

PROJECT TITLE <b>BEARING STRENGTH OF HEM-FIR</b>			
TLA <b>BUILDING SYSTEMS</b>	LOCATION <b>WEST</b>	DEPARTMENT <b>WOOD ENGINEERING</b>	FISCAL YEAR <b>1994/95</b>
GOAL <b>B-1</b>		PROJECT NUMBER <b>1510A816</b>	
PROJECT LEADER <b>C. LUM</b>	MANAGER RESPONSIBLE <b>J.A. COOK</b>	START DATE <b>APRIL 1994</b>	DATE OF LAST REVISION <b>MARCH 15, 1995</b>
		PLANNED COMPLETION DATE <b>MARCH 1996</b>	

### SIMPLE PROGRESS REPORT

#### OBJECTIVE

To establish characteristic bearing strength values for the Hem-Fir species group in CSA O86.1.

#### INDUSTRY LIAISON

E. Jones, CWC

#### BACKGROUND

Of the three major commercial species group, the Hem-Fir species group has lowest compression perpendicular-to-grain strength value assigned in the Canadian timber design code. Furthermore, Hem-Fir has the highest ratio of tension strength to bearing strength. The ramifications of this is that for there will be applications where the tension strength cannot be fully utilised because of inadequate bearing strength. An example of this is in the tension chords of trusses; because the truss is supported and consequently produces bearing stresses on the tension or bottom chord, Hem-Fir may not be used in the tension chord even though there is more than enough tension capacity.

Increasing bearing capacity by adjusting the design details are sometimes difficult to perform. In the case of the roof truss, for example, the available bearing area is dictated by the width top wall plate. If the code requirements cannot be met, then the designer is forced to switch to another lumber species.

Higher bearing strength values for Hem-Fir, where justified, will allow designers to realise the full strength potential of the lumber. Machine stress rated (MSR) lumber would benefit the most from an increase in the Hem-Fir bearing strength. Although there are few Hem-Fir MSR lumber producers, it is anticipated that given the recent or planned increase in installed kiln capacity on the west coast, more mills will be considering producing MSR lumber. Acceptance of Hem-Fir MSR lumber in the marketplace will depend on the design values assigned to Hem-Fir MSR lumber.

Two producing members have requested we address this issue as quickly as possible. Work on this project has been accelerated in order to assemble the information in time for implementation in the Canadian timber design code, CSA-O86.1-M94 code. Although the timber design code was completed late last year, a supplement to the code will be tabled for consideration by the timber design code committee in November of this year. If higher bearing values can be justified for Hem-Fir or MSR Hem-Fir lumber, then the results should be implemented in this supplement so that the information may be available when the CSA-O86.1-M94 code comes into effect.

PROPOSED APPROACH

Verification of the correlation between density and bearing strength will be established for Hem-fir. An analysis of bearing strength of Hem-fir will be carried out. The effect of mixing different proportions of Western hemlock and Amabilis fir will be considered.

WORK COMPLETED THIS FISCAL YEAR

<b>Phase</b>	<b>Completion Date</b>
1. Sample material and complete short term tests	Jan/95
2. Conduct preliminary analysis of short term test results	Jan/95
3. Preliminary results to the CSA C-Perp task group chairman. Begin constant load tests	Mar/95

PUBLICATIONS

None.