

# Crossties

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

JANUARY/FEBRUARY 2000

NEW VIDEO HIGHLIGHTS  
HISTORY OF WOOD TIE  
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*RTA Introduces New  
Educational Video:*

## The Legacy Of The Wood Crosstie



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# The Legacy Of The Wood Crosstie



It seems that in today's Pentium-driven world of electronic operating systems, much of the population in North America has their hands full just keeping up with the change that consistently invades daily life.



Jim Gauntt

One only has to look at television today and all its ".com" advertising to see examples of the massive structural changes under way in our economy.

"Commerce is changing," is what we hear. For most people, it's as if what will happen tomorrow is more important than what is going on today. And forget about what happened two days ago—that's ancient history.

This attitude is hard to stomach when one makes a living in the crosstie business—not because the tie industry is adverse to change, but rather because most tie producers are historians. While there may be few among us who have written Ph.D. dissertations, tie men and women do hold their doctorates in experience. They know their history and how it repeats itself when it's forgotten.

We should remember that even though commerce may be changing, people still have to eat, build shelter and clothe themselves. And most need daily personal transportation. So, some commerce will still take place the old-fashioned way—railroads and the trucking industry will still govern our nation's economy because they govern the transportation of items people need, including the computer on

which this article was processed and formatted for publication.

You may wonder why I call your attention to this. The other day while re-reading the 1919 proceedings of the Railway Tie Association in preparation for this issue, I was interrupted by "you got mail." The electronic correspondence was from a freelance writer doing an article on railroading in the next millennium. One of his comments expressed concern for the "mind-boggling" use of archaic practices by modern railroads. Based on other comments the writer had made, I interpreted this to mean the use of wood crossties was outdated among other things (one wonders why the use of steel rail isn't considered just as archaic).

After a thorough explanation of the remarkable "technology" known as the treated wood crosstie, his interest was turned in a new direction, or so his comments would indicate. He asked for and will soon receive a new RTA video entitled, "The Legacy of the Wood Crosstie," and several other important RTA publications. This brings me to my first point.

RTA has a new video presentation entitled, "The Legacy of the Wood Crosstie," first seen by members at the annual convention last fall. Rare archive footage is combined with a look at modern railroading as seen through the eyes of some of this industry's most important leaders, including Gary Hunter of Union Pacific Railroad, Doug Fox of Canadian Pacific Railway, and Paul Webster of Webster Industries. This 12 1/2-minute history tells a unique and inspiring story. You are invited, with this issue, to receive a copy for your video library.

But this is not a story to make a sales pitch for a new product, although it has received

numerous accolades as an important educational tool about our industry. The point of this is that certain industries defy "e-commerce" business models because of their inherent qualities. For railroads, this uniqueness accrues from the fact that they are the indispensable backbone of the transportation network that makes our economy tick. For the tie industry, it is because for more than 160 years, the wood tie has continually evolved to meet the needs of railroads.

But you might not know this if you didn't know the history. In 1919, as America emerged from World War I, some 140 million wood ties were being produced and used annually. The Railroad Administration, a government entity formed to regulate the rail industry, dictated tie pricing, called for standardization via specification, and attempted to minimize unscrupulous business tactics during the reconstruction period that followed the war. That same year, the Railway Tie Association was formed to do an important job—to represent tie producers in the process of standardization, timber resource management, research, education and wood crosstie performance improvement.

Article III of the Constitution that formed the association stated that the purpose of the association was "benevolent, scientific and educational"—that it was dedicated to "closer relationships between members and others engaged in the railroad tie business; to do any and all things which may be necessary and proper to carry into effect the said objectives; and to facilitate in every proper way the transaction of all legitimate business between members and between members and the railroads."

Since then, the association and its pro-

ducer members have worked with railroads to produce revolutionary changes in the engineered wood crosstie system—changes that have kept the wood tie the material of choice for more than 93 percent of railroad applications on this continent. If my calculations are correct, more than 6 billion wood crossties have been produced for American railroads over the last 150 years. Close to 1 billion are still in service today.

Wood has gone from supporting slow-moving, much lighter trains to supporting today's massive locomotives and 286,000-pound cars, traveling only minutes apart and at speeds never imagined in the 1800s. Indeed, the wood crosstie is the most successful product in the history of industrialized North America. Not only has it been produced most abundantly, it is a modern-day wonder for its record of meeting and succeeding in the challenge of change.

But history proves something else as well. Reading early accounts and listening to the voices of experience, of which there are many in this industry and a few remaining in railroading today, one learns a valuable lesson.

The lesson is that the crosstie industry is a supply network somewhat akin to a deli-

cate fabric. This fabric is woven together with thousands of threads that all work together to provide a key component for the railroad's success today and in the future. While the fabric can be stretched, sometimes to remarkable limits, we must not forget that it can also be torn.

In this millennium year, RTA will explore some of the history lessons of the past. And, as the evolution of the wood crosstie's service to railroading continues, we will continue to provide the programs and services that railroads and producer members can use to better build their industries. One such tool is the video, "The Legacy of the Wood Crosstie." For both the non-historian and historian alike, it is a good start to understanding the unique and irreplaceable wood crosstie. §

#### Correction:

In the November/December 1999 issue of *Crossties*, the article on page 26 stated that Dick Krause received his bachelor's degree from Virginia Technical College. It should have read that he received his degree from Virginia Tech University.

## Letters to RTA

### Thanks For Your Contributions

*Editor's Note: Dennis McMahon of Norfolk Southern, a longtime member of the Railway Tie Association, lost his battle with cancer last fall.*

Dear Jim:

Please express my thanks to all the members of the Railway Tie Association for remembering Dennis (McMahon) by adding to his dream.

Your contribution to Habitat for Humanity honors Dennis and what he stood for—helping and encouraging others, especially those who are working and striving.

His parents, children and I thank each and every one of you. I've also been told that his name was mentioned at the annual convention. Thank you for that.

Working and knowing you meant a great deal to Dennis, as did the Branding Hammer Award he received in 1998.

*May God bless you,  
Natalie McMahon*

Mellott Wood  
Preserving  
7 1/2 x 4 3/4  
B/w  
Pickup  
Nov/Dec 99  
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# 2000 Tie Market Analysis Predicts North American Supply, Demand

By Jim Gauntt

This year's look at the North American tie markets paints a paradoxical picture. On the one hand, it shows that "installations" will be approximately as strong for all markets as 1998 and 1999. On the other hand, it tells a story of an industry facing a significant reduction in tie production. How can both things be true? Hindsight is always better than foresight. So, using hindsight to look at some hard historical numbers, this article will seek answers. Remember, though, to pay close attention to the difference between "installations" and "production" as you review past data and the forecasts for 2000.

## Class I Railroads

1997 was a big installation year for Class I railroads. With the reduction in operating trackage that had occurred in the previous decade, it was especially significant that the Class I's in the United States and Canada installed the equivalent of 16 million ties\*. After the difficult winter of 1996-1997, the tie industry was under pressure to get production up—and it did—to remarkable levels. The level of prices also had to rise remarkably in order to attract production away from other markets for hardwood timber products.

The mild winter of 1997-1998 did not cure the demand for ties as the railroads kept up a torrid purchasing pace and the production remained strong. A look at 1998 "production" figures shows that RTA reported production hit 20 million ties for the first time in most industry officials' memories. But then, near the end of 1998, installations dropped precipitously in the West, and system-wide inventories rose to all-time highs. The RTA reported tie inventories at the end of 1998 hit 13,384,000.

Then came the mildest winter (1998-99) in memory. Tie production, which naturally softens during the winter months, did not. Production stayed about 10 percent ahead of norms for the first quarter of 1999, and inventories continued even higher. It wasn't until June 1999 that more normal levels of production were reported.

But by that time, the system-wide inventory was approaching 14 million ties.

So, this is why the new millennium will, in fact, start with a paradoxical year. According to phone surveys of Class I railroads conducted by RTA in the last weeks of November 1999 and confirmed during early December, Class I installation programs will be slightly more than 1998 and 1999 by 150,000 ties or so. However, because of the inventory situation in the West and the curtailment in one Eastern road's buying program, 2000 will be a tough year for production.

RTA reported "production" for 2000 could be as much as 9 percent below 1999 levels. If this holds true, inventories should begin to look more like historic norms by year-end. But, for many producers, it will be a difficult year as they try to balance railroad requirements for 2001 and beyond with cash flow.

The bright spot to all this is that the overall system-wide installation pattern of the Class I railroads appears to be reaching a level that resembles "steady-state." It will take another year or two to see if that pattern really is real. But if it is, then what will occur in Class I purchasing will be the result of working some of the excess inventory out of the system.

This can be a good thing, even if it isn't pleasant. If all the Class I's are indeed bring-

\* when including switch/bridge timbers in e.c.u.'s - equivalent cross-tie units

ing greater stability to their year in-year out installations, then steady-state tie programs will not be too far behind. And, if that occurs, as the RTA TieLife™ model consistently shows, the growth in tie demand will creep upwards slowly and consistently over the next 10 years. This could mean the end to tie production boom/bust cycles during the coming decade.

## Short Line Railroads

The most dynamic market of the last three years has been driven by the short line railroads. According to the RTA survey published earlier this year, short lines installed 4.3 million ties in 1998. That's a stupendous 40 percent increase from 1997 reported figures. 1999 and 2000 show retreats from these lofty levels, but, still, at 3.5 million and 3.6 million ties, respectively, that's a full 20 percent larger market than in 1997. And, this doesn't take into account what could happen if the Dakota, Minnesota & Eastern Railroad kicks in with their long-awaited Powder River Basin Project or what could happen if federal money becomes more available for much-needed short line infrastructure investment.

The survey also has good news for tie producers on another front. It appears that a fundamental change is occurring in the use of second-hand ties. Class I's and short lines are both using less. For the short

## TieLife™ Model Forecasting For Class I Installations

If you are a member of RTA who has purchased the TieLife™ forecasting model, you realize how valuable a tool it can be. And, RTA staff members and our engineering consulting team at ZETA-TECH Associates have recently made the model even better.

Applying new calibration to the forecasting portion of the model has produced extremely realistic forecasting for Class I railroad installation scenarios (see Table 2). The new calibration has been corroborated in several ways, but most notably through the research on track strength conducted by ZETA-TECH Associates for

the Federal Railroad Administration (with significant contributions by RTA).

The TieLife™ forecasting numbers referred to in our market analysis article are reproduced in Table 2. The forecast is shown in two ways—as a range and as a median forecast.

Using any forecasting tool always goes with some caveats, however. The TieLife™ model uses 40 years of data to generate its results. Unfortunately, to generate a forecast that starts with the year 2000, we have to include 1999 data. This data is estimated, as the final numbers for 1999 won't be formal-

continued on page 16

lines, this means increased use of industrial grade ties when they are available. This can help both industries provide stability for their respective needs.

Short lines now command a solid 25 percent of the installation market for North America. That share of the market could grow even higher if short line railroads can find the necessary private and public capital to invest in the track upgrades necessary for handling 286,000-pound cars.

### Other Markets

1999 was a good year for industrial installations of ties by railroad contractors, according to RTA surveys. Several hundred thousand ties were purchased for industrial sidings and track. There may be a slight pullback in 2000 for this market as well, but there are those who are just as bullish as they can be beyond 2000. Interviews with industry leading contractors indicate no lack of work. RTA offices are receiving inquiries from all over the world seeking railroad contractors to complete projects. Without a doubt, railroad contractors are playing a significant role in building and maintaining railroad infrastructure.

Amtrak will feel the pinch in 2000.

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Combined with other passenger transits, the purchases for ties will dip by 40 percent in 2000, from 385,000 ties in 1999 to 215,000 ties in 2000. This is not likely a trend, however, with many regional transit projects on the board and Amtrak's Northeast Corridor maintenance and construction needs beyond 2000.

On the global market front—surprise! According to U.S. Department of Commerce figures, 1998 saw a 250 percent increase in wood crossties exported to global markets. Even adjusting for ties going to Canada, short block ties and other ties/timbers that may be used for purposes other than railroading, at least 1 million crossties were exported to places like Mexico, Central and South America, the Caribbean and other world markets. According to the most recent statistics available (second quarter 1999), the pace appears to be similar for 1999. 2000 could see a continuance of the global demand for U.S. and Canadian wood tie products. Certainly, the global tie market is not to be overlooked.

### Tie Life Forecasting

In 1998, RTA introduced a new tie-planning tool called TieLife™. It is a computer model that predicts both tie life in a variety of operating environments and how many ties are needed by the railroads to maintain track in "like-new" condition.

For 1999, the model underwent a calibration to reflect real-world scenarios. It became apparent that, although the trends were correct, the predicted numbers for replacement were consistently higher than even the most optimistic industry forecaster. The adjustments had to be made because railroads don't maintain their entire systems

### TieLife™ continued from page 15

ly reported until the first or second quarter of 2000. So, if our 1999 estimates are off, the forecasts will also be slightly affected.

The other caveat is the economy. Should there be a dip in economic activity that affects the amount of goods transported on railroads, tie installations could suffer—and vice versa, if more is shipped via rail, more ties will be needed for maintenance.

It is important to realize that a forecast is a guide to what is likely to happen, not a guarantee. The fact that for the first time in the long history of wood crosstie usage RTA has developed such a fine tool for this

in "like-new" condition. Railroads know that wood ties are forgiving and some can remain in track, even if they aren't perfect.

The newly calibrated model predicts an installation program of 12.3 million ties in 2000 for (U.S. only) Class I trackage. This compares favorably with our 12.3 million forecast (see Table 1, line 1). For 2001, it predicts 13.4 million, and in 2002, 13.8 million. If inventories of wood ties drop by the end of 2000 to around 12 million, tie production in 2001 (for just Class I roads) will have to be higher than 2000. This is because inventory vs. installation historically works best (at least in the Class I market) when the ration is about one tie in inventory for every tie installed—in other words, equilibrium.

What this means is that Class I railroads can provide the best situation for tie producers—and themselves—by looking forward 12 to 24 months and planning next year's (zero to 12 months out) purchases based on that. For example, if the engineering departments could set a number now for maintenance and construction in 2001, and finance could say for sure that they could have the money, the benefits of steady-state tie purchasing would begin to pay off. Now is the time for both supplier and user to figure out how to do this, as it would provide enormous long-term economic benefits to both. §

### Counterpoint

There is and has been a fundamental change occurring in the marketplace for wood ties. Class I railroads, while still the major players, no longer dominate what happens in the tie-purchasing marketplace completely. If you combine short line railroads with other markets, 30 percent of tie demand comes from purchases other than

**Table 2 - TieLife™ Model Forecasting For Class I Installations**

	Forecast Median	Forecast Range
2000	12,287,267	12,066,538 - 12,507,997
2001	13,376,772	13,136,477 - 13,617,080
2002	13,848,161	13,599,391 - 14,096,930
2003	13,838,411	13,539,817 - 14,087,005
2004	13,036,320	12,803,446 - 13,271,865
2005	14,164,605	13,910,151 - 14,419,059

industry's use is a great step toward a better understanding of what will happen in the marketplace.

A better understanding of the marketplace for ties is the foundation for improving long-term stability in the tie supply and demand. §

Class I railroads. This may account for why inventories are going to be higher than in the past. That is, other sources now require more system-wide inventory than what has been the historical norm for servicing just Class I railroads. What this means for the Class I's is that other factors now must be considered when planning for the future.

So, even though all signs point to a slower year for tie producers, a few industry pundits believe that the worst won't be all that bad. They point to strong fourth quarter 1999 shipments of ties, the likeli-

hood of a normal wintertime production pattern, and the fact that some important rail construction projects on the drawing board will have to be planned for.

Specifically in question is the Dakota, Minnesota & Eastern Railroad Powder River Basin Project. This project, if it becomes a reality, will require close to 3 million wood ties over a 2 1/2 to three-year period, starting in 2001. No one knows yet whether the funding and approvals will be forthcoming. But, if it does, then just when the Class I's are pro-

jected to increase their system-wide total purchasing, the two industries, rail and tie, will be faced with huge demands—this at a time, when production will have been driven down to significantly lower levels.

If you are in the railroad planning process, it might be important to consider this as you plan for purchasing in the year 2000. Those who make the right call will be in a much better position to deal with the next 24 to 48 months. Those who don't may find that they have created an economic disadvantage for themselves. §

	<b>Table 1</b>			
	1997	1998	1999	2000 Projections
<b>CLASS I TRACK MILEAGE</b>	172,564	171,098	170,100 (Estimated)	169,985
<b>CLASS I RAILROADS</b>				
1. Total ties installed (U.S.)	13,363,000	12,161,173	12,109,500	12,307,700
2. Total wood ties installed - new and relay combined (U.S.)	12,368,761	10,725,938	10,964,200	11,412,300
3. New alternative ties installed (U.S.)	994,611	1,435,235	1,145,300	895,400
4. New wood ties installed (Canada) <sup>1</sup>	1,400,000	1,085,000	1,100,500	1,200,500
5. Relay ties installed - wood (U.S.)	504,384	418,500	395,000	350,000
6. Switch/bridge timbers in ECU's (U.S.) <sup>2</sup>	791,103	795,014	875,000	795,000
7. Total U.S./Canada installations	16,066,487	13,246,173	14,085,000	14,303,200
8. Total demand for all new ties U.S./Canada	15,562,103	12,828,123	13,690,000	13,953,200
9. Total demand for new wood ties U.S./Canada	14,567,492	11,392,888	12,544,700	13,057,800
<b>SHORT LINE TRACK MILEAGE</b>	47,000	48,500	49,600	50,000
<b>SHORT LINE RAILROADS</b>				
10. Total ties installed (U.S./Canada) <sup>3</sup>	3,081,357	4,314,319	3,595,208	3,667,152
11. Grade ties installed (U.S./Canada)	2,493,656	2,486,585	1,977,250	2,200,291
12. Industrial ties installed (U.S./Canada)	784,723	1,412,312	1,258,438	1,100,100
13. Relay ties installed (U.S./Canada)	702,978	298,862	359,520	366,761
<b>CONTRACTORS</b>				
14. All new ties purchased for markets other than above <sup>4</sup>	1,208,593	933,909	1,017,960	900,000
15. New wood ties purchased for markets other than above	1,194,271	933,909	1,014,760	900,000
16. New alternative ties purchased for markets other than above	14,322	—	3,200	—
<b>TRANSITS</b>				
17. New ties for all transits, including Amtrak	486,500	363,500	385,000	215,000
18. New wood ties for all transits, including Amtrak	311,500	250,000	250,000	125,000
19. New alternative ties installed, including Amtrak	175,000	113,500	135,000	90,000
<b>GLOBAL</b>				
20. Wood ties exported to markets other than above	410,000	1,062,500	1,012,500	985,000
21. Wood ties imported to U.S. from countries other than Canada	27,200	37,000	33,000	30,000
<b>TOTAL MARKET DEMAND</b>				
22. Total all ties installed by all markets supplied from U.S./Canada sources <sup>5</sup>	22,152,937	19,920,401	20,095,668	20,100,352
23. Total all new ties installed by all markets supplied from U.S./Canada sources	20,845,665	18,485,166	19,341,148	19,383,591
24. Total demand for new wood ties	19,661,732	18,066,666	18,195,848	18,488,191
<b>TOTAL MARKET SUPPLY - WOOD</b>				
25. Total RTA reported wood tie production	17,188,000	20,099,000	16,517,000	14,438,191
26. Total production of non-reporting companies (estimate)	2,222,732	1,022,760	1,000,000	950,000
27. Total supply from all producers of wood ties (U.S./Canada)	19,010,732	21,121,760	17,517,000	15,388,191
28. Increase or (decrease) in wood tie reported inventory	12/96-12/97 (251,000)	12/97-12/98 3,189,000	905,000	(2,050,000)
29. Actual RTA inventory reported	As of 12/97 10,135,000	As of 12/98 13,284,000	14,182,000	12,132,000

1. Canadian roads, with their U.S. trackage included, installed over 1.6 million ties in 1996, 1997 and 1998. The U.S. trackage portion of these installations is combined with U.S. Class I roads in Line 1. The Canadian trackage installations are reported here in Line 4.

2. RTA reports switch/bridge timbers as ECU's (Equivalent Crosstie Units). This ECU figure is determined by dividing total reported board footage by 40 BF (average BF per crosstie). Thus, in 1999, 35,000,000 BF of switch and bridge timbers translates into 875,000 ECU's.

3. RTA survey data combined with projections for Canadian short lines.

4. In 1999, contractors reported that only about 18 percent of their tie purchases went into short line projects and 4 percent to class I roads. The remaining 80 percent went into industrial and other non-Amtrak government projects.

5. This figure represents total installations in U.S. and Canadian markets, plus the total exported to global markets worldwide.