

# Wood Ties Dominate 2005 Installs

## Future Holds Promise & Pitfalls

By Jim Gauntt

“A lot can happen in a short period of time in

this industry.” That was the first sentence in the Railway Tie Association’s (RTA) concluding remarks to the article on tie demand in the September/October 2005 issue of *Crossties* magazine. And how!

For some in the tie industry, it seems like it’s been a lifetime since last summer when concerns for constrained tie production were quickly erased as sawmills and treating plants ratcheted up production at a torrid pace.

Not only did producers find another gear, but they also stomped on the gas pedal and never looked back. And, until recently, railroads couldn’t have been more pleased with the response.

Railroads needed this industry’s rapid ramp-up to meet engineering and maintenance-of-way requirements. Continuing freight growth, stretched capacity and rising revenues all set the stage for increased track work. The 18.7 million tie purchases for 2005 occurred as predicted and are in the process of being eclipsed by a 20.5 million tie purchasing pace at the writing of this article (*Figure 1*).

Yet, not all is coming up roses. A new constraint in production has reared its head, and flush inventories of green ties in some regions may put a squeeze on purchases for the remainder of the year. Before the train goes ‘round that bend however, a look at the recently released historical numbers would be prudent.

### History Primer

In 2004, wood ties gained market share as the increasing demand for wood outpaced any growth for alternative materials. In 2005, little changed even though more concrete ties found their way to track than in 2004 (982,375 in

**Figure 1—Tie Production, Purchases & Inventory** (000’s omitted)

Year	Month	Tie Production	Annual Production Rolling Total	Tie Inventory	Change In Inventory	Tie Purchases	Annual Purchases Rolling Total	Inventory To Sales Ratio
2002	Jan	1,446	15,275	13,057	433	1,013	16,029	0.81
	Feb	1,399	15,557	13,118	61	1,338	16,278	0.81
	Mar	1,312	15,595	12,760	(358)	1,670	16,554	0.77
	Apr	1,370	15,856	12,482	(278)	1,648	16,772	0.74
	May	1,359	15,852	11,996	(486)	1,845	16,865	0.71
	Jun	1,401	16,040	11,735	(261)	1,662	16,732	0.70
	Jul	1,533	16,305	11,751	16	1,517	16,870	0.70
	Aug	1,647	16,538	11,602	(149)	1,795	17,044	0.68
	Sep	1,611	17,002	12,006	404	1,208	17,111	0.70
	Oct	1,893	17,481	12,927	922	972	16,935	0.76
	Nov	1,370	17,624	13,174	246	1,123	17,215	0.77
	Dec	1,127	17,468	13,406	232	895	16,686	0.80
2003	Jan	1,288	17,309	13,782	376	912	16,585	0.83
	Feb	1,143	17,054	13,748	(34)	1,177	16,424	0.84
	Mar	1,255	16,997	13,544	(204)	1,459	16,213	0.84
	Apr	1,525	17,152	13,354	(190)	1,714	16,280	0.82
	May	1,439	17,232	13,148	(206)	1,645	16,080	0.82
	Jun	1,365	17,197	13,037	(111)	1,476	15,894	0.82
	Jul	1,577	17,242	13,136	98	1,479	15,856	0.83
	Aug	1,587	17,181	12,997	(139)	1,725	15,786	0.82
	Sep	1,651	17,221	13,020	23	1,628	16,207	0.80
	Oct	1,725	17,053	13,403	383	1,342	16,577	0.81
	Nov	1,378	17,061	13,658	255	1,124	16,577	0.82
	Dec	1,280	17,214	13,426	(232)	1,512	17,194	0.78
2004	Jan	1,615	17,541	14,022	596	1,019	17,301	0.81
	Feb	1,470	17,868	14,129	107	1,363	17,887	0.81
	Mar	1,927	18,540	14,140	12	1,916	17,943	0.79
	Apr	1,583	18,598	14,254	113	1,470	17,699	0.81
	May	1,497	18,656	14,284	30	1,467	17,521	0.82
	Jun	1,876	19,166	14,384	100	1,776	17,820	0.81
	Jul	1,532	19,121	14,343	(41)	1,573	17,914	0.80
	Aug	1,656	19,190	14,243	(100)	1,755	17,943	0.79
	Sep	1,789	19,328	14,342	99	1,691	18,006	0.80
	Oct	1,655	19,258	14,728	386	1,269	17,933	0.82
	Nov	1,373	19,253	14,865	136	1,236	18,046	0.82
	Dec	1,366	19,338	15,015	150	1,216	17,749	0.85
2005	Jan	1,273	18,996	14,898	(117)	1,390	18,120	0.82
	Feb	1,270	18,797	14,707	(191)	1,461	18,218	0.81
	Mar	1,451	18,320	14,410	(297)	1,748	18,051	0.80
	Apr	1,421	18,158	13,951	(459)	1,880	18,460	0.76
	May	1,502	18,162	13,984	33	1,469	18,462	0.76
	Jun	1,793	18,079	13,988	5	1,788	18,475	0.76
	Jul	1,590	18,137	13,927	(62)	1,651	18,553	0.75
	Aug	1,860	18,341	14,143	216	1,643	18,441	0.77
	Sep	1,882	18,434	14,699	556	1,326	18,077	0.81
	Oct	1,774	18,553	14,691	(8)	1,782	18,590	0.79
	Nov	1,786	18,966	14,904	213	1,572	18,926	0.79
	Dec	1,661	19,261	15,531	626	1,035	18,745	0.83
2006	Jan	1,734	19,721	15,747	217	1,517	18,872	0.83
	Feb	1,674	20,125	15,890	142	1,532	18,943	0.84
	Mar	2,128	20,803	16,178	288	1,840	19,035	0.85
	Apr	1,744	21,126	15,981	(197)	1,941	19,097	0.84
	May	2,405	22,030	15,711	(269)	2,674	20,302	0.77
	Jun	1,981	22,218	15,573	(139)	2,120	20,633	0.75
	Jul	1,609	22,237	15,606	33	1,577	20,559	0.76

NOTE: The information in this chart is calculated from reported production and inventory numbers by RTA members. This represents more than 95% of the U.S. and Canadian market for wood crossties.

**Table 1—Crossties Laid In Replacement Statistics For Class 1 Railroads In The U.S. In 2005**

District & Railroad	Treated wooden crossties laid in replacement (#)		New crossties laid in replacement other than wooden (#)	Track maintained by reporting railroad		Crossties per mile (1967)	New crosstie replacement avg.		Switch and bridge ties laid in addition (board ft.)
	New Ties	Second-Hand Ties		Miles occupied by crossties (a)	Total crossties (b)		% renewal to all ties	# laid per mile	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Eastern District</b>									
CSX	2,922,381	18,956	(c) 51,528	31,049	92,774,412	2,988	2.53%	75	6,826,586
Grand Trunk Corp. (CN)	618,492	1,000	0	10,197	32,171,535	3,155	1.92%	61	1,150,119
Norfolk Southern	2,522,570	187,577	0	30,501	93,821,076	3,076	2.69%	83	9,461,090
<b>Total Eastern District</b>	<b>5,433,443</b>	<b>207,533</b>	<b>51,528</b>	<b>71,747</b>	<b>218,767,023</b>	<b>3,049</b>	<b>2.51%</b>	<b>76</b>	<b>17,437,795</b>
<b>Western District</b>									
Burlington Northern Santa Fe	2,655,296	0	(c) 126,599	40,185	124,372,575	3,095	2.24%	69	2,947,810
Kansas City Southern	379,367	0	0	3,945	12,620,055	3,199	3.01%	96	440,383
Soo Line (CPR)	157,298	0	0	2,711	8,184,509	3,019	1.92%	58	1,031,200
Union Pacific	3,970,886	74	(d) 325,906	45,209	134,722,820	2,980	3.19%	95	(e) 6,435,168
<b>Total Western District</b>	<b>7,162,847</b>	<b>74</b>	<b>335,572</b>	<b>92,050</b>	<b>279,899,959</b>	<b>3,041</b>	<b>2.72%</b>	<b>83</b>	<b>10,854,561</b>
<b>Total United States</b>	<b>12,596,290</b>	<b>207,607</b>	<b>513,699</b>	<b>163,797</b>	<b>498,666,982</b>	<b>3,044</b>	<b>2.63%</b>	<b>80</b>	<b>28,292,356</b>

88,424 Second-Hand Other-Than-Wooden ties, not shown on this page were laid in replacement in 2005.

**Source: R-1 Annual Reports to the Surface Transportation Board**

(a) Total mileage operated at the end of year, excluding mileage under trackage rights. (b) Based on crossties per mile of track in 1967, the last year reported. (c) Concrete ties. (d) 306,619 concrete ties, and 28,953 non-wooden-non-concrete ties. (e) Includes 109 steel switch ties and 126 concrete switch ties, all assigned 65 board feet per tie.

2005 vs. 861,634 in 2004). Composite tie installations were constrained by continuing production woes and cost increases and, according to the R1 reports, did not even reach 30,000 ties in 2005. Steel ties also continued to find only limited Class 1 applications.

Thus, wood still maintained a 93-plus percent share of U.S. Class 1 (includes Canadian Class 1 track operated in the United States) tie installations in replacement and new construction (Tables 1 and 2). U.S./Canadian Class 1s installed right at 13 million new wood ties and an additional 210,000 relay wood ties in U.S. track in 2005.

Class 1s installed another 1.7 million ties in Canada, and the remainder of the market, short lines, contractors, etc., accounted for another 4.1 million wood ties.

Add it all together and wood maintained a dominating 95 percent share of all ties purchased in 2005.

But as impressive as all that may be for wood tie producers, will it continue? A look at this year's exclusive RTA surveys of Class 1s and short line and regional roads offers some guidance. ►

**Table 2—For Calendar Year 2005  
Crossties Laid In Addition Statistics For Class 1 Railroads In The U.S.**

District & Railroad	Treated wooden crossties laid in addition (number)		New crossties laid in replacement other than wooden (number) (12)	Switch and bridge ties laid in addition (board ft.) (13)
	New Ties (10)	Second-hand ties (11)		
<b>Eastern District</b>				
CSX	46,887	190	(c) 1,069	43,727
Grand Trunk Western (CN)	0	0	0	0
Norfolk Southern	26,475	0	0	29,575
<b>Total Eastern District</b>	<b>73,362</b>	<b>190</b>	<b>1,069</b>	<b>73,302</b>
<b>Western District</b>				
Burlington Northern Santa Fe	50,226	0	(c) 339,402	14,690
Kansas City Southern	80,857	0	0	312,045
Soo Line (CPR)	4,873	0	0	37,376
Union Pacific	143,452	3,540	(c) 157,158	(g) 256,627
<b>Total Western District</b>	<b>279,408</b>	<b>3,540</b>	<b>496,560</b>	<b>620,738</b>
<b>Total United States</b>	<b>352,770</b>	<b>3,730</b>	<b>497,629</b>	<b>694,040</b>

**Source: R-1 Annual Reports to the Surface Transportation Board**

(c) Concrete ties. (g) Includes 252 concrete ties and 136 steel ties which were assigned 65 board feet per tie.

**Surveys**

Based solely on the surveys, tie producers can expect Class 1 requirements for 2006 to be right on pace to meet the RTA forecasts at about 16 million wood ties (Table 3). This is about 1.3 million more ties than in 2005.

A survey of short lines (Table 4) indicates that this portion of the market will require 3.5 million new wood ties for 2006. If we speculate that another

500,000 ties will be required by all other users of ties (contractors, government and industry), it would suggest that the RTA forecast total of around 20 million new wood ties for 2006 would be spot-on.

But, since the purchasing clip is currently at a 20.6 million tally (Figure 1), one has to figure that a slow down is in order before the end of the year. This is especially true in that tie production is

outpacing purchases by some 1.6 million ties. July's 12-month rolling total production figure weighs in at a hefty 22.2 million ties annually. Something's gotta give. And, in fact, that self-correcting feature of supply vs. demand is beginning to be seen in the form of quotas and announced price reductions for green ties in some regions.

Unfortunately, now there is yet another issue that has arisen that will

**Table 3—Railway Tie Association Annual Survey\***

**Estimated Crosstie Requirements Class 1 Railroads  
2006-2009 Inclusive**

**AUTHORIZED CROSSTIES FOR 2006**

Region	Total Track Miles	New Wood Crossties		Wood Relay Crossties	New Non-Wood Crossties			Switch Ties (Units)		Bridge Timbers Units
		Hardwood	Softwood		Concrete	Steel	Other	Wood	Other	
Eastern U.S.	44,200	5,918,000	0	25,000	45,500	65,000	0	261,000	0	100,000
Western U.S.	74,846	6,622,928	350,000	5,810	1,291,457	5,300	135,980	337,615	0	24,000
Canada & Canadian Owned U.S. Track	33,300	2,800,000	305,000	50,000	51,435	3,491	0	85,000	0	1,800
<b>TOTAL</b>	<b>152,346</b>	<b>15,340,928</b>	<b>655,000</b>	<b>80,810</b>	<b>1,388,392</b>	<b>73,791</b>	<b>135,980</b>	<b>683,615</b>	<b>0</b>	<b>125,800</b>

**AUTHORIZED CROSSTIES FOR 2007**

Region	Total Track Miles	New Wood Crossties		Wood Relay Crossties	New Non-Wood Crossties			Switch Ties (Units)		Bridge Timbers Units
		Hardwood	Softwood		Concrete	Steel	Other	Wood	Other	
Eastern U.S.	44,200	5,918,000	0	10,000	20,000	80,000	0	261,000	0	100,000
Western U.S.	74,846	7,193,244	350,000	0	1,366,240	5,000	280,000	291,756	0	25,500
Canada & Canadian Owned U.S. Track	33,300	2,650,000	225,000	50,000	50,200	3,000	0	85,000	0	1,800
<b>TOTAL</b>	<b>152,346</b>	<b>15,761,244</b>	<b>575,000</b>	<b>60,000</b>	<b>1,436,440</b>	<b>88,000</b>	<b>280,000</b>	<b>637,756</b>	<b>0</b>	<b>127,300</b>

**AUTHORIZED CROSSTIES FOR 2008**

Region	Total Track Miles	New Wood Crossties		Wood Relay Crossties	New Non-Wood Crossties			Switch Ties (Units)		Bridge Timbers Units
		Hardwood	Softwood		Concrete	Steel	Other	Wood	Other	
Eastern U.S.	44,200	5,618,000	0	0	15,000	80,000	0	246,000	0	100,000
Western U.S.	74,846	7,357,794	255,000	0	1,406,240	5,000	350,000	252,206	0	25,500
Canada & Canadian Owned U.S. Track	33,300	2,650,000	200,000	50,000	50,200	3,000	0	85,000	0	1,800
<b>TOTAL</b>	<b>152,346</b>	<b>15,625,794</b>	<b>455,000</b>	<b>50,000</b>	<b>1,471,440</b>	<b>88,000</b>	<b>350,000</b>	<b>583,206</b>	<b>0</b>	<b>127,300</b>

**AUTHORIZED CROSSTIES FOR 2009**

Region	Total Track Miles	New Wood Crossties		Wood Relay Crossties	New Non-Wood Crossties			Switch Ties (Units)		Bridge Timbers Units
		Hardwood	Softwood		Concrete	Steel	Other	Wood	Other	
Eastern U.S.	44,200	5,418,000	0	0	15,000	80,000	0	246,000	0	100,000
Western U.S.	74,846	7,630,963	175,000	0	1,456,240	5,000	400,000	259,037	0	25,500
Canada & Canadian Owned U.S. Track	33,300	2,650,000	200,000	50,000	50,200	3,000	0	85,000	0	1,800
<b>TOTAL</b>	<b>152,346</b>	<b>15,698,963</b>	<b>375,000</b>	<b>50,000</b>	<b>1,521,440</b>	<b>88,000</b>	<b>400,000</b>	<b>590,037</b>	<b>0</b>	<b>127,300</b>

\*Eastern Railroads reporting - CSX Transportation and Norfolk Southern. Western Railroads reporting - Burlington Northern Santa Fe, Kansas City Southern Railway and Union Pacific. Canadian Railroads reporting - Canadian Pacific Railway (includes Soo Line) and CN/IC (includes GTW).

**Volume of Wood Necessary To Produce Estimated Crosstie Requirements For Class 1 Railroads (000's omitted)**

	Thousand Board Feet		
	2006	2007	2008
Crossties - U.S. & Canada	639,837	653,449	643,231
Switch Ties - U.S. & Canada	44,435	41,454	37,008
Bridge Timbers - U.S. & Canada	16,983	17,185	17,185
<b>TOTAL BOARD FEET</b>	<b>701,255</b>	<b>712,088</b>	<b>698,324</b>

impact the market. With tie production so far ahead of last year's pace—to the tune of 4 million more ties—the amount of creosote that was committed to U.S. treaters has been stretched beyond the limits. Couple this with the other worldwide issues in coal tar supply and distillation reported in July/August *Crossties*, and a real dilemma ensues.

Not only then is black tie production being constrained by this situation, it also means that railroads have to be very careful as to how many more new green ties they put in the air to dry at least until they know how the creosote supply issues are going to sort out. Thus, in some areas already experiencing high green tie inventories, a double whammy to sawmills and treaters is a definite possibility for the balance of the year.

All of this leads to some pessimism that tie purchases will reach the 20 million mark in 2006. And, if tie purchases fail to reach that level in 2006, there could be a bit of a hangover into 2007 as the rebalancing of supply and demand takes place.

Yet, the fundamental demand, as expressed by the RTA forecasting model (Table 5), and the surveys both state unequivocally that 2007 will exceed 2006 by a significant margin and that 2006 will end at or above 20 million ties.

The combined Class 1 and short line surveys predict at least 500,000 additional tie demand for 2007. The caveat here is that some of the surveys were filled out prior to a full understanding of the impact of the creosote supply issues. Yet, the RTA model agrees that the underlying fundamental demand increase should be 500,000 to 800,000 ties more than in 2006. So, don't worry, be happy?

Maybe. Much depends on factors yet undetermined. How many black tie orders will remain unfilled by the end of 2006? Will the amount of creosote imported by U.S. suppliers in 2007 meet railroad demand? Is the economy headed toward a soft landing or is it still overheated? These are just a few of the unanswered questions.

Observations over the past few years would lead to the conclusion that if railroads want or need materials, they'll find a way to get them. One Eastern road ramped up its steel tie purchases by 50,000 ties in 2006 and expects that to grow by another 15,000 next year. Many railroads are beginning to use alternative preservatives like copper naphthenate and are reducing creosote retentions in conjunction with borate pre-treatments to extend the creosote supply. Others are contemplating installing more concrete ties if the wood

industry can't supply all the wood ties needed in a timely fashion.

**The Future**

Yes, truly, a lot can happen in a short period of time in this industry. It makes predicting what will happen in the next few months increasingly difficult.

On one hand, it would only seem logical that a short pause to the hectic pace of production needs to occur to achieve some balance with slowing purchases. On the other hand, ramping down production isn't as simple as a snap of the fingers. Just like increasing production takes a certain amount of time, adjusting to the other direction takes some time as well given timber purchase contracts, log inventories, etc.

For that reason, it is likely that production will continue to slow—but not as fast as is really necessary to quickly achieve balance with purchases. Additional quotas and downward pricing pressures may appear in some regions as a result.

As far as purchases are concerned, softening is definitely occurring. This should be short-lived as true demand remains stout. But, still, it is a distinct possibility that the 12-month rolling totals for purchases may dip under 20 million by year's end.

As far as 2007 is concerned, it is likely ▶

**Table 4—The Railway Tie Association\* 2006 Regional & Short Line Crosstie Survey**

<u>Tie Categories</u>	<u>2005 Usage</u>	<u>2006 Projected</u>	<u>2007 Projected</u>	<u>2008 Projected</u>
New 7" Ties	1,301,208	1,337,657	1,899,527	1,625,716
New 6" Ties	1,763,786	1,556,230	1,413,932	1,499,608
<b>Sub-Total New</b>	<b>3,064,995</b>	<b>2,893,886</b>	<b>3,313,459</b>	<b>3,125,324</b>
Relay 7" Ties	414,370	573,824	430,122	333,230
Relay 6" Ties	40,559	207,135	203,365	197,014
<b>Sub-Total Relay</b>	<b>454,930</b>	<b>780,959</b>	<b>633,486</b>	<b>530,243</b>
Industrial 7" Ties	422,173	508,105	485,500	487,757
Industrial 6" Ties	4,730	7,027	13,405	29,730
<b>Sub-Total Industrial</b>	<b>426,903</b>	<b>515,132</b>	<b>498,905</b>	<b>517,486</b>
<b>Grand Total All Wood Ties</b>	<b>3,946,827</b>	<b>4,189,978</b>	<b>4,445,851</b>	<b>4,173,054</b>
Switch Ties	91,338	110,816	140,789	111,384
Bridge Timbers	39,981	45,224	49,765	49,222
Concrete Ties	0	1,892	1,284	2,703
Steel Ties	81,622	60,000	56,419	56,486

\*In cooperation with the American Short Line and Regional Railroad Association.

Note: Calculation based on survey responses from 115 roads, representing approximately 37% of operating trackage.



to be as forecasted, especially if the long awaited Dakota, Minnesota & Eastern project takes off as anticipated. The surveys and the computer models both agree that 2007 could see another jump in purchases to 20.5 million to 21 million ties. That is, if enough creosote is available and if the hangover from the softer third and fourth quarters in 2006 isn't too painful.

And beyond? Well, the surveys agree with the forecast model in that substantial demand appears to be here for the foreseeable future.

One of the interesting trends, though, is how many composite ties are in the plans for the Western roads. From a target of 135,000 ties in 2006 (which, according to sources, will not be reached due to price and production issues) UP and BNSF show steady increases in their projections for composite tie use reaching 400,000 ties in 2009.

Of course, the key will be if quality, performance and price—not to mention actual production—of composites will allow that many to be received and

installed. Given the massive run-up in pricing for these materials as oil prices have skyrocketed and no end to production issues is in sight, an opportunity for the wood tie and creosote producers exists to capture some of that demand as well.

Message to producers and creosote suppliers: Keep those sleeves rolled up even in the face of a short-term softening in the market. Railroads will be clamoring for more ties before you know it. §

**TABLE 5—Railway Tie Association Econometric Model—July 2006  
Forecast Summary, Thousands Of New Wood Ties**

Year	Total Purchases	Class 1 Purchases	Small Market Purchases
2003	16,485	13,578	2,907
2004	18,006	14,007	4,000
2005	18,819	14,729	4,090
2006	20,202	15,866	4,336
2007	21,252	16,666	4,586
2008	20,923	16,402	4,521
2009	21,202	16,677	4,525

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