Fir
IDF	-	Interior Douglas Fir

4.3.2.3 Subgrade Cost Estimate

For each operational and block road the subgrade cost estimate in \$/km is determined from the equation for the appropriate road group.

Road Group

2	$14512 + (101 * \text{SLOPE}\%) + (135 * \text{ROCK}\%) + (3181 * \text{OP})$
3	$1283 + (545 * \text{SLOPE}\%) + (9682 * \text{OP})$ (\$2,176/km set as minimum. If equation yields less than \$2,176/km then use \$2,176/km)
4	$5404 + (296 * \text{SLOPE}\%) + (5556 * \text{SMR}) + (5518 * \text{OP})$
5	$4989 + (159 * \text{SLOPE}\%) + (171 * \text{ROCK}\%) + (4831 * \text{SMR}) + (4054 * \text{OP})$
6	$-1218 + (551 * \text{SLOPE}\%) + (369 * \text{ROCK}\%) + (8241 * \text{OP}) + (3202 * \text{ESSF})$ (\$2,817/km set as minimum. If equation yields less than \$2,817/km then use \$2,817/km)
7	$6093 + (6179 * \text{ESSF}) + (22592 * \text{ESSF} * \text{OP}) + (6024 * \text{BWBS} * \text{OP}) + (14525 * \text{SBS} * \text{OP})$
8	$2567 + (6249 * \text{OP}) - (5547 * \text{IDF} * \text{OP})$
9	$2956 + (182 * \text{SLOPE}\%) + (237 * \text{ROCK}\%) + (4348 * \text{OP})$
10	$8429 + (176 * \text{SLOPE}\%) + (331 * \text{ROCK}\%)$
11	$2698 + (474 * \text{SLOPE}\%) + (371 * \text{ROCK}\%) + (5329 * \text{OP}) + (27430 * \text{CWH/MH})$ (\$5,287/km set as minimum. If equation yields less than \$5,287/km then use \$5,287/km)
12	$7296 + (324 * \text{SLOPE}\%) + (258 * \text{ROCK}\%) + (4686 * \text{OP})$