Paper No. 973122
An ASAE Meeting Presentation

STATIC, MODAL AND TRANSIENT ANALYSIS OF A HARDWOOD ATHLETIC FLOORING SYSTEM USING FINITE ELEMENTS

Paul W. Elliott
Research Engineer
Robbins Inc.
4777 Eastern Ave.
Cincinnati, OH 45226

Kamyar Haghighi
Professor
Purdue University
Agricultural and Biological Engineering Bldg.
W. Lafayette, IN 47907

Mike Niese
Director of Maple Products
Robbins Inc.
4777 Eastern Ave.
Cincinnati, OH 45226

Written for Presentation at the
1997 ASAE Annual International Meeting
Sponsored by ASAE

Minneapolis Convention Center
Minneapolis, Minnesota
August 10-14, 1997

Summary:

With the demands on our natural resources and the ever increasing cost of hardwood lumber, new hardwood athletic floor systems must be developed to reduce the amount of hardwood used. A critical tool in this design process will be finite element analysis, and simulation. This results from various finite element analysis procedures using approximate material properties are presented. A comparison between the transient modeling results and data collected during field studies to determine the accurate of the current model was also performed. The results showed that determining the damping characteristics and dynamic-directional material properties of the system components should be a primary focus in new research intended to improve the accuracy of the current model. Finite element analysis results can be used now to improve designs to predict general trends in changes in performance.

Keywords:
DIN Testing, Maple, Simulation, Damping