

Online SelecTie III Model Now Free

The new SelecTie III Modeling Tool, available online, is now free and may be used to help determine the economic benefits of alternate tie materials.

In the late 1980s, SelecTie was a groundbreaking tool developed for railroads by the Railway Tie Association in partnership with Dr. Allen Zarembski.

The model has been updated over the years and is now especially designed for short line railroads, railroad contractors, and government and industrial users.

The same level playing field that SelecTie brought over 30 years ago has been retained, but default values have been updated by Dr. Joe Palese of the University of Delaware to reflect ever-changing railroad needs.

Plus, it is now free for all users in an online format.

The SelecTie III model now provides streamlined data entry, and allows for the determination of the economic benefits in the format of net ROI of alternate tie materials as compared to wood ties.

Users can generate a report of the model results to share with project stakeholders, and can even create accounts to save model sessions for later access and revision.

Users will quickly find the slider bars in

The screenshot shows the 'SelecTie Analysis Tool' interface. On the left, there are input fields for 'Track & Operating Characteristics' and 'Advanced' settings. The 'Advanced' tab is selected, showing parameters like Length (1 mi), Grade (0%), Superlevation (0 in), Car Weight (286000 lbs), Alternate Tie Material (Steel), Climate (Moderate), Curvature (0 deg), Speed (25 mph), Annual Tonnage (5 MGT), Wheel Load (35750 lbs), Wood Tie Fastener (Cut Spike), and Interest Rate (5%). On the right, a 'PV Costs/Mile Summary' table compares Wood and Steel tie costs across various activities.

Use	Activity	Wood	Steel	Delta
-	Basic Force	\$ 93,750	\$ 78,187	\$ -15,563
-	Rail Replacement	\$ 66,903	\$ 54,370	\$ -12,534
-	Rail Transposing	\$ 23,824	\$ 8,131	\$ -15,693
-	Tie Installation	\$ 77,408	\$ 12,532	\$ -64,877
-	Steel Tie Repair	\$ -	\$ -	\$ -
-	Surfacing	\$ 20,826	\$ 16,820	\$ -4,006
-	Undercutting	\$ 85,903	\$ 61,889	\$ -24,014
-	Rail Grinding	\$ 1,106	\$ 1,952	\$ 846
-	Gauging	\$ 15,180	\$ -	\$ -15,181
-	Anchor Adjustment	\$ 2,733	\$ -	\$ -2,734
-	Fuel Usage	\$ 88,600	\$ 84,428	\$ -4,172
-	Demolition	\$ 4,401	\$ 5,235	\$ 834
-	Conversion to Alt. Ties	\$ 54,797	\$ 285,090	\$ 230,293
Total		\$ 1,395,434	\$ 1,345,917	\$ 49,517
Net Benefit of Wood Ties		\$ -40,183.02		
ROI for Steel Tie				-18.11%

several of the “Track and Operating Characteristics” tabs make working in the model far easier, with results instantly viewable in the same window.

An “Advanced” tab allows a deeper dive into the default values for 13 separate key inputs that drive the model. Defaults can be changed to reflect users’ needs and costs structure.

“SelecTie was the gold standard when it arrived on the scene more than 30 years ago,” said RTA Executive Director Jim

Gauntt. “To this day it is the deepest, most complete model of its kind for assessing the benefits wood ties offer in comparison to alternative materials in over 90 percent of track applications.”

Gauntt added that RTA is proud to be able to offer this valuable tool free in partnership with the College of Forestry at Oregon State University, which hosts the site.

To access the model, visit <http://eptw.forestry.oregonstate.edu/> and click on “SelecTie Modeling Tool” in the header. ■

SELECTIE III: RTA, OSU COLLABORATE ON NEW RAILROAD TOOL

By Gerald Presley & Matthew Konkler

The Oregon State University (OSU) College of Forestry is home to a wide variety of research groups aimed at improving the properties of wood products and measuring their impact on the environment.

Research done at OSU and elsewhere continues to show wood’s ability to reduce the environmental impact of structural materials while still maintaining the structural integrity necessary to make functional reliable infrastructure.

This choice between wood and alternate materials is one that exists in the railroad tie industry as well and is made with a variety of factors under consideration for each project.

The Railway Tie Association (RTA) has partnered with the OSU Environmental Performance of Treated Wood Research ▶



BMP verification study on a bridge in Oregon.

Cooperative (EPTW) to host their updated SelecTie III model on the EPTW website.

This model aids its users in calculating the economic benefits and detriments to utilizing wood or alternative tie materials in the construction of specific railroad track projects. The new model version has several new features, including more streamlined data entry, enabled sharing of the model results with other stakeholders, and the ability to save sessions for later access.

The EPTW hopes to use this collaboration to improve its own research studies by modelling the benefits of using wood materials over alternatives.

Beyond economic considerations, one of the critiques of utilizing wood ties over steel or concrete alternatives is that wood ties must be treated with preservatives, primarily creosote. The EPTW has performed research verifying the ability of best management practices (BMPs) to reduce post treatment discharge of creosote, and other preservatives, from treated wood. This work showed that recommended BMPs reduce the loss of preservative from treated wood and effectively mitigate the risks of environmental damage.

Another recent study monitored creosote migration from treated posts into sediments in a freshwater pond near OSU. This work shows that creosote discharge from pilings are minimal to non-detectable farther than a one-foot radius around the piling and thus do not pose a far-reaching environmental risk.

Moving forward, the EPTW would like to continue to study the environmental performance of creosote and copper naphthenate treated wood with the aim of addressing concerns about the use of these materials. One of the areas of research we would like to explore is whether dual treatments of railroad ties with borates and either a creosote or copper naphthenate overtreatment affect tie longevity and how these ties should be disposed of.

Considerations like these will ultimately contribute to the overall cost-benefit calculations in the SelecTie III model. Through our collaboration with the RTA we hope to improve the quality of information available to SelecTie III users. ■

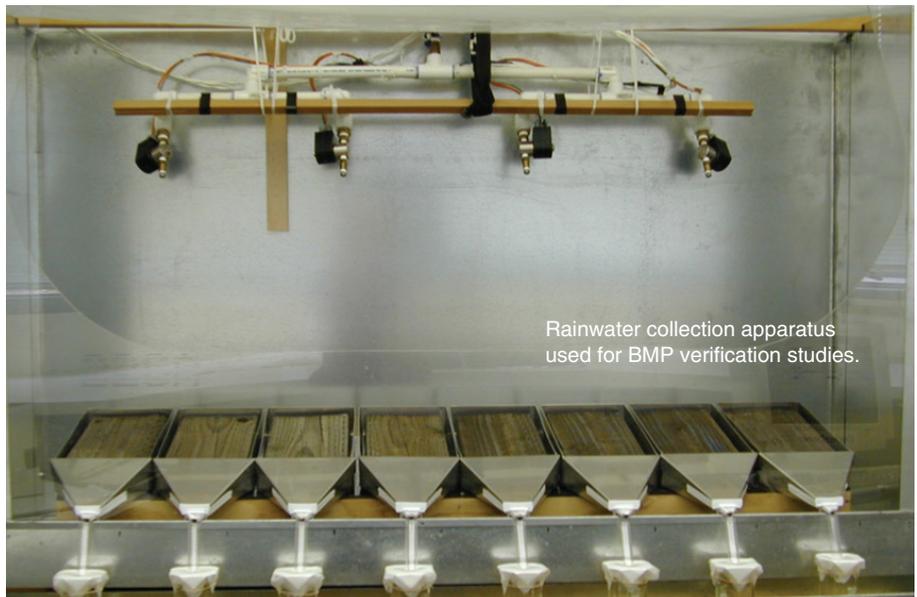
Gerald Presley is assistant professor and Matthew Konkler is senior faculty research assistant I in Oregon State University's Department of Wood Science and Engineering.



BMP verification study on a bridge in Minnesota.



Experimental pond used for environmental leaching studies.



Rainwater collection apparatus used for BMP verification studies.