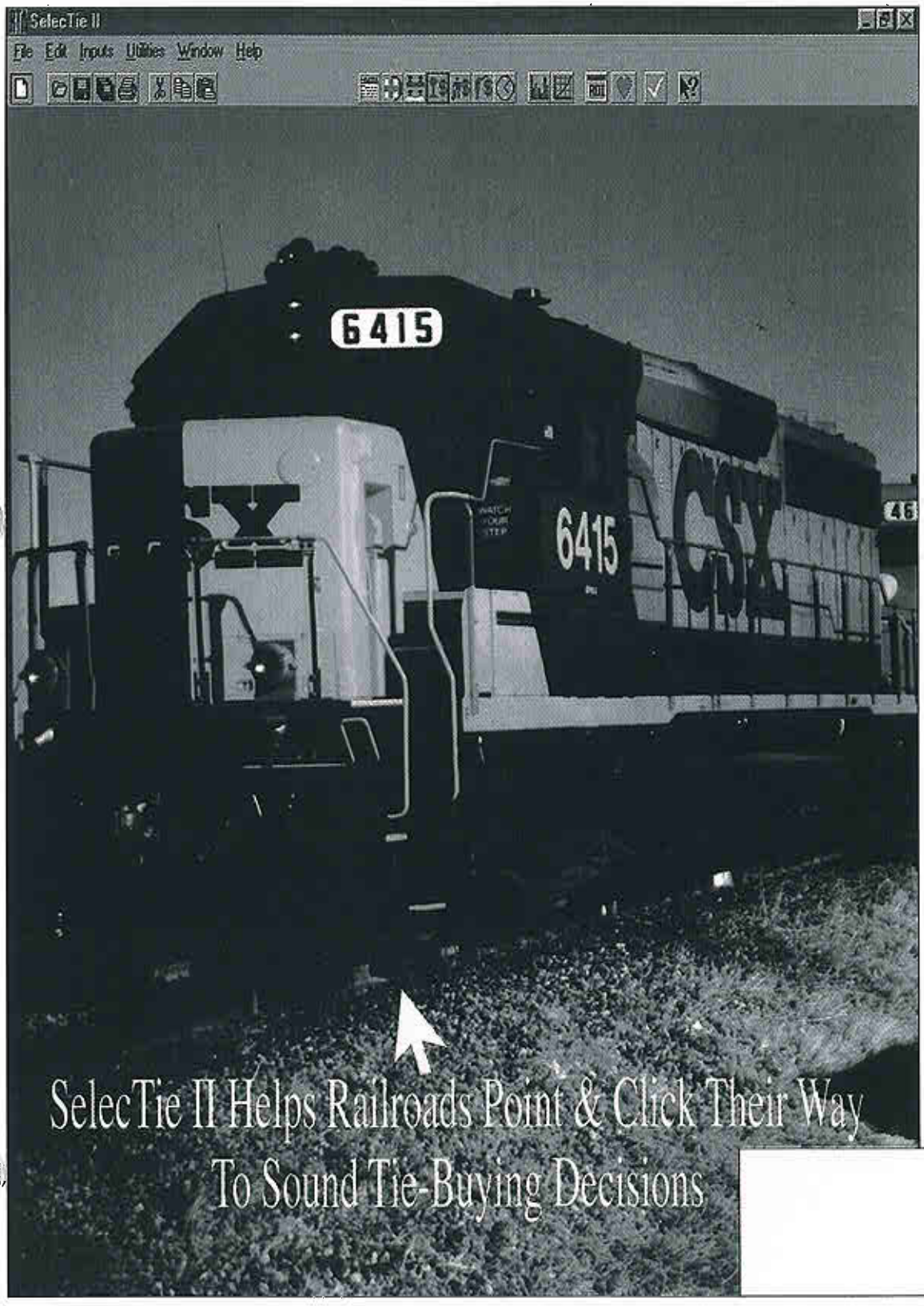
Crossties

MAY/JUNE 1997

The Magazine For Producers And Users Of Treated Wood Crossties And Related Products.



Special Report

New SelecTie II Economic Modeling Tool Now Available

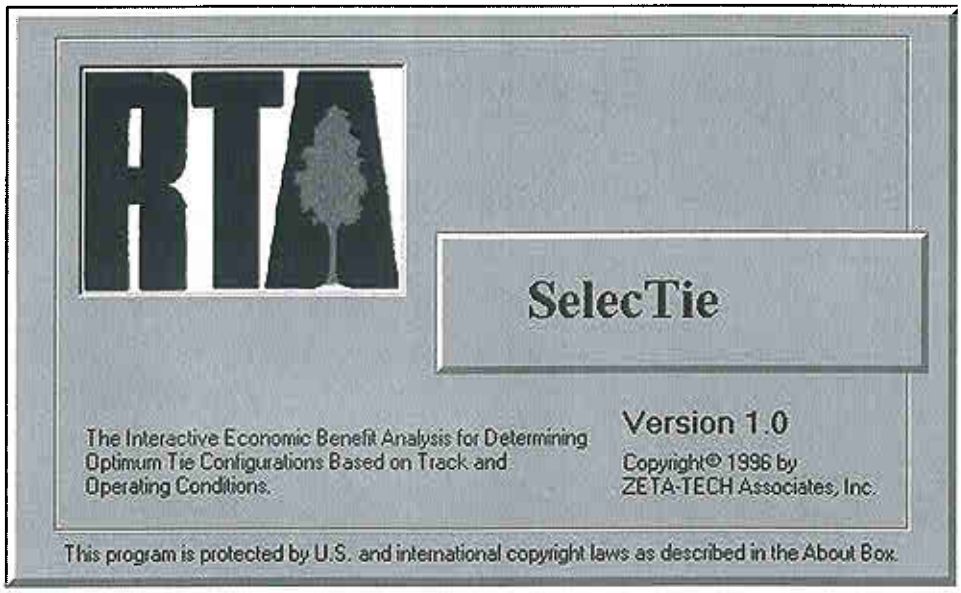
AREA Looks Toward Pending Merger

Attendees Give RTA Engineering Seminar A+

1997 Convention Looks Like Another Winner

Crosstie Grading Seminar Coming In August

Technical Paper Examines The Life Cycle Of Wood Crossties



SelecTie II Helps Railroads Make Solid Economic Decisions

By Joe Palese, MCE, PE,
ZETA-TECH Associates, Inc.

Editor's Note: With this issue, the Railway Tie Association proudly introduces the new SelecTie II Windows-compatible economic modeling tool. Maybe one of the most significant computer-based analytical tools ever developed for railroads, SelecTie II is now more user-friendly and includes several exciting new features.

The software model is now available for shipment and offers complete, easy-to-understand documentation. New railroad licensees will be given the option of an on-site seminar conducted by RTA and ZETA-TECH Associates, Inc., as part of the software licensing package. For more information, or to order SelecTie II, contact RTA at (770) 460-5553.

In the cost-conscious railroad industry, with increased mergers and decreased budgets, it is necessary for railroad engineers and purchasing agents to provide justification for every expenditure.

When deciding which product to buy, particular attention must be paid to product performance. Product performance can be measured by a product's life cycle cost which combines the life and cost of the product (both capital and maintenance) into a quantitative, economic measure of overall product performance.

Very few objective tools are available to railroad personnel which help them make optimum economic decisions concerning material selection. Most tools available are not specific to railroads, are not comprehensive enough, or are so complex that they are rarely—if at all—used. Only a few tools have been found to be both easy to use, flexible and technologically sophisticated.

One tool that combines these qualities is the Railway Tie Association's SelecTie II developed by ZETA-TECH Associates, Inc., for selecting the optimal crosstie/fastener configuration for any given railroad operating environment.

SelecTie™ was first introduced in 1990 as a spreadsheet model, and it quickly became the standard for life cycle modeling of alternate crosstie configurations. With more than 2,500 line items of user changeable data, immediate access to analytical results and research-based life cycle equations, the user was quickly and easily provided with a look at the crosstie's costs over its active service life.

Economic comparison of alternate materials and maintenance practices could be evaluated based on the present value costs of the various scenarios. By providing the user with the present value costs for each material, SelecTie™ allowed the user to determine which alternative was the best choice based on overall economics such as differences in costs and subsequent return on investment.

The recently developed SelecTie II (See Figure 1) is an upgrade to SelecTie™ and reports a comprehensive engineering economics model designed for use on a personal computer running Microsoft Windows 3.1 or higher. This model combines the easy-to-use Windows operating environment and a sophisticated analytical approach that provides railroad users with a user-friendly decision support tool.

SelecTie II contains standard features common to Windows that will make most users familiar with the Windows environment comfortable in accessing and changing data in the SelecTie II program. These features include pull-down menus, icon-based toolbar, common file selection, print dialog windows and online help.

The model allows the user to enter track and operating characteristics for any user-defined segment of track. For each of two alternative crosstie and fastener configurations, SelecTie II calculates present value costs for a number of maintenance activities, including tie replacement, rail replacement, surfacing, etc. For each

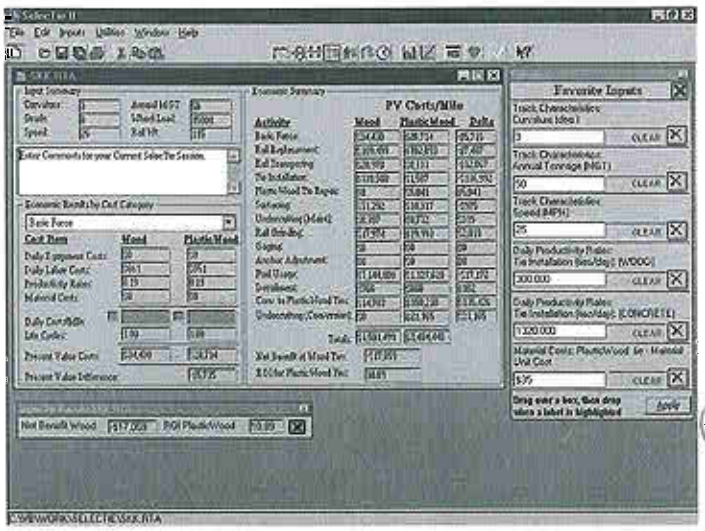


Figure 1

CROSSTIES CALENDAR

May 13-15, 1997
AAR Hazardous Materials Seminar
Hyatt Regency Hotel
Dallas, TX
Contact: Cyndi Stone, (202) 639-2230

May 18-20, 1997
AF&PA Spring Legislative Conference
Capital Hilton
Washington, DC
Contact: AF&PA, (202) 463-2700

May 23, 1997
Workshop On Ways To Increase The Value Of Hardwood Lumber
Roanoke, VA
Contact: Bob Smith, (540) 231-5876

June 2-6, 1997
Hardwood Lumber Grading Shortcourse
Wood Technology Center
Elkins, WV
Contact: Ed Murriner, (304) 558-2788

August 10-13, 1997
RTA Crosstie Grading Seminar
Koppers Industries Plant
Guthrie, KY
Contact: Debbie Holden, (770) 460-5553

September 7-10, 1997
REMSA Expo '97
Bartle Hall Convention Center/ NS Railyard
Kansas City, MO
Contact: Helen Pape, (703) 241-8589

September 28-30, 1997
AWPI Annual Meeting
New Orleans Marriott
New Orleans, LA
Contact: Tanya Tate-Taylor, (703) 204-0500

October 7-11, 1997
RTA Annual Convention
Opryland Hotel & Convention Center
Nashville, TN
Contact: Debbie Holden, (770) 460-5553

October 17-20, 1997
NHLA Annual Convention
Le Centre - Sheraton
Quebec, Canada
Contact: Dan Meyer, (800) 933-0318

maintenance activity, SelecTie II utilizes a life/ maintenance cycle, productivity rate, material cost, equipment cost and labor cost to determine a present value cost for that maintenance activity. Based on these maintenance activities, a total cost is developed, along with a net difference in present value costs and corresponding return on investment.

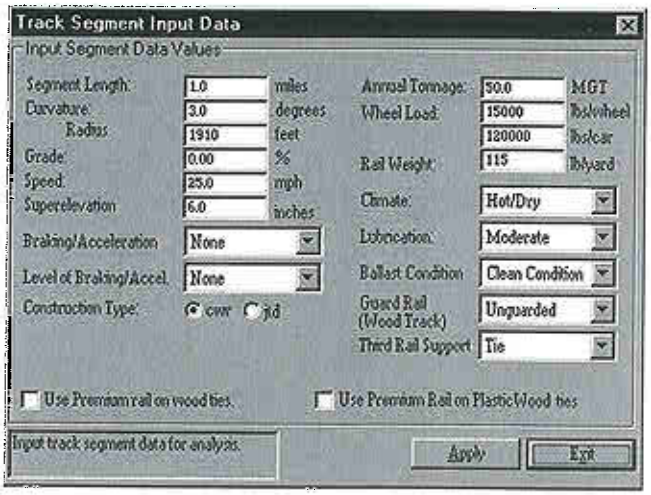


Figure 2

SelecTie II is a state-of-the-art economic benefit analysis tool that provides the user with an easy-to-use interface for specifying costs and engineering inputs while retaining the sophisticated analytical approach inherent to the original SelecTie. The return on investment is the primary indicator of economic justification and is always available to the user as a separate window in order to show the effects of changing any given input parameters.

As can be seen in Figure 1, a session form is contained within the SelecTie II main program window which contains the data for a given session or file. Several of these forms may be opened at one time such that multiple documents can be viewed simultaneously. The session form summarizes the economic benefit analysis and contains a summary of the track inputs as well as a space for user comments and notes. In addition, a breakdown of costs is presented for each specified maintenance activity which can be changed using the pull-down list of maintenance activities.

When the user opens a new SelecTie II session, the input variables are defaulted to values based on industry average data. Railroad-specific data can be input for any variable and saved as a railroad specific file to be used later for any analysis scenario.

For a given set of track characteristics and operating criteria, several maintenance activities are defined for which the costs of installation and maintenance are calculated for each tie and fastener configuration. The track characteristics are input through a

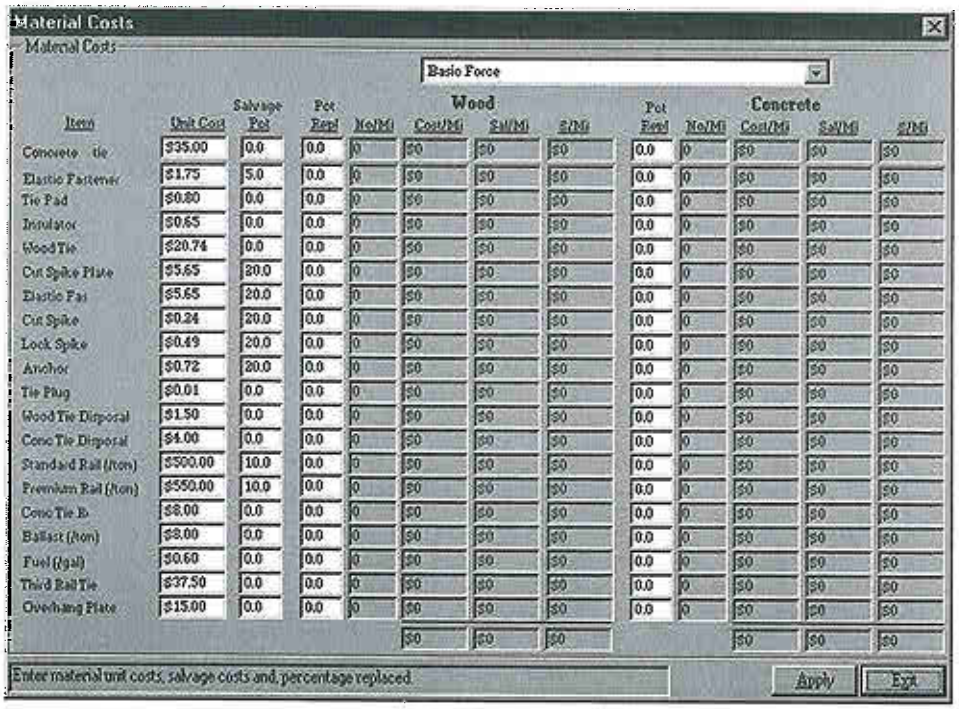


Figure 3

screen which contains information related to the existing layout and operating requirements of the track segment (See Figure 2). Whenever possible, pull-down lists, option buttons and/or check boxes are provided for ease of input.

In addition to the track characteristics input screen, separate input screens are available for the component life cycles (internal model calculations can be overridden by the user), material characteristics, material costs, labor costs, equipment costs and productivity rates.

The individual input screens allow for more intuitive and comprehensive data editing as compared to the original sequential format of the SelecTie spreadsheet model. As an example of the ease of use of the input screens, the material costs input screen is shown in Figure 3 for the tie replacement maintenance activity.

Material cost inputs for each maintenance activity can be defined by selecting the desired maintenance activity from the pull-down list at the top of the input screen.

Several upgrades have been included in SelecTie II that make it more useful and easier to use. The first upgrade is an ROI window (See Figure 1) that provides the user with a constant update of the return on investment and can be moved to any location that suits the user. The second upgrade is the addition of the user's favorites toolbox (See Figure 1) which allows the user to assign any input text box to the favorites toolbox by clicking and dragging the desired input to the favorites window. This provides the user with quick and easy access to any variable that is viewed most or needs changing often.

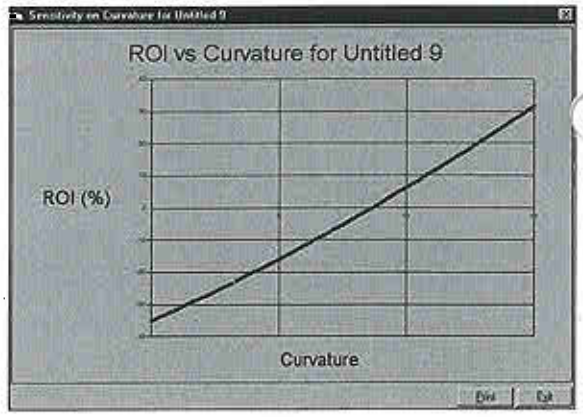


Figure 4

Another upgrade is SelecTie II's multiple document interface which allows for several sessions to be opened simultaneously to compare results of different input values. An additional upgrade is the capability for sensitivity analysis which allows the user to compare the effects of changing one variable (curvature, tie cost, etc.) while holding all other variables constant. In this manner, break even points can be determined for the variable for which the sensitivity analysis is being performed. A sample sensitivity analysis for degree of curvature is shown in Figure 4.

SelecTie II is an unbiased analytical tool for selecting the optimal crosstie/fastener configuration for a particular stretch of track based on the engineering and operating characteristics of that segment. The model has default cost data and engineering life cycle equations that have been based on several years of research. If the users feel that this default information is not consistent with their experience or current cost structure they have the ability to change any input variable. In this manner, SelecTie II is flexible enough that a railroad engineer or purchasing agent can determine the optimal crosstie/fastener configuration for a defined segment of track knowing that railroad's experience and costs. ◆