

**A Perceptual Comparison of Wood in Separate Infrastructure Markets**

by

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Thesis Submitted to the Faculty of the  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

Master of Science  
in  
Wood Science and Forest Products

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## **(ABSTRACT)**

Decision-makers involved in material choice decisions in the United States infrastructure were surveyed to identify factors which are important in the material choice decision and to determine the perceptions of wood in various infrastructure applications. This information led to the development of strategies to increase the use of wood in infrastructure markets across the US. The highway, marine/inland waterway, railroad and utility systems composed the four markets representing the US infrastructure. A total of 2344 questionnaires were mailed nationwide. The perceptions of wood were further defined through personal interviews with 112 individuals in four geographically dispersed states.

The most important factors in material choice decisions were durability, maintenance and cost. Environmental impact, ease of design and innovativeness of material were less important in the material choice decision. Highway and marine/inland waterway respondents perceived wood to be among the lowest materials in overall performance. Railroad and utility respondents perceived wood to have significantly better overall performance than highway and marine/inland waterway respondents.

Respondents perceived wood's advantages to be its aesthetically pleasing appearance, low initial cost, ease in repair and ease in field modification. They perceived the disadvantages of wood to be high life-cycle costs, high maintenance requirements and low biological decay resistance. Several strategies are suggested to increase wood use in infrastructure, including: greater market approach by the wood products industry, improved timber structure design details, and increased service life of wood through improved chemical preservative treatments.

## **Dedication**

Raymond “Sarge” Spradlin and Richard T. Snellings Sr. are my grandfathers and I have always admired them for their many fine qualities. They loved their families and worked hard to provide for them. Their achievements inspired me to earn my master of science degree, and I dedicate this work to them.

This work is dedicated to my parents, Warren and Margaret Spradlin Sr. You have supported and loved me through all my work. You always urge me to give my best effort and reach my goals. I love and thank you for all you have done.

Finally, my wife, Kristin, loved me, cared for me and supported me throughout this long journey. This work is dedicated to you and I thank you for all you have done. Your success is one of my greatest pleasures. I look forward to loving and supporting you in all your achievements.

## **Acknowledgements**

First, I would like to thank Dr. Robert L. Smith, my committee chair, for his guidance, generosity and encouragement throughout my Master's program. I want to thank Dr. Robert J. Bush and Dr. Fred M. Lamb for serving on my committee and advising me in this work. The staff at Virginia Tech, especially Joanne Buckner, are greatly appreciated for their support and efforts in helping me complete my work.

A special thanks is extended to the US Forest Service, Northeastern Area, National Wood In Transportation Information Center, for giving me the opportunity to achieve this goal.

I thank the infrastructure leaders who provided the data and information which allowed this study to succeed.

I want to thank my wife's parents, Furman and Carol Walker, for their kindness and support while I finished my Master's degree.

My fellow graduate students are greatly appreciated for all their support, advice and friendship during this work. I want to especially thank Matt Bumgardener, Ren-Jye "Marshall" Shiau, Curt Alt, Delton Alderman, Jim Chamberlain and Sara Jensen for their efforts in this work. I wish you the greatest success.

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