# Contents

A Minnesota Southern diesel spots a single covered hopper car on a team track next to the elevator at Luvurne, Minn., on a cold November day in 2008.

# Modeling the grain industry

Modeling the grain industry is much more complex than having a local freight randomly set out a few covered hoppers at a local grain elevator. The grain industry encompasses a wide variety of processes and presents a multitude of modeling possibilities.

If your layout is set in an agricultural area, you can model steam-era country grain elevators that loaded a boxcar or two a day during the grain rush, or a modern collection elevator that loads out an entire unit train in less than a day. Along with the elevators are the trucks and farm wagons that bring in grain and the boxcars and covered hoppers that carry grain on the rails.

You can also model the large terminal elevators that receive boxcars or covered hoppers of grain. They receive grain by the trainload, store it, and ship it back out by train, barge, or ship for export and industrial users.

Other modeling possibilities are the mills that process corn, wheat, and other grains into flour, meal, and feed. These range from small-town feed mills that custom grind feed with added premixes for local farmers to huge flour mills that receive and ship dozens of railcars a day.

Railroads have hauled wheat, corn, and other grains—and the resulting products—since the first railroads. Traffic has evolved from carrying bagged grain in small boxcars of the mid-1800s to today's unit trains of jumbo covered hoppers. Collection elevators have grown from small wood structures to towering concrete and steel facilities.

There are many options for modeling grain operations as well. You can re-create the seasonal grain rush, when boxcars are being prepped for grain service and sent to collection elevators for loading as fast as they arrive. Even if your line doesn't include any elevators, you can model extra trains of grain that add to the traffic levels of railroads across the country.

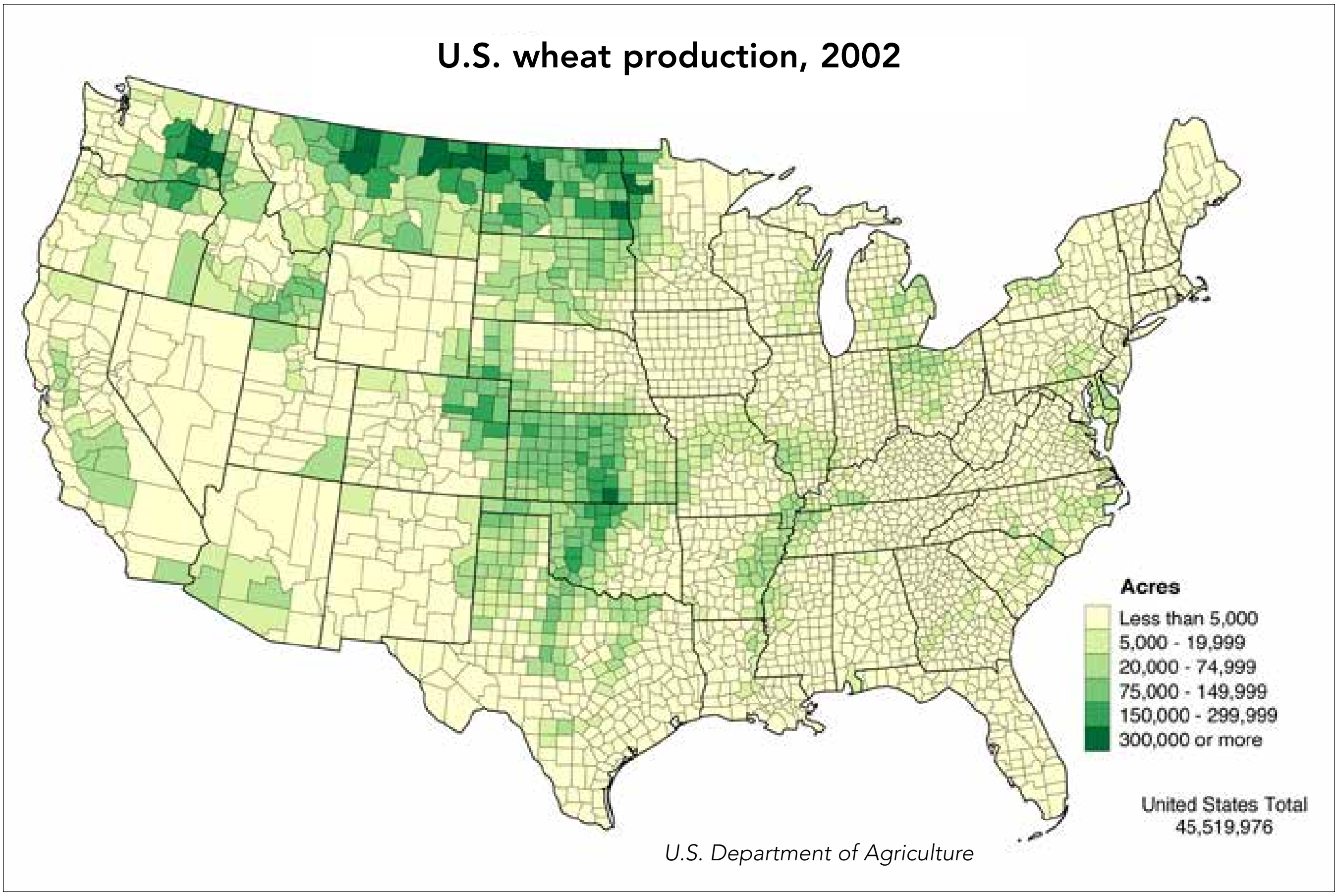
Regardless of the era or region you model, there's a place on your layout for grain traffic and grain-related industries. Throughout this book, you'll find ideas for modeling the industry's structures, railcars, and operations.

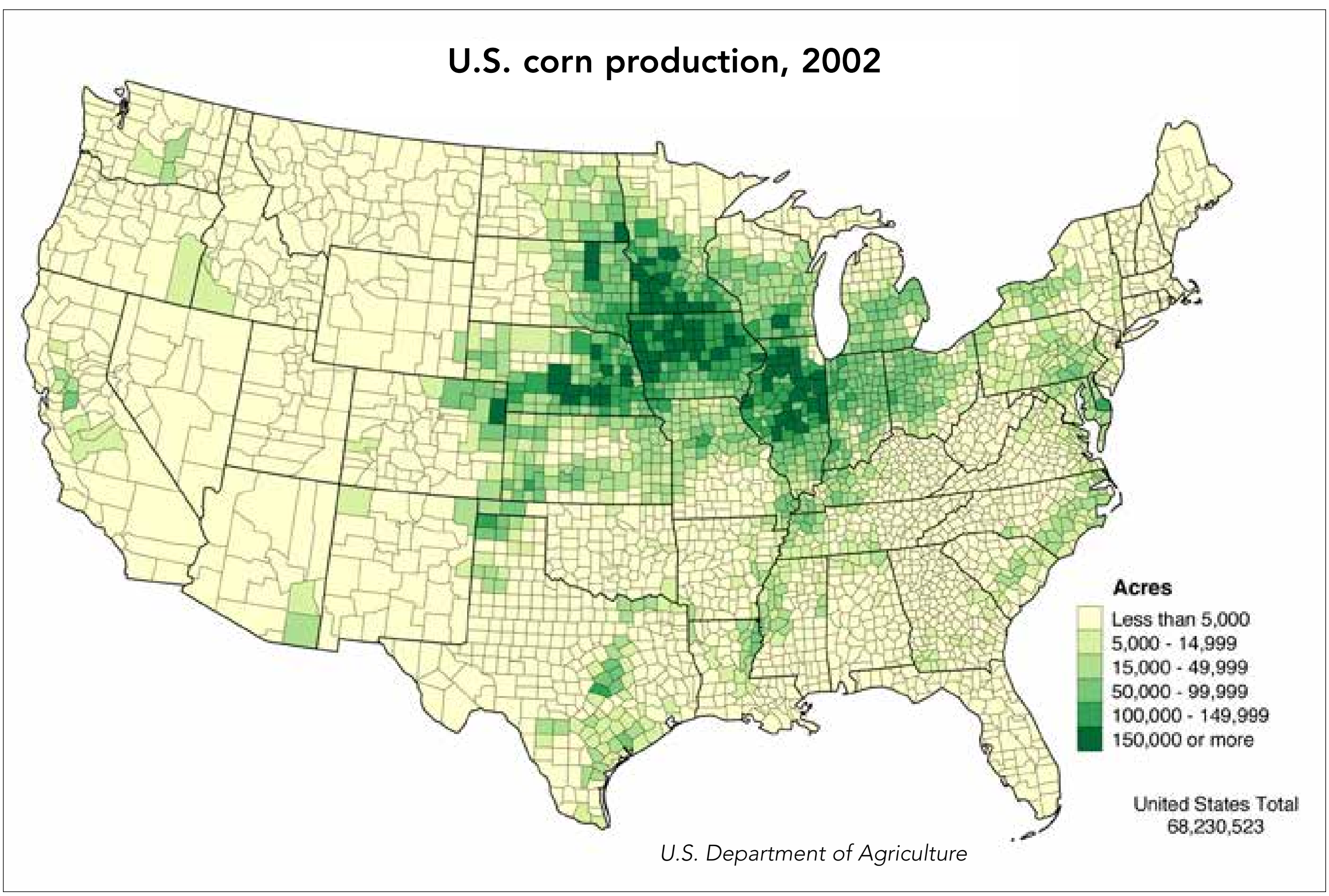

CHAPTER ONE

# History of the grain industry

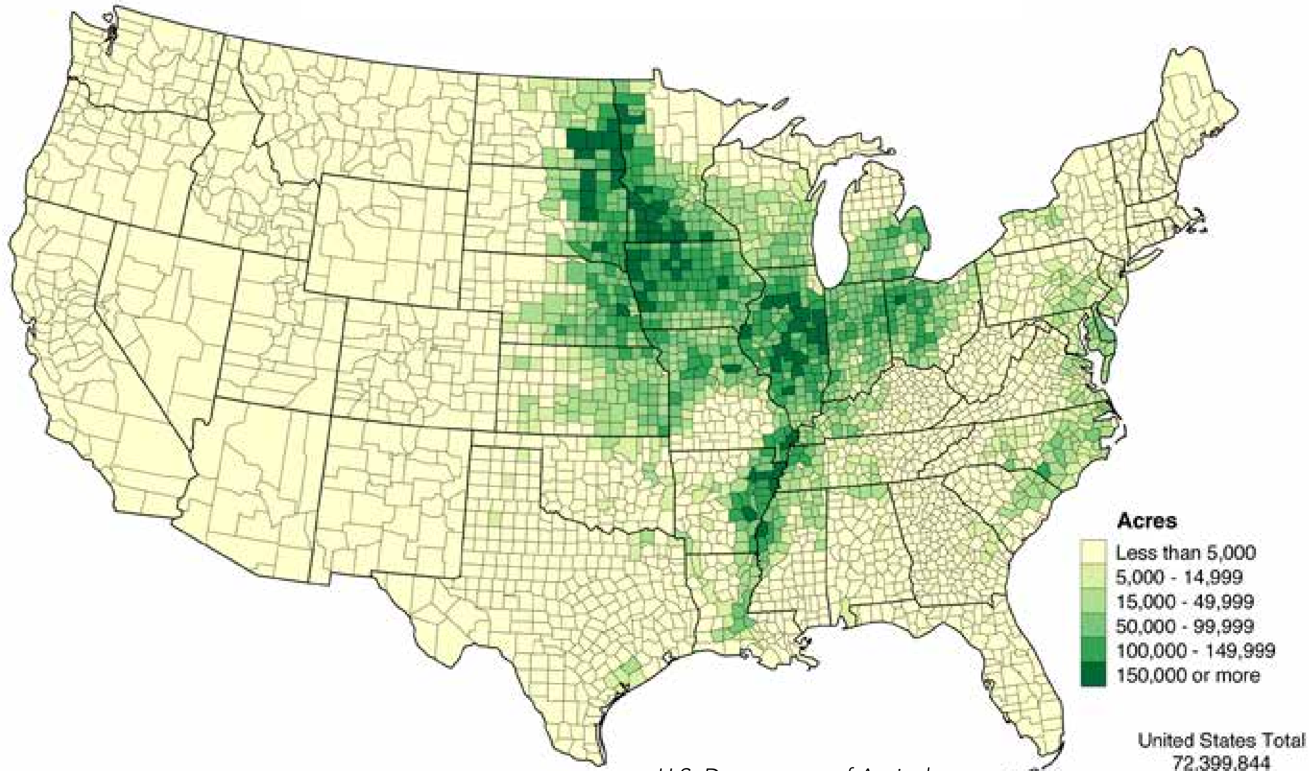
The United States has been a major agricultural producer since the 1800s, and farmers, mills, elevators, and other grain businesses have relied heavily on railroads from the time the first rail lines pushed across the Midwest and West. From the early days of shipping bagged and bulk grain in wood boxcars to today's trains of 110-ton jumbo covered hoppers, railroads remain a key carrier of grain as well as the many products made from it.

Several boxcars await loading at three classic wooden elevators along the Santa Fe at Dumas, Texas, in late summer 1936. In spite of the Dust Bowl, there's still wheat to be loaded. *Arthur Rothstein, Library of Congress*


U.S. wheat production, 2002
Acres
Less than 5,000
5,000 - 19,999
20,000 - 74,999
75,000 - 149,999
150,000 - 299,999
300,000 or more
United States Total
45,519,976
U.S. Department of Agriculture


U.S. corn production, 2002
Acres
Less than 5,000
5,000 - 14,999
15,000 - 49,999
50,000 - 99,999
100,000 - 149,999
150,000 or more
United States Total
68,230,523
U.S. Department of Agriculture

U.S. soybean production, 2002




U.S. Department of Agriculture

Railroads covered the Midwest by the time of the Civil War and were pushing across the Mississippi to the West by the 1870s. The first transcontinental railroad, completed in 1869, along with other expanding rail lines, led to a tremendous movement of settlers to the Great Plains and the West.

The primary means of making a living for these settlers was agriculture—growing crops and raising animals. Although much of this initially was subsistence based, with products grown for their own use, early farmers found a ready market for agricultural goods in the East. Grains became a cash crop, and railroads were the method to get wheat, corn, and other products to buyers.

Let's first look at the various types of grain, where they're produced, and what they're used for, and then see how the market has grown and evolved over the last 150 years.

## Types of grain

Grain is a broad category that encompasses many crops, the most common of which are corn, wheat, oats, barley, sorghum (milo), rye, and alfalfa. Soybeans—although technically an oilseed—are usually included in discussions of grain products, as they are harvested and shipped by rail like grain.

In addition, each of those grains has many subcategories. Wheat, for example, includes durum, hard white, soft white, hard red spring, and hard red and soft red winter, all having different properties and uses. Each of these is, in turn, graded by quality: for example, No. 2 corn is higher quality than No. 4 and will fetch a higher price.

For modelers and railfans, this helps us understand that to buyers and sellers of grain, a boxcar isn't simply filled with corn or wheat. It's a boxcar of No. 2 durum or a boxcar of No. 2 yellow corn. The maps on pages 6–8 show the regions where each type of grain is grown.

**Wheat.** Wheat became the first major cash crop in the United States, and the first that resulted in significant long-distance shipping opportunities for railroads. In part because of foreign demand, the wheat market grew substantially from the mid-1800s into the 1900s.

Wheat is used in many food products, mainly as flour (which can be found in thousands of foods) and in pasta and cereals. Wheat is also used for animal feed, and wheat middlings (the leftovers after milling) are used as feed as well.

Many varieties of wheat grow readily on the western plains, with large fields from Texas northward through Kansas, Nebraska, Montana, the Dakotas, and into western Canada. Winter wheat is actually planted in the fall. It germinates and begins to grow, becomes dormant over the winter, and continues growing in spring. Winter wheat is the first crop ready for harvest each season, by late May in many southern areas. Spring wheat is planted in the spring and is ready for harvest starting in August (southern areas) to mid-September (north).

The country's growing population through the late 1800s created a

The dumping process is the same at modern elevators, but the grate area or opening is usually larger. The unloading shed is covered to minimize the chance of water and other contamination.

The leg is the heart of the elevator. A series of buckets attached to a belt (this is the downward side) carry grain upward at high speed from a bin at the bottom of the structure. *Library of Congress*

floor, with the main floor providing shelter for animals.

Near the barn on most farms, you'll find one or more silos, tall cylindrical structures for storing silage. Silos are not used for storing dry grains. Silage is made of cuttings from various plants, commonly corn or sorghum, designed to be high in moisture. Silage is compressed, allowed to ferment, and then used on site as animal feed.

Through the mid-1900s, silos were commonly made of concrete block (or sometimes slip-cast concrete); steel tank-type silos became more popular from the late 1900s into the 2000s.

Another common farm storage structure is the corn crib, which was used for storing husked (but not shelled) corn. Early corn cribs were rectangular wood frame structures with open slatted sides; later cribs were typically round wire mesh structures. The corn stored in cribs was used on the farm as feed.

Historically, harvested and threshed grain (and shelled corn) was stored in a granary. By 1900, granaries were typically square wood-framed structures. Grain could be stored indoors in sacks, or in bulk in any of several bins on the main floor. Granaries required a tight roof to keep out moisture and venting to allow air to flow through to keep grain from spoiling (the floor was typically raised off the ground to allow air movement from underneath the structure).

Steel grain bins began appearing around 1910, and the now-familiar corrugated round bin became common by the late 1930s. These bins are economical and easy to build, making them popular for both farms and elevator annexes. Bins are available in a huge range of sizes. A 15-foot-diameter, 22-foot-tall bin will hold about 2,900 bushels, while a 27-foot-diameter, 51-foot-tall bin holds 22,000 bushels. Large modern farms and elevators have even larger bins: a 60-foot-diameter, 96-foot-tall bin holds 194,000 bushels, and a 105-foot-diameter, 111-foot-tall bin holds 670,000 bushels, and some elevators have even larger bins.

These bins have enabled farms to increase their on-site storage capacity, allowing a farmer to hold crops based on market prices. A typical farm today can store more grain on site than a small-town elevator of the 1940s.

A farmer bringing grain to an elevator can sell it outright to the elevator for the market price. He can also pay to have his grain stored, waiting for a time when the price goes up, and then sell it. Traffic to elevators is heaviest during harvest season, especially in the days before farms expanded their on-site storage capacities.

## How an elevator works

The drawing on page 17 shows the basic components of a classic wood collection elevator, and it provides an idea of the flow of grain from an arriving farm truck to an outbound train. The same basic operations apply regardless of the size or construction of the elevator.

First, a farmer brings in a load of grain. This can be by horse-drawn wagon (see photo on page 12), tractor-powered wagon, straight truck, or tractor-trailer. Semis with bottom-dump hopper trailers are common today, but if you're a classic vehicle fan, during harvest time, you can still see some ancient farm trucks bringing grain to market.

Next, the inbound vehicle is weighed. The scale is sometimes located on the deck inside the unloading shed, so the wagon or truck can unload immediately after being weighed. Other elevators have a separate scale house and platform away from the elevator building. Some large modern elevators have a separate scale for inbound and outbound trucks that speeds the process.

A sample of the grain is taken before the load is emptied. Modern elevators do this with robotic probes that reach into the grain load, usually when the truck is on the scale. The sample is checked for moisture content and quality or grade before the inbound grain is added to a bin with other grain.

Grain is unloaded in a covered area to keep rain and snow from contaminating the product. The grain is dumped through an opening on the floor into the receiving bin or tank (sometimes called a *boot*). Old elevators had an opening with a trapdoor cover; newer installations feature an open pit covered by a steel grate.

Most trailers and wagons today have bottom-dump hoppers, and most straight trucks in grain service have hydraulic lifts that enable the load to be cleanly dumped. Older elevators had a lift mechanism for farm wagons and small trucks that could elevate

The leg carries the grain up to the headhouse to a bin called the *gerber*. From there the distributor routes it to any one of several storage bins, either within the main elevator building or to a separate annex. *Library of Congress*


Masonry construction was one answer to the fire problems of wood elevators around the turn of the 20th century, but it was not widely used. This small elevator is at Goltry, Okla. *Hal Miller*


An EMD switcher pulls hopper cars into position at the Pierre Farmers Elevator Association in Pierre, S.D., in the 1990s. *Cody Grivno*

The Santa Fe's 10-million bushel grain elevator at Argentine (Kansas City), Kan., was among the largest in the country when photographed here in 1943. *Jack Delano*

trailer that might travel 30 to 50 miles to a large collection elevator. At harvest time, however, it's not uncommon to see tractors with wagons, 50-year-old farm trucks, and modern semis all waiting in line.

New collection elevators tend to feature more open construction than traditional elevators, with no headhouse—instead, separate legs and conveyors are located outside. Many have large round concrete structures and large cylindrical corrugated-metal bins instead of the grouping of concrete cylinders slip-formed together.

Basic processes are the same as early collection elevators, just on a larger scale: more legs with higher capacity, along with larger receiving pits, storage bins, tanks, and scales. Outlet chutes for loading trucks are generally separate from the unloading area to avoid traffic congestion, and larger elevators may have multiple outlet bays for trucks.

Also common is a ground pile, a large concrete pad surrounded by a low wall, for temporary storage of excess grain. This is covered by a tarp for long-term storage. Ventilation fans under the pile keep the grain dry and safe.

## Terminal elevators

Concrete became the norm for building terminal and subterminal elevators in the early 1900s, giving most of these elevators a similar appearance (with size being the key difference). Most feature concrete slip-form construction with many vertical storage bins.

Terminal elevators can use dozens of storage bins when dividing grain by type and grade. Tracking what's in each bin—and how much of it—is a daunting job but made much easier by computers at modern facilities. After being elevated, grain is distributed along the top of the bins by a conveyor belt. A "tripper" routes the grain off the belt above the proper storage bin.

Another belt under the bins (concealed by the structure itself) routes outbound grain coming from a storage bin. The outbound grain goes to a shipping scale, where it is elevated and dumped into the appropriate shipping bin for delivery to a railcar, barge, or ship.

How terminal elevators receive and ship grain depends upon their location. Inland elevators receive grain by rail, as well as truck, and ship outbound loads by rail. The largest example is the Cenex-Harvest States elevator in Hutchinson, Kan. Able to store 18.3 million bushels, this elevator is a half-mile long and was the largest in the world when it was built in 1961. It had several owners prior to CHS.

Local farmers can truck their grain in as they would for a small collection elevator. Through the 1970s, railcars (boxcars, then covered hoppers) would arrive in single-car and small lots from small collection elevators. These single-car shipments would be consolidated on various trains and arrive at the elevator in large cuts of cars (but each with its own waybill), so a terminal elevator must have extensive trackwork to handle inbound loads and empties, and, in the days of boxcars, tracks for clean-out as well. Since the 1990s, cars are more likely to arrive in large lots or sometimes via unit or shuttle trains. We'll look more at unloading cars in a bit (and more about shuttle trains in chapter 7).

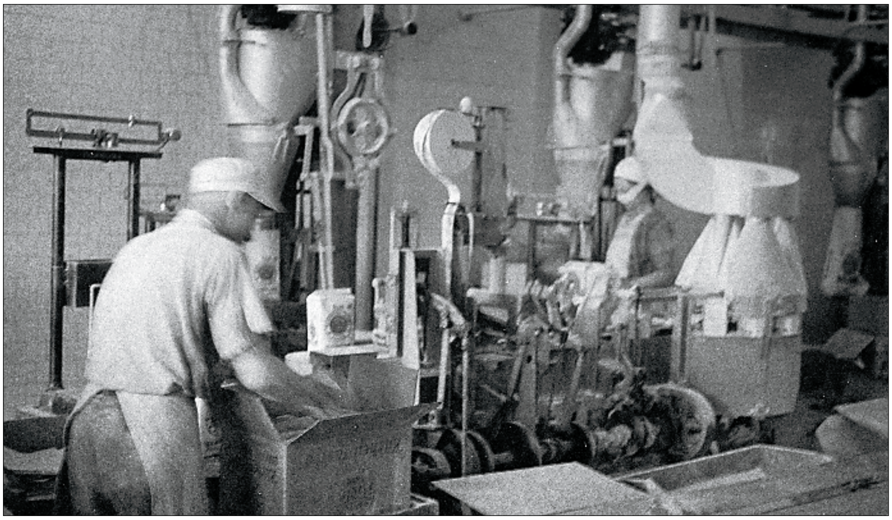
Terminal elevators on lakes and rivers feature rail unloading on the inland side, lots of rail storage tracks, and loading and unloading gear for boats and barges on the water side. This scene is from the early 1950s. *William A. Akin*


The Continental elevator at Milwaukee, shown here in 1986, had a capacity of 3.1 million bushels. Located on a Lake Michigan harbor, the elevator could load 30,000 bushels per hour onto ships. *Andy Sperandeo*

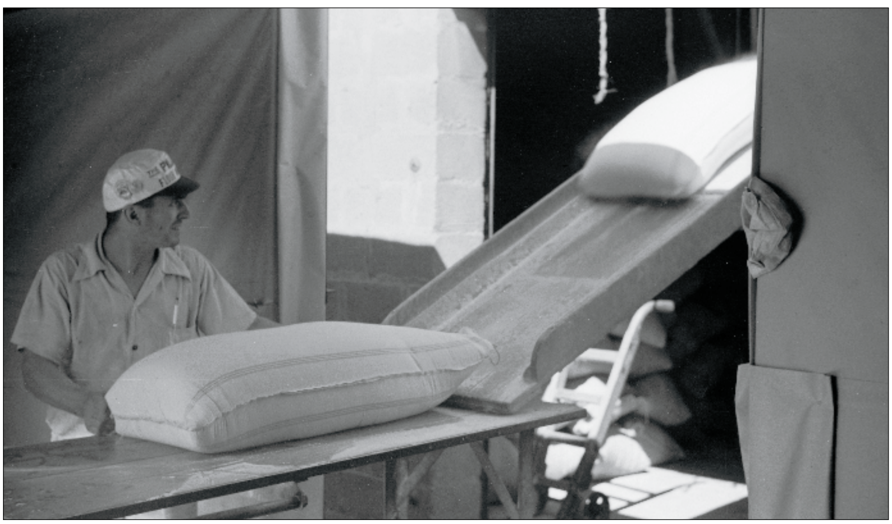
Outbound loads from these elevators can head to final customers such as mills, or to large export elevators. Today, these shipments are likely to go by unit train or shuttle train or in sets of several cars.

For an elevator located on a river or lake, inbound grain can arrive by rail, truck, barge, or ship, depending upon the location. Most (in some cases, all) outbound grain will depart by barge or ship. River barge traffic generally heads downstream to on-river mills or to export elevators at ports.

The largest terminal elevators are those located at ports, serving oceangoing ships. Modern export elevators can have storage capacity from 4 million to more than 20 million bushels. Inbound grain arrives by barge, ship, or rail.



After flour is packaged and boxed for consumer use, it can be shipped by boxcar or truck. *Library of Congress*



Hundred-pound sacks of flour slide down a chute into a paper-lined boxcar at the Pillsbury mill in Minneapolis in 1939. *Library of Congress*

Bulk flour is loaded into an Airslide covered hopper at a mill in the late 1960s. Flexible loading hoses are secured to the hatches to eliminate dust and reduce the risk of load contamination. *Great Northern*

The city's production dropped to 5.5 million barrels in 1960, and the last mill in Minneapolis—Pillsbury's A mill—closed in 2003.

As with other industries, the trend was having fewer facilities but higher production. In 1973, 279 U.S. mills produced wheat flour, including more than 100 that produced less than a million pounds per day; by 1998, there were 208 mills, but only 34 made less than a million pounds daily.

In 2012, the average U.S. mill produced about a million pounds of flour per day, with the largest making about 3 million pounds daily. Kansas and North Dakota are the leading flour milling states—and they're also the country's top two states for wheat production. As of 2013, the leading companies in flour milling are Horizon Milling (owned by Cargill and CHS Inc.), ConAgra, and Archer-Daniels-Midland, which together produce more than half of U.S. flour.

## Flour milling

Early mills were just that—mills. They processed farmer's wheat in batches, so they didn't require storage bins or elevators for inbound grain or processed flour. The rise of commercial mills from the late 1800s into the 1900s meant larger mills with extensive storage elevators for wheat as well as warehouse space for the finished product.

Wheat can arrive at a mill by barge, rail, or truck. It's handled the same way as described for terminal elevators in chapter 3. The wheat is inspected, graded, and stored in one of several storage elevator bins. The amount of storage depends upon the mill's processing capabilities, as well as the mill's access to inbound wheat. Early mills in Buffalo, for example, had more on-site storage to last through the winter when lake navigation of ships and barges wasn't possible.

Some mills specialize in a single type of flour, while others make several varieties. How grain is stored (and how many types of wheat are handled) varies by the type of mill.

The elevator portion of a mill looks and functions like a standard grain elevator. Wheat in long-term storage at a mill is often "turned over"—pulled from a bin, then elevated, and restored—to make sure it stays in good condition during storage. The proper moisture content and temperature of stored grain must be maintained with good air circulation. If it is improperly stored, wheat can spoil, mildew, ferment, or sprout.

The first step in producing flour is drawing the wheat from the storage bins, blending it if necessary, and sending it to the cleaning house. In the cleaning house, the wheat is mechanically cleaned by passing through a series of machines, including the separator, magnetic separator, aspirator, destoner, and scourer. Together, they remove any foreign material, such as straw, other grains, soil, sticks, metal particulates, and rocks.

The wheat is then tempered by soaking it at a certain temperature (which varies depending upon the type of wheat) for up to 24 hours. This process makes the kernel separate more easily during milling.

The wheat then heads to the mill itself for grinding. Through the 1800s, this meant a stone gristmill, where a moving stone rotated above a lower stone to grind the wheat. By 1900, roller mills were becoming more common. With this process, the wheat passes through a series of iron (later steel) rollers. It goes through this process multiple times, being sifted each time. The middlings and bran are separated, saved, and then used as feed. About 70 to 75 percent of the wheat becomes flour.

The remaining process varies depending upon the type of flour being made. Bleached flour (used as cake flour and for other products) passes through a device that exposes it to a bleaching agent, usually chlorine or benzoyl peroxide. This oxidizes the flour and brightens its appearance. Prior to large-scale commercial flour mills, nonbleached flour was aged naturally for a few months to oxidize it, but the risk was that it could spoil if not stored properly.

Any additional products are then added. From the late 1930s onward,

A truck loads packaged flour, while a pressure-differential covered hopper is loaded with bulk flour at a Kansas City, Kan., mill in 2003.

Two bulk flour semitrailers await loading at a Kansas City mill. Two covered hoppers are parked just behind the trailers.

A string of Airslide covered hoppers awaits loading at a flour mill in the early 1990s. Most mills load freight cars in covered areas, but some use open-air facilities. *Lloyd Keyser*


The grain doors atop the plug door pivot inward. *Soo Line*


The Union Pacific had the largest fleet of rebuilt boxcars with built-in grain doors. Number 520003 was rebuilt from an older 40-foot car in 1967. *Union Pacific*

The Burlington painted the small grain doors light gray to help in spotting the cars easily. The cars remained in service through the 1980s, but had their grain doors welded shut or plated over starting in the early 1970s.

The Soo Line also built similar cars, assembling 200 cars in its Fond du Lac, Wis., shops in 1964. The Soo's version was a 50-foot, 70-ton, exterior-post boxcar with a single 10-foot plug door. A pair of grain doors was located at the top of the plug door.

The Union Pacific in 1965 began rebuilding some older 40-foot cars with twin plug doors, again with double grain doors on the right-hand plug door. The railroad eventually had more than 4,000 of these 50-ton cars (UP classes BF-50-1, -2, and -3). The railroad also had 200 similar 70-ton cars built in 1973 and 1974 (classes BF-70-10, -12). Many of these cars lasted through the 1970s.

## Demise of the boxcar

Covered hoppers for grain service began appearing in the mid-1950s—initially for milled grain products such as flour and meal. It wasn't until the early 1960s that jumbo (100-ton) covered hoppers began carrying grain in significant amounts (as we'll see in chapter 6).

A single covered hopper could carry almost twice as much grain as a boxcar, and they were easier to load and unload. As lower rates for covered hoppers gave shippers more incentive to use them (and for railroads and private owners to buy them), more were built and placed in service.

Another factor was that the fleet of general-purpose boxcars was shrinking in the late 1950s and being replaced by specialized cars with cushion underframes, load dividers, and other equipment. The shrinking fleet of XM cars made it especially difficult on railroads when the grain rush hit in late summer, as the pool of cars available wasn't as large.

By 1972, covered hoppers were responsible for about 54 percent of total carloads of grain (and 63 percent of the total amount of grain). The shift toward covered hoppers continued, and in 1979, boxcars were just a quarter of the grain freight-car fleet (63,530 boxcars and 177,223 covered hoppers).

The final homes for 40-foot grain boxcars were western and southwestern branch lines with light rails that couldn't handle 100-ton covered hoppers. By the early 1980s, boxcars were almost extinct in U.S. grain service, as these branch lines were abandoned and the small elevators on these lines were themselves abandoned or switched to trucks for hauling grain to larger nearby collection elevators. Boxcars lasted a bit longer, through the 1980s, on some lines in western Canada.

## Boxcar alternatives

In the early 1970s, as railroads were retiring large numbers of older 40-foot boxcars but before covered hoppers had completely taken over grain traffic, the grain rush could cause temporary car shortages. Railroads became creative in providing cars.

With the decline of livestock and ice-cooled refrigerator service, railroads had surpluses of stockcars and ice-bunker reefers that would otherwise be heading to the scrapyard. Stockcars were lined with plywood and then fitted with standard grain doors. Both were provided to elevators on a two-for-one basis, as the cars were smaller physically and often rated for only 30 or 40 tons, compared to 50 tons for a boxcar. Elevators lined the stockcars at their own expense; the appeal was that they were guaranteed to get the same cars back for reloading. The Santa Fe and Burlington Northern both did this for shippers.

Railroads as early as the 1940s and 1950s sometimes turned to open hopper cars during car shortages. Because outlet gates on open hoppers were designed for coarse lading such as coal and aggregates, the interior above the gates would be lined to keep wheat and fine grains from seeping through openings in the gates. Corn and soybeans often didn't require such covering.

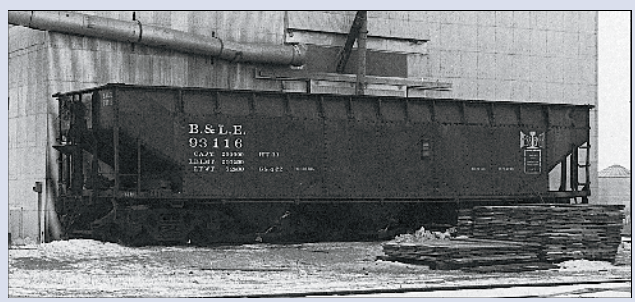
If the car wasn't covered, contamination from rain was an issue. Although rain wouldn't necessarily ruin the lading, it could lower its grade. Another concern was that the lading would blow out of the top of the cars when the train was in motion, as grain was much lighter than lumps of coal.

Some railroads took this further and covered the hoppers, either with a temporary tarp (or purpose-made disposable cover) or with a solid temporary fiberglass roof that essentially turned the car into a covered hopper. Open hoppers were used at various times by Baltimore & Ohio, Chicago & Eastern Illinois, Conrail, Illinois Central, Monon, and Santa Fe, as well as by private owners and other railroads.


BN supplied elevators with stockcars for grain service in the 1970s, such as this car at Breckenridge, Minn. Note the plywood sheathing behind the horizontal slats. *Lloyd Keyser*

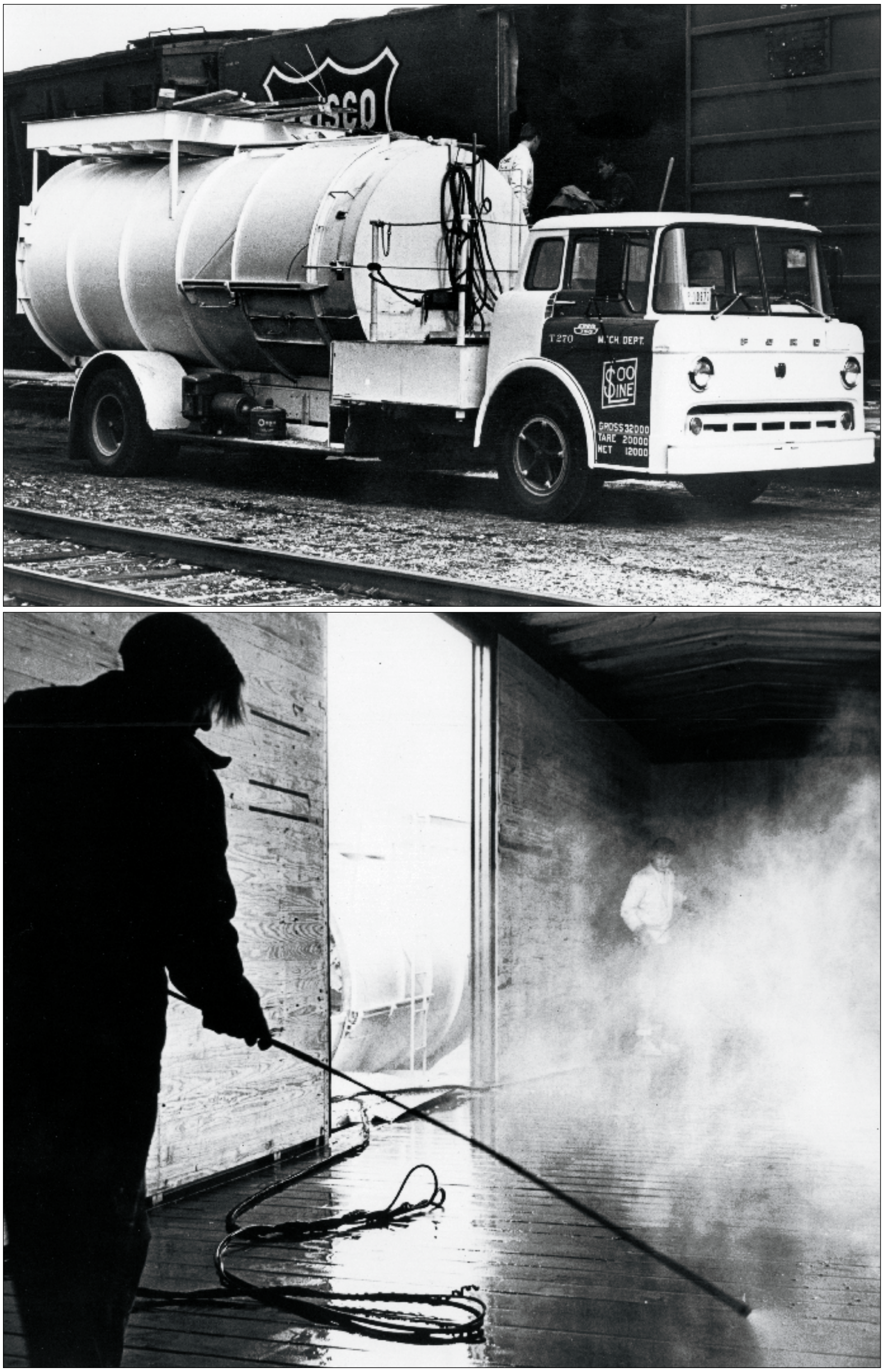

Cargill converted several open hoppers to covered hoppers by adding new roofs and outlet gates. This 50-ton offset-side car is at Savage, Minn., in 1969. *Lloyd Keyser*


In the mid-1940s, the Santa Fe added old boxcar roofs (with hatches cut in) to 200 three-bay open hoppers for grain service. *Santa Fe*




A Bessemer & Lake Erie three-bay, 70-ton open hopper is being loaded with grain at the Zahl, N.D., elevator in January 1973. *Keith Enget*


A string of converted Chessie System coal hoppers with fiberglass roofs rolls through Columbus, Ohio, in 1980. *Dwight Jones*




The Soo Line used what it called Mobile Cleaning Units—trucks with a power sweeper, power washers, and other cleaning and repair equipment—to clean and prep boxcars at its yards in Schiller Park (Chicago) and Shoreham (Minneapolis) in the early 1960s. The rig, with two workers, could clean a boxcar in 12 minutes. *Soo Line*

Although grain rushes still exist to a point, traffic levels for grain have leveled out over the course of each year. Shuttle and unit trains have improved car utilization and eliminated many excess switching moves (more on that in a bit). Farms are much larger, with increased on-site storage that eases the pressure on local elevators. The greatly increased size of local collection elevators has also helped. Another factor has been the increased level of U.S. grain exports since the 1980s, with shipments going out year-round.

## Prepping for the rush

Into the 1970s, preparing for the grain rush was a carefully coordinated event, especially for railroads in the Midwest, West, and plains states. The exact timing would vary depending upon the location (the rush began in early summer for winter wheat in the Southwest, then progressed farther north through the fall). It would be fascinating to re-create these operations on a model railroad.

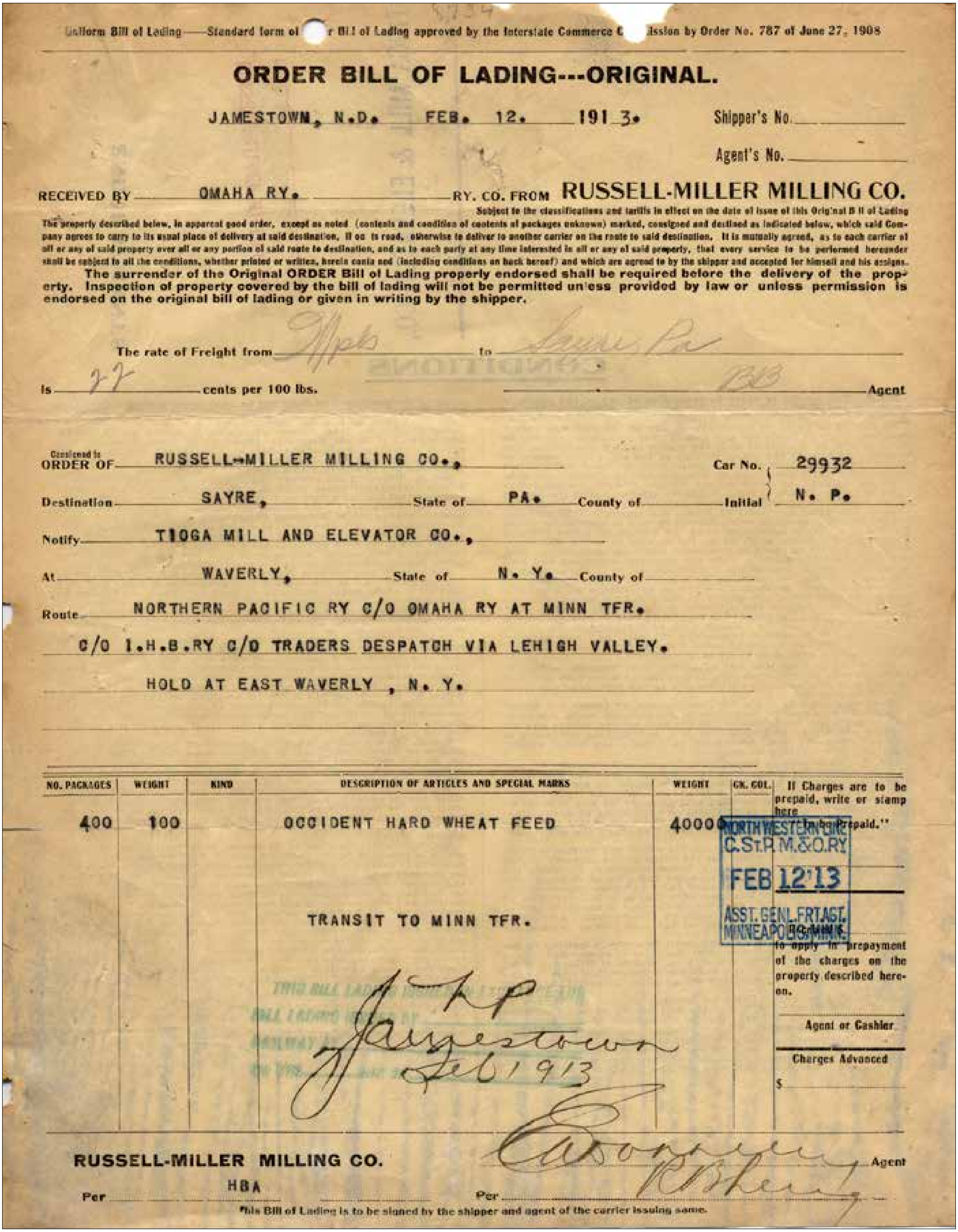
Railroads began early preparation in April of each year, when the U.S. Department of Agriculture issued its first winter wheat forecast. The AAR's Car Service Division would begin issuing instructions and special directives to railroads regarding the handling of boxcars, making sure that empties promptly got to where they would be needed. These directives superseded standard car-handling rules.

Railroads started putting out their own directives. The Soo Line in the early 1960s called its preparations "Operation Grain Movement." The following summary is based on the Soo's practices, but other grain-hauling railroads had a similar set of procedures.

For the Soo, most loaded grain cars not destined for mills or elevators in Minneapolis were headed east or southbound through Minneapolis. Empties arrived from the east or south. The dominant traffic flow pattern varied by railroad.

The Soo called for its directives to go into motion when traffic at its main yard (Shoreham in Minneapolis, at the eastern end of the Soo system) began to exceed capacity. The railroad then moved grain operations to nearby Humboldt yard.

The first order was to sort and prep empty grain boxcars for service. As empties arrived on-line, they were sorted into blocks: empties ready for loading, empties needing cleaning or upgrade, and foreign-road cars being moved to their home roads. During most grain seasons, special ICC rulings required empty grain cars to be moved expeditiously to their home roads. Railroads could also request additional foreign-road boxcars through the Car Service Division of the AAR. The CSD would pull cars from railroads (mainly non-grain-carrying roads in the East) and distribute the cars to western railroads.



Uniform Bill of Lading——Standard form of Order Bill of Lading approved by the Interstate Commerce Commission by Order No. 787 of June 27, 1908

ORDER BILL OF LADING---ORIGINAL.

JAMESTOWN, N.D. FEB. 12. 1913. Shipper's No.

Agent's No.

RECEIVED BY OMAHA RY. RY. CO. FROM RUSSELL-MILLER MILLING CO.

Subject to the classifications and tariffs in effect on the date of issue of this Original Bill of Lading

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as indicated below, which said Company agrees to carry to its usual place of delivery at said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (including conditions on back hereof) and which are agreed to by the shipper and accepted for himself and his assigns.

The surrender of the Original ORDER Bill of Lading properly endorsed shall be required before the delivery of the property. Inspection of property covered by the bill of lading will not be permitted unless provided by law or unless permission is endorsed on the original bill of lading or given in writing by the shipper.

The rate of Freight from Mpls to Sayre, Pa

is 22 cents per 100 lbs. Agent

Consigned to ORDER OF RUSSELL-MILLER MILLING CO. Car No. 29932

Destination SAYRE, State of PA. County of Initial N. P.

Notify TIOGA MILL AND ELEVATOR CO.,

At WAVERLY, State of N. Y. County of

Route NORTHERN PACIFIC RY C/O OMAHA RY AT MINN TFR.

C/O I.H.B.RY C/O TRADERS DESPATCH VIA LEHIGH VALLEY.

HOLD AT EAST WAVERLY, N. Y.

| NO. PACKAGES | WEIGHT | KIND | DESCRIPTION OF ARTICLES AND SPECIAL MARKS | WEIGHT | CK. COL. |
|---|---|---|---|---|---|
| 400 | 100 | | OCCIDENT HARD WHEAT FEED | 40000 | |
| | | | TRANSIT TO MINN TFR. | | |

If Charges are to be prepaid, write or stamp here "To be Prepaid."

NORTHWESTERN LINE C.St.P.M.&O.RY FEB 12'13 ASST. GENL. FRT. AGT. MINNEAPOLIS, MINN.

Received $ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Charges Advanced

$

RUSSELL-MILLER MILLING CO. Agent

Per HBA Per

This Bill of Lading is to be signed by the shipper and agent of the carrier issuing same.

Shippers filled out a bill of lading for each car, after which the railroad agent completed a waybill. This 1913 bill of lading covers a shipment of 400 100-pound sacks of wheat feed from Jamestown, N.D., to Waverly, N.Y., in a Northern Pacific boxcar. *Jeff Wilson collection*