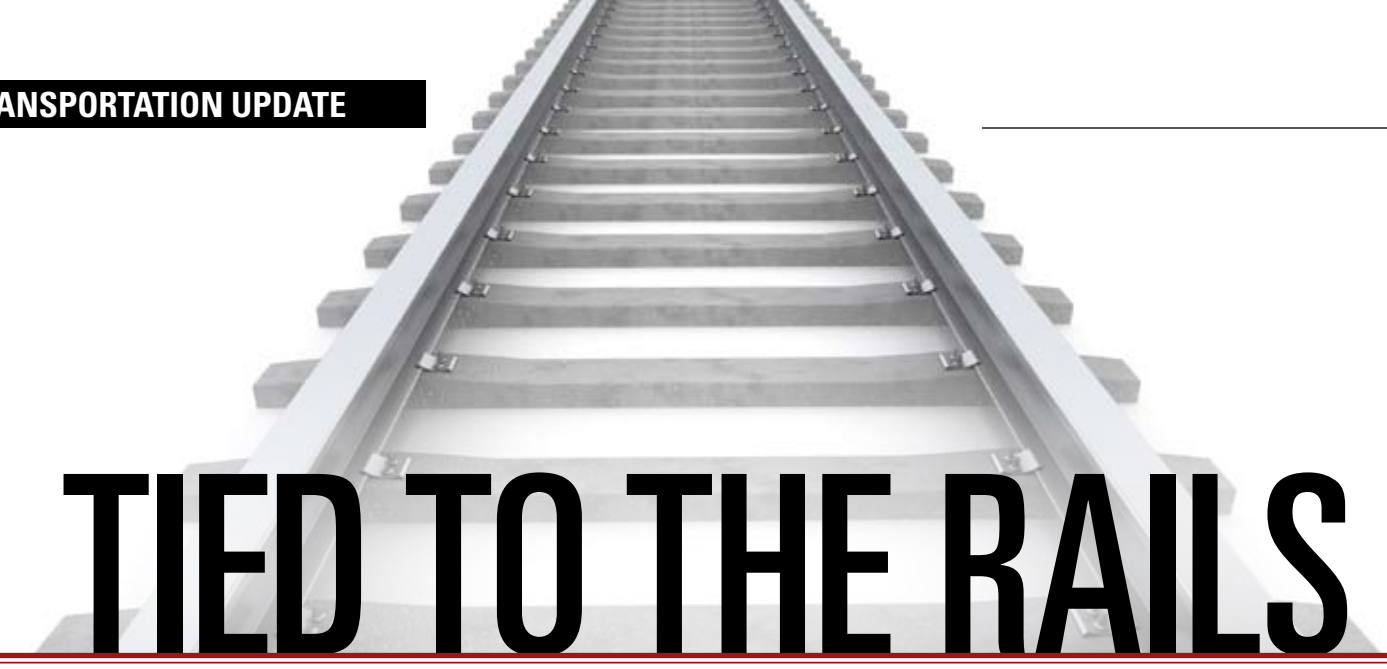

TIED TO THE RAILS

Farmers might not like railways much — but simple physics says they're stuck with them until someone figures out a better alternative

BY GORD LEATHERS

It's doubtful that farmers and railways could ever be friends.

Farmers want surge capacity, elevator facilities and low freight rates.

Railways want steady traffic, low infrastructure costs and high freight rates.

The needs of one interfere with the profits of the other.

Still, farmers need railways. Historically, it was the building of railways in North America that delivered settlers to their new homesteads and delivered their produce to burgeoning new markets. Back then, railways were the only game in town and if anything went anywhere, going by train was the first and often only option. Consequently, farmers felt bound to a transport monopoly, something that could and did generate a fair bit of bad blood.

Farmers are still bound to a transport monopoly but not one born of policy or lack of alternative infrastructure.

Nowadays it's about physics and engineering and to understand this we have to look at what a railway is and why this makes them behave the way they do.

The very core of the railway is a steel wheel on a steel rail and everything that a railway is and does rests on the physics of this one seemingly insignificant factor. It makes the railways energy efficient and it increases the capacity of the infrastructure beyond other modes of overland transport. It also dictates the quality, the cost and the overall flexibility of the right of way.

English railroad historian M. J. T. Lewis suggested the concept rose in ancient Greece around 30 BC in the Spartan theatre. The theatre had a stage building that was only used periodically so it was built on wheels and was rolled into place on stone rails. A similar concept had already been used for transportation across the Isthmus of Corinth and that dated back to 600 BC. Six kilometres of smooth grooves were carved into the limestone and carts with gauged wheels ran in them. Boats were put on the carts and hauled between the Corinthian and Saronic Gulfs by slaves. This helped avoid a long and dangerous sea journey.

The first actual railway was a funicular railway — two small cars that counterbalance each other and move up and down a hill in opposite directions at the same time — used to haul goods up a steep slope to Hohensalzburg Castle at Salzburg, Austria in 1494. Originally it ran on sled runners but they were replaced with wooden wheels on wooden rails. The wheel and rail combination then started popping up in coalmines and horse-drawn street railways where the meeting of the two rigid surfaces created very little rolling resistance. The resulting energy efficiency was very high.

The next major breakthrough occurred in 1804 when Cornwall engineer Richard Trevithick put a steam engine, consisting of a small high-pressure boiler driving a piston, on rails and it hauled a short train around a tramway at Merthyr Tydfil in South Wales. The steam locomotive was born and the railway as we know it came to be.

Over the next 150 years Trevithick's puffing devil evolved into the big, powerful steamers that gave way to modern diesel-electric locomotives after the Second World War. The delicate carriages grew into the robust, heavy cars that are now hauled over the rugged steel rails which replaced the first wooden strap rails or wrought iron rails.

But it's still steel on steel and it's the most energy-efficient way to haul heavy goods over long distances. According to Phillip Longman of the New America Foundation, today's freight train can haul the load equivalent of 280 trucks using a third of the fuel. Those steel wheels don't flex and bend the way rubber tires do so the rolling resistance of trains is only one-tenth of the rolling resistance of trucks. Furthermore, the railway's ability to absorb and spread the weight of the cars over a long distance means the efficiency only increases as you add cars to the train. A train can haul one ton of cargo 168 kilometres for every litre of fuel.

So if the railways are so efficient, why the constant fight over their rates? A large part of it comes down to capacity. James McClellan of the Woodside Consulting Group talked about this in a paper entitled "Railway Capacity Issues."

"Capacity is created (or destroyed) by a host of factors, all interrelated. While we tend to think of capacity as an infrastructure issue, rolling stock, motive power, employees and operating strategies (size of trains, speed of trains, timing of trains, etc.) are all part of the equation."

He goes on to say that capacity is costly. For instance, a locomotive comes in at almost $2 million and it needs shops and technicians to maintain it. A centralized traffic controlled (CTC) siding costs in excess of $10 million, even more if substantial grading is required, and this is compounded with the costs of maintaining additional right of way.

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Infrastructure this costly requires considerable capital. Getting it isn't always easy because railways are publicly traded companies and they're beholden to the whims of the stock market. Phillip Longman reports that just before the last recession, American railroads were trying to raise the funds necessary to increase their capacity.

"While those markets were pouring the world's savings into underwriting credit cards and subprime mortgages on overvalued tract houses, America's railroads were plead-

ing for the financing they needed to increase their capacity. And for the most part, the answer that came back from Wall Street was no, or worse. CSX, one of the nation's largest railroads, spent much of last year trying to fight off two hedge funds intent on gaining enough control of the company to cut its spending on new track and equipment in order to maximize short-term profits."

LOGISTICS

The other part of the capacity equation is the logistics. Trains are rolling warehouses promising "just-in-time" delivery of a variety of goods to a variety of customers on expensive and inflexible infrastructure. How well this works is dependent on the type of track a railway has — single and double mainlines, yards and sidings — and how well it's people manage the operation of trains so they can maintain scheduled deliveries. A train that falls behind schedule, or even worse, has an accident, really gums up the works from coast to coast.

Factor in the operating regulations and union rules and keeping the costs down becomes a steep order. Consequently, the Class One railways, the big national carriers, are most effective with long-haul trains on heavy-haul mainlines carrying high-value merchandise. What they like is the intermodal traffic, the container trains, and that makes up the cargo of over 20 per cent of Canadian rail cars (2008). They also like the high-value bulk commodities such as coal or minerals. It stands to reason that, if their overall capacity is limited, their priorities would lie with their highest-value customers.

This doesn't do anything for farmers, especially those in outlying regions far from the main lines. This is the preserve of the branch lines, many of which have been abandoned. Part of the reason, according to McLellan, was unplanned over-capacity.

"Railroads were usually built ahead of demand and that demand often failed to materialize. There were numerous bankruptcies throughout the 19th century; overcapacity and flawed financial structures were the root causes."

SHORT LINES

This has opened up the potential for the short-line railroads and the number of them has increased since the mid 1990s to the point where 24 per cent of Canadian carloads originated on short lines. Their employees are often the owners as well and, since the lines aren't interprovincial, they're not bound to the operating rules applied to the class one railways. This means a great deal of flexibility in an environment where the big carriers simply can't do the job economically.

But it's not an easy row to hoe for the short-line operators. Take the case of the Palouse River and Coulee City Railroad, a short line consisting of 372 miles of track that serviced grain farmers and small industry in Washington State. In 2000, the line generated 10,700 carloads of traffic. In spite of this, the owners couldn't make a go of the line for two principal reasons, the existing debt burden and the deferred maintenance. The quality of the line meant lower running speeds and reduced service. The line was headed for bankruptcy.

A report tabled by the Washington State Department of Transport suggested that the line required $40 million in upgrades and had an acquisition value of $7.45 million. They determined the cost of abandoning the line was actually higher then the cost of acquisition and upgrades. They determined the net economic benefits of the line ranged from $12.9 to $23.9 million per year. Additionally, the capacity of the rail line kept 29,000 heavy truckloads per year off the highway system which saved the state and estimated $4.16 million in annual road maintenance. Washington State bought and upgraded the railroad and it continues to run under the PCC banner. The cost of the alternatives was seen as too high.

Rail service is essential to agriculture and this puts the western Canadian farmer between that steel wheel and the steel rail. Prairie farmers have to ship their grain more than twice the distance to port than farmers from other parts of the world. A Saskatchewan producer may send his harvest 1,450 kilometres to the nearest port as opposed to the 650 for a farmer from Kansas or the 280 for an Australian. The vistas here are big and they're reflected in our transportation tallies, the single biggest cost in marketing Canadian grain. ■