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MEMORANDUM

File: 21840-04/ECE

January 29, 2007

To: Richard Manwaring
District Manager
Kalum Forest District

Re: Amendment No.2 to the Procedures for Calculating Sub Grade and
Ballast Tabular Construction Cost Estimates, Road Group 1, Kalum Forest District

I hereby approve Amendment No. 2 to the Procedures under Section 4.3.3 (14) of the Interior Appraisal Manual (IAM) which provides for using detailed engineering cost methodology specified by the Northern Interior Region to calculate sub grade and additional stabilization cost estimates for Road Group 1, Kalum Forest District.



Commencing December 1, 2006, road development costs in stumpage appraisals in the Coast Forest Region are being estimated using the bank height method, as described in Amendment No. 15 of the Coast Appraisal Manual (CAM). The present methodology for tabular road construction and additional stabilizing cost calculations for Road Group 1 are based on the CAM effective February 29, 2004. To continue to use the methodology as found in the CAM, updates to the existing procedures employing the bank height method from the CAM amendment are being implemented in this Amendment No. 2 .

The amendment is effective on January 1, 2007. Recognizing some appraisals may be in the process using the existing method, a transition period of two months ending March 1, 2007 is also being implemented.

Richard Manwaring

If you or your staff have any questions, please contact Franc Humar, P.Eng., Timber Pricing Officer at (250) 565-6136.

Yours truly,



W.J (Bill) Warner, R.P.F.
Regional Executive Director
Northern Interior Forest Region

Attachment(s): 1

pc: Ralph Ottens, Revenue Specialist, Kalum Forest District
Kalum Forest Licensees
Jason Nunn, Timber Pricing Coordinator, West, NIFR
Franc Humar, Timber Pricing Officer, West, NIFR

AMENDMENT NO. 2
NIFR PROCEDURES FOR CALCULATING THE SUBGRADE AND
BALLAST TABULAR CONSTRUCTION COST ESTIMATES,
ROAD GROUP 1, KALUM FOREST DISTRICT

1. Introduction

The Interior Appraisal Manual (IAM) effective November 1, 2004, as per Section 4.3.3 (14) provides for applying detailed engineering cost methodology specified by the Northern Interior Forest Region (NIFR) to calculate sub-grade and ballast tabular cost estimates in Road Group 1, Kalum Forest District. Amendment No.2 is a compilation of the applied methodology based on specific sections of the Coast Appraisal Manual (CAM) which can be applied to calculate sub-grade and ballast tabular road construction estimates in Kalum.

2. Purpose

The purpose of these procedures, effective January 1, 2007 is to outline the principles and methodology to be used for road construction and ballast cost calculations using the **bank height method** as defined in Amendment No. 15 (December 1, 2006) in Section Appendix VII and VIII of the CAM. Recognizing that some appraisals are already in progress using the existing formula cost method, a **transition period until March 1, 2007** is being implemented.

3. Format to be used

A tabular cost estimate is calculated as per CAM Section 5.3.3 and Appendixes VII and VIII using the bank height method on the basis that the construction project will be completed using commonly used logging road construction practices and that the roads will have single lane width, turnouts and landings.

4. New Road Construction

- a. **CAM Sec. 5.3.1.2** (page 5-6) is to be applied to define New Road Construction.
- b. **CAM Amendment No. 15 (December 1, 2006) Section 5.3.3.1** (Page 5-10) New Road Construction is applicable herein. This section specifies the sub grade construction methodology to be applied in terms of items 1 to 8 inclusive. It also contains **Table 5-1** consisting of the applicable road cost estimates expressed in dollars per kilometre of road length, based on bank height category and rock face heights.
- c. New road section data is recorded using Appendix VII and the criteria is as per **CAM Sec. 5.3.3.1(3) (a to e)**.
- d. As per **CAM Sec. 5.3.3.1(4)** trucking additional stabilizing material greater than 3.2 km, uses the non-tabular method. Section VIII.5 (Page A-36) is applied for Capping, where applicable.

- e. All pipe culverts including those under 0.9 m diameter, and all single log abutment culverts **are not included** in Table 5-1 road cost estimates. The cost estimates for the supply and installation of culverts from 0.3 to 1.8m in diameter are determined from Table 4-4 of IAM.
- f. Detailed engineering estimates are required for culverts larger than 1.8m.
- g. Table 6-10 of Detailed Engineering Cost Estimate Procedures for NIFR applies to Wood Box Culverts from 4m to 15m span lengths. However up to 3.4m span lengths, box culverts are included in subgrade construction cost estimate as per CAM Appendix VIII.2.12.

5. Bridges and Culverts

- a. A cost estimate for **log bridges and non log bridges** not included in the subgrade cost estimates are detailed in Item 6: Log and Non-Log Bridges, Detailed Regional Engineering Cost Estimate (ECE) Procedures (July 1, 2006) (Pages 26 to 41).
- b. A cost estimate for supply and installation of **culverts** is as per IAM Section 4.3.2.4, Drainage Structures, including Table 4-4, Culvert Appraisal Cost Estimates for 0.3m to 1.8m diameters.
- c. Where the tabular cost estimates cannot be used due to their physical limitations, the bridge or culvert cost shall be estimated preparing a detailed engineering cost estimate as per IAM Sec. 4.3.3. Detailed engineering estimates may only be made and used in the appraisal or reappraisal of a cutting authority area where its necessity is substantiated by field data.

6. Non-Tabular Road Construction Cost Estimates

- a. Non-tabular cost estimates per CAM Sec. 5.3.4 may be calculated for the following kinds of new construction listed in CAM sec. 5.3.1.2.(4a &4b)
- b. The regional manager approved standardized methodology to estimate the cost of these kinds of projects is as per items 1 to 13 of the Detailed Regional Engineering Cost Estimate (ECE) Procedures, effective July 1, 2006 applied to projects when they qualify.
- c. For particular applications to Kalum, where reference is required in Procedures to the appropriate road group, 27.3 thousands of dollars per kilometre from CAM Table VIII-2 (Page A-32) will be set for Road Group 1.
- d. The cost methods contained in CAM Appendixes VII and VIII (Pages A-28 to A-36 inclusive) including Table Appendix VIII-2 are to be used in conjunction with the Detailed Regional Engineering Cost Estimate Procedures effective July 1, 2006 for the Interior, and not the Detailed Engineering Estimates for Coast Stumpage Appraisal (February 1, 2001, amended to September 1, 2002).
- e. It should be noted that the previous **Interim Detailed Engineering Cost Estimates Procedures**, dated January 26, 2004 are no longer applicable to appraisals with effective dates after July 1, 2006.

- f. CAM Appendix VIII.2 Sub-grade Construction items 1 to 12 apply herein. All pipe culverts 0.3m to 1.8m in diameter, to be estimated using IAM Sec. 4.3.2.4, Table 4-4.
- g. CAM Appendix VIII.3 applies to additional stabilizing material
- h. CAM Appendix VIII.4 refer to items 1 to 5 inclusive, together with Table Appendix VIII-3, which provides the methodology for estimating additional stabilizing material cost.
- i. CAM Appendix VIII.5 provides for use of capping of suitable rock or gravel road sections where required and substantiated. Refer in this case to the Detailed Engineering Estimates for Coast Stumpage Appraisal , February 1, 2001, amended Sept. 1, 2002), Surfacing, Capping (Pages 20 to 22).

7. Attachments

- Bank height data field entry sheet, April 19 2006 v2.xls
- Bank height cost calculation sheet, revised April 19, 2006.xls *

* cost calculation spreadsheet was built for internal use only, and comes with a “caveat emptor”.

8. References:

- — Coast Appraisal Manual (CAM), Ministry of Forests, Revenue Branch, Province of British Columbia. Amendment No. 15, December 1, 2006
- Interior Appraisal Manual (IAM), Ministry of Forests, Revenue Branch, B.C., Amendment No. 16, November 1, 2006-12-07
- Detailed Regional Engineering Cost Estimate (ECE) Procedures, Northern Interior Forest Region (NIFR), Ministry of Forests, B.C., July 1, 2006.
- Detailed Engineering Estimates for Coast Stumpage Appraisal, Coast Forest Region, Ministry of Forests, B.C., February 1, 2001 and amended September 1, 2002.

F.H.
06/12/2006
Revised 07/01/22