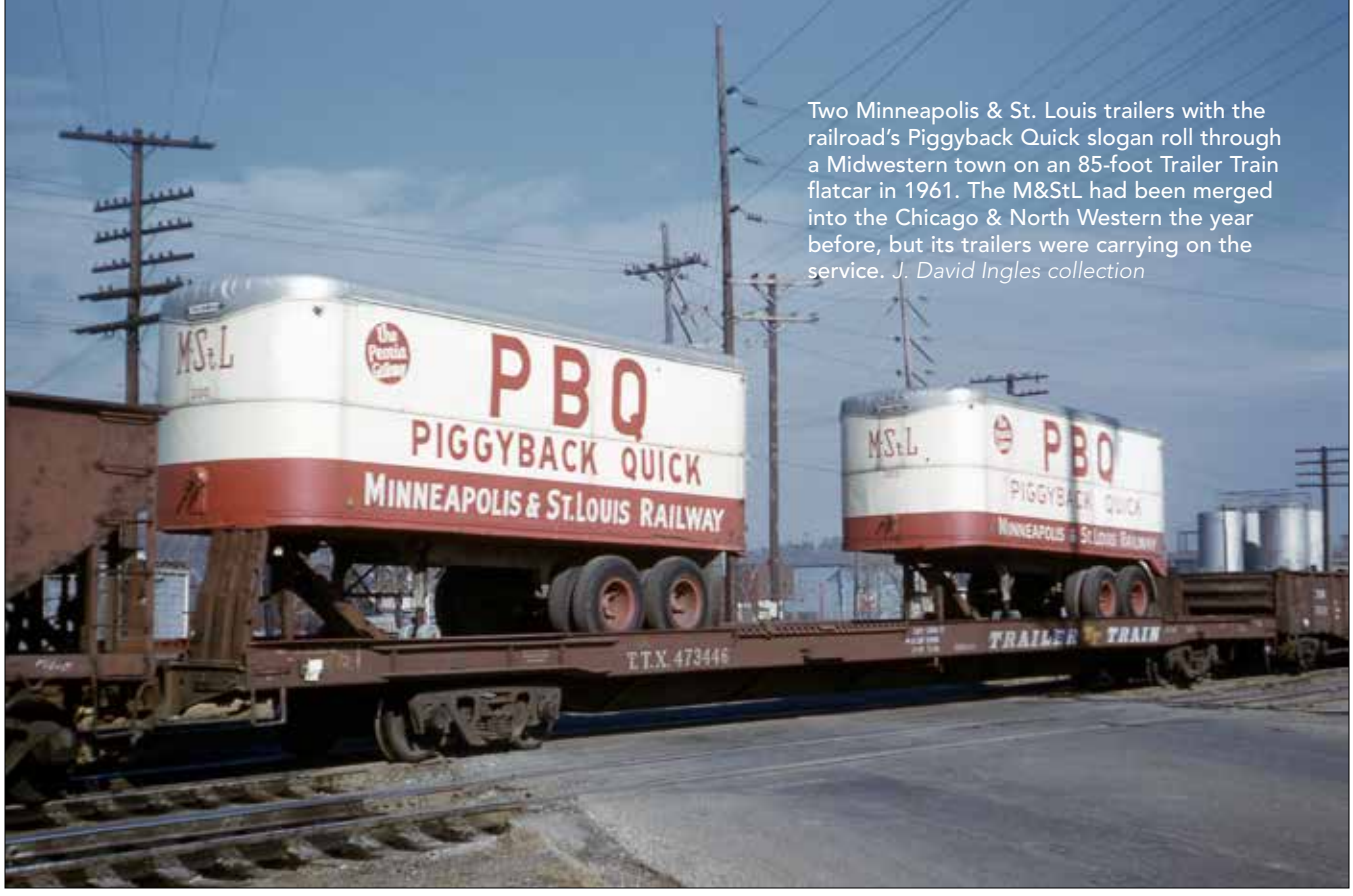
Contents



Two Minneapolis & St. Louis trailers with the railroad's Piggyback Quick slogan roll through a Midwestern town on an 85-foot Trailer Train flatcar in 1961. The M&StL had been merged into the Chicago & North Western the year before, but its trailers were carrying on the service. *J. David Ingles collection*

INTRODUCTION

Piggyback and container traffic represents a fascinating—and very modelable—part of railroad history and operations. Trailer-on-flatcar (TOFC) began booming in the mid-1950s. With the coming of international shipping containers in the late 1960s, trailer and container traffic (together, they comprise intermodal) grew to become the largest revenue source for railroads today.

No one book can detail every facet of each railroad's history and operations, or cover all the variations of every type of flatcar, double-stack, or spine car. Entire books have been written about a single equipment type or class. This book is meant to be a guide for your overall modeling efforts, and it covers the highlights (worrying about detailed spotting features and minutia would have meant omitting other features).

The bibliography on page 125 lists the key sources used, and they can provide you with more detailed information about various car types and other equipment. Many of the articles listed there present highly detailed information on prototype equipment, as well as in-depth, step-by-step instructions and photos for modeling trailers, railcars, and related accessories.

Railroad historical societies are another excellent source of information. Most publish periodicals, and many of these contain detailed articles on a railroad's trailer and container operations, including history, equipment, train schedules, and basic train operations. Some societies have articles, photos, and reference information available on their websites.

Check various websites. A simple Google search will yield many photographs and potential sites, but be aware that the quality of individual websites can range from excellent to sketchy. Try to find as many sources as possible to verify information. Websites of model manufacturers and prototype manufacturers are a good source for details on current equipment, and some have additional historical information.

Modeling

When modeling, all facets of intermodal traffic from any era from the 1930s to the present are accessible. A wide variety of railcars, trailers, containers, and loading equipment is available in HO and N scales, in particular.

Many small manufacturers have produced resin or limited-run kits for obscure trailers and other equipment, although some of these are no longer available (or were discontinued many years ago). However, don't be discouraged. If a model has been produced, it's available somewhere. Check eBay and other online auction sites and shops (eBay lets you save a search and will send you a message when something matching your search criteria is listed).

Whether it's modeling a complete modern lift terminal, solid trains of piggyback and container traffic, a small-town loading ramp, or just a few trailers on trains passing through, almost any layout will benefit from adding intermodal models.

A westbound double-stack train heads west on Union Pacific's double-track main line through Nebraska in 2006.

the 1920s—fizzled out because of over-regulation, but containerized freight would eventually revolutionize both international and domestic shipping.

Although there were many abortive attempts at shipping with containers, credit for the concept and successful execution of using a large (truck trailer size) container that could be transferred from a ship to railcar to truck goes to Malcolm McLean, a trucker from North Carolina.

McLean knew transferring containers directly would save transloading time and thus money—a significant challenge in dealing with large cargo ships. In the early 1950s, after unsuccessfully trying to peddle his idea to steamship companies, McLean finally just did it himself. He sold his trucking company and worked with Fruehauf to develop 35-foot containers. He then bought the Pan-Atlantic Steamship Company and several old World War II-era T-2 tankers and had them rebuilt to carry the new containers.

On April 26, 1956, one of the 524-foot refitted tankers—christened the *Ideal X*—made its first revenue trip, carrying 58 loaded containers from Newark, N.J., to Houston.

McLean's venture (renamed Sea-Land in 1961) was a success. By the late 1960s, Sea-Land had a fleet of more than 30 ships and 27,000 containers, and it was sailing routes to Germany, Scotland, the Netherlands, Hong Kong, Thailand, and the Philippines.

In the meantime, a few railroads had dabbled in container traffic, including the Southern, Missouri Pacific, Baltimore & Ohio, and New York Central. Most met with minimal success, with the exception of NYC's unique Flexi-Van system (more on that in chapter 4).

A limitation for containers through the 1960s was that each container system—including Sea-Land's, those of other shipping companies, and each railroad's—was proprietary, **14**. Each used a unique container size, required different highway chassis, and used different means of stowing aboard ships. Containers required special cradles on flatcars or, more commonly, simply rode on chassis as piggyback trailers.

Thus, even though McLean's business flourished, and rival shipping lines began copying the idea, container freight still represented a small fraction of international shipping. Most ports couldn't easily handle containers, and weren't willing to make the investment in cranes and other alterations for what was comparatively small share of the market. There was also the issue of dock workers, who knew their jobs would be eliminated.

Standardization

The answer would come, as it did for piggyback, in the form of standardization. As early as the late 1950s, there was talk of adopting standard container sizes. In the United States, a subcommittee of the National Defense Transportation Association (NDTA) met in 1958 and recommended that containers be 20 or 40 feet in length (maximum U.S. trailer length had just been stretched to 40 feet), 8 feet wide, and 8 feet tall.

There was international interest in the idea as well, and Sea-Land and several other companies were in favor—although there was some disagreement on what the standards should be. In 1965, size standards were officially adopted by the International Organization for Standardization (commonly referred to as ISO), resulting in what has become known as the international or ISO container. The standard was for containers 8 feet wide and 8 feet tall, with lengths of 10, 20, 30, and 40 feet. (The most common, by far, would become the 20- and 40-footers.)

17

BNSF's Logistics Park Kansas City opened in 2013. It covers more than 400 acres and features five 90-foot-tall cranes serving six 8,000-foot-long working tracks. *BNSF*

A key part the standard, adopted in 1967, was the connecting system. Based on Sea-Land's containers, the standard called for oval slots located at each container's top and bottom corner. These slots would accommodate a turn-lock connector (an IBC, for inter-box connector; also called a twist-lock) to allow containers to be stacked, and to provide standard connection points for truck chassis, railcars, and overhead loaders, **15**.

This standardization made possible the wholesale adoption of containers by international and domestic shipping companies, railcars from multiple manufacturers that could handle containers from any shipper, and the ability to easily move containers among ships, trucks, and railcars.

Staggers

The Staggers Act, passed in 1980, effectively deregulated the rail industry. It's more complex than that, but the net effect was that railroads were now able to privately negotiate rates with individual shippers. For intermodal, this was vital at the time because of the growing number of containers from international shippers.

By the 1980s, traffic was trending from trailers to containers, with a growing number of international containers. The double-stack well car, introduced in 1981, greatly improved the efficiency of transporting containers. Within a few years, double-stacks were carrying international and domestic containers on routes throughout North America, **16**.

Piggyback trailer traffic was declining, and much of what railroads were hauling were common-carrier and leased trailers, with a lot of domestic intermodal traffic moving to containers. By 2010, there were few railroad-owned trailers left.

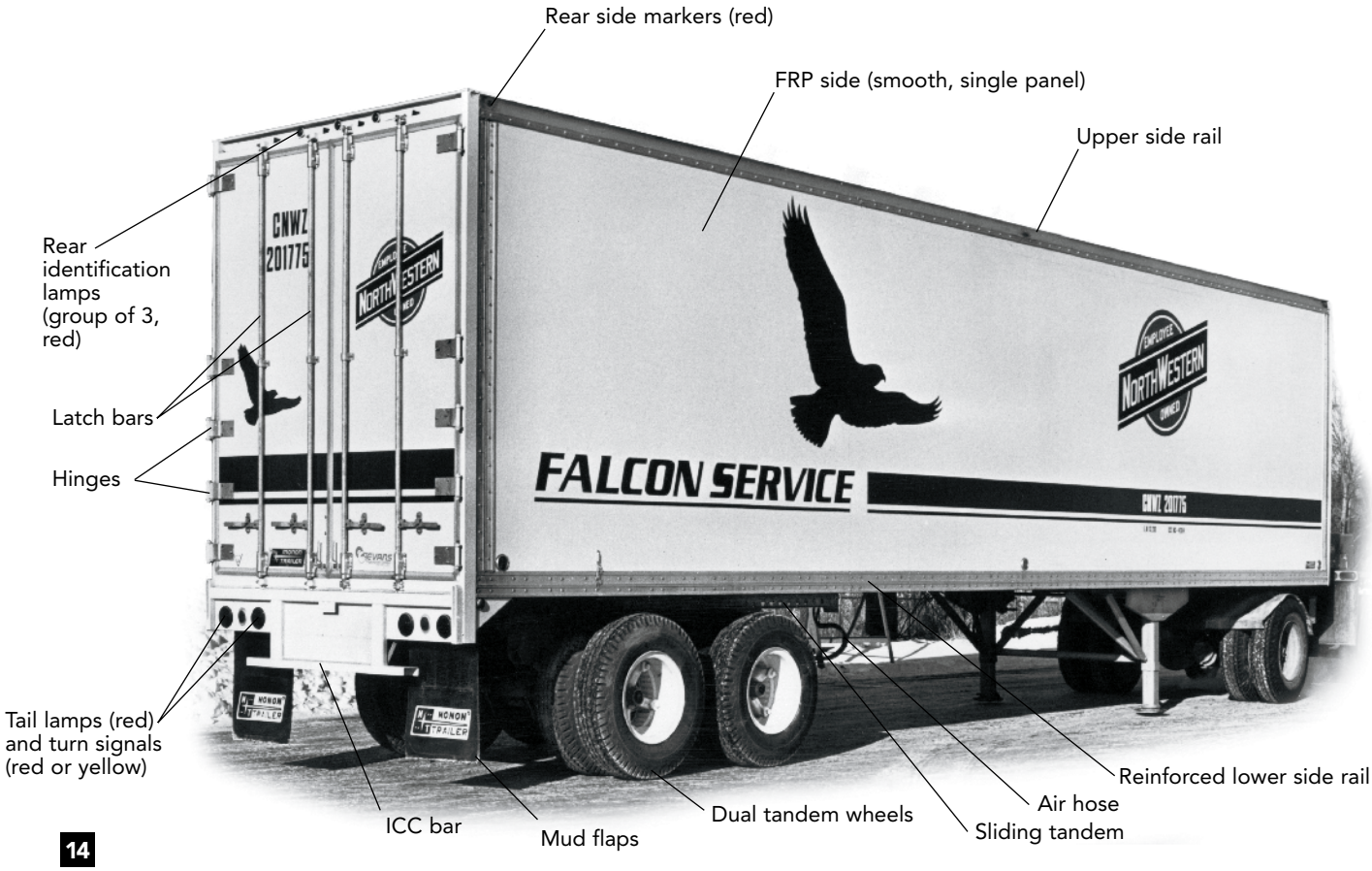
As shown in the chart on page 12, total annual container loadings first surpassed trailers in 1992. By 2000, containers made up 74 percent of intermodal traffic; by 2010, it was 85 percent, and today it's close to 90 percent.

Container operations moved from single-unit shipments to land-bridge and mini-bridge service. This is the intermodal equivalent of a unit train, where an entire train of containers is loaded at one location for a single customer (generally at a port for an international shipping company) and carried to another location (an inland terminal or another port).

The following chapters outline how intermodal equipment has grown and evolved, how piggyback and container terminals work and how their technology and size has advanced, and how railroads handle intermodal traffic, **17**.

Intermodal timeline

1926: North Shore begins LCL piggyback service
1936: Chicago Great Western begins long-haul TOFC service with common carrier trailers
1955: First run of Pennsylvania RR dedicated TrucTrain service
1956: Trailer Train Co. (now TTX) begins operations
1956: First container ship makes revenue trip
1965: ISO container standards established
1981: Double-stack well cars debut on Southern Pacific
1991: Trailer Train officially becomes TTX Co.
1992: Container loadings surpass trailers
2015: Intermodal loadings top 13 million
2015: Containers account for 89 percent of intermodal loadings



14

This 40-foot FRP dry van was built for Chicago & North Western in 1978 by Monon.

and rear. Yellow lights are at the front and the front and middle of the sides. Red lights are on the sides at the rear and on the rear. Turn signals and brake lights appeared at the lower rear starting in the late 1950s.

The rear bumper (officially the Rear Underrun Protection System, or RUPS, but unofficially the ICC bar, DOT bar, or Mansfield bar) became required in 1953. These standards were modified in the late 1990s, resulting in lower-hanging, wider bumpers.

For trailers built after 1993, conspicuity striping (alternating red/white reflective) is required along the lower sides and rear (including ICC bar) of trailers longer than 30 feet.

Mud flaps began appearing after World War II, and have been found on most trailers since then. Although there is no federal regulation regarding mud flaps, most states mandate their use, with exact specifications that vary from state to state.

The style of landing gear varies among manufacturers and by era. Landing wheels were common into the 1960s, with flat pads (called "sand shoes") since then. The gear on trailers into the 1940s typically swung back for highway use; since then, gear that telescopes vertically has been standard.

Into the 1970s, many trailers had spare-tire racks under the body on one or both sides. The past decade has seen a growth in trailers with underbody wind skirts or smaller bogie fairings, both designed to lower wind drag and increase mileage.

Trailers with tandem (two) axles became more common as trailer size grew to 32 feet and longer in the 1950s. Dual wheels have been standard from the 1930s through today, but single wide tires (known as super singles) gained in popularity in the 2000s.

Although chromed and polished aluminum wheels are now common on semi tractors, for the most part, trailers have always had plain steel wheels, painted in various colors. Spoke-type (Dayton) wheels were most common into the 1970s, with disk-type (Budd) wheels becoming more common in the past few decades.

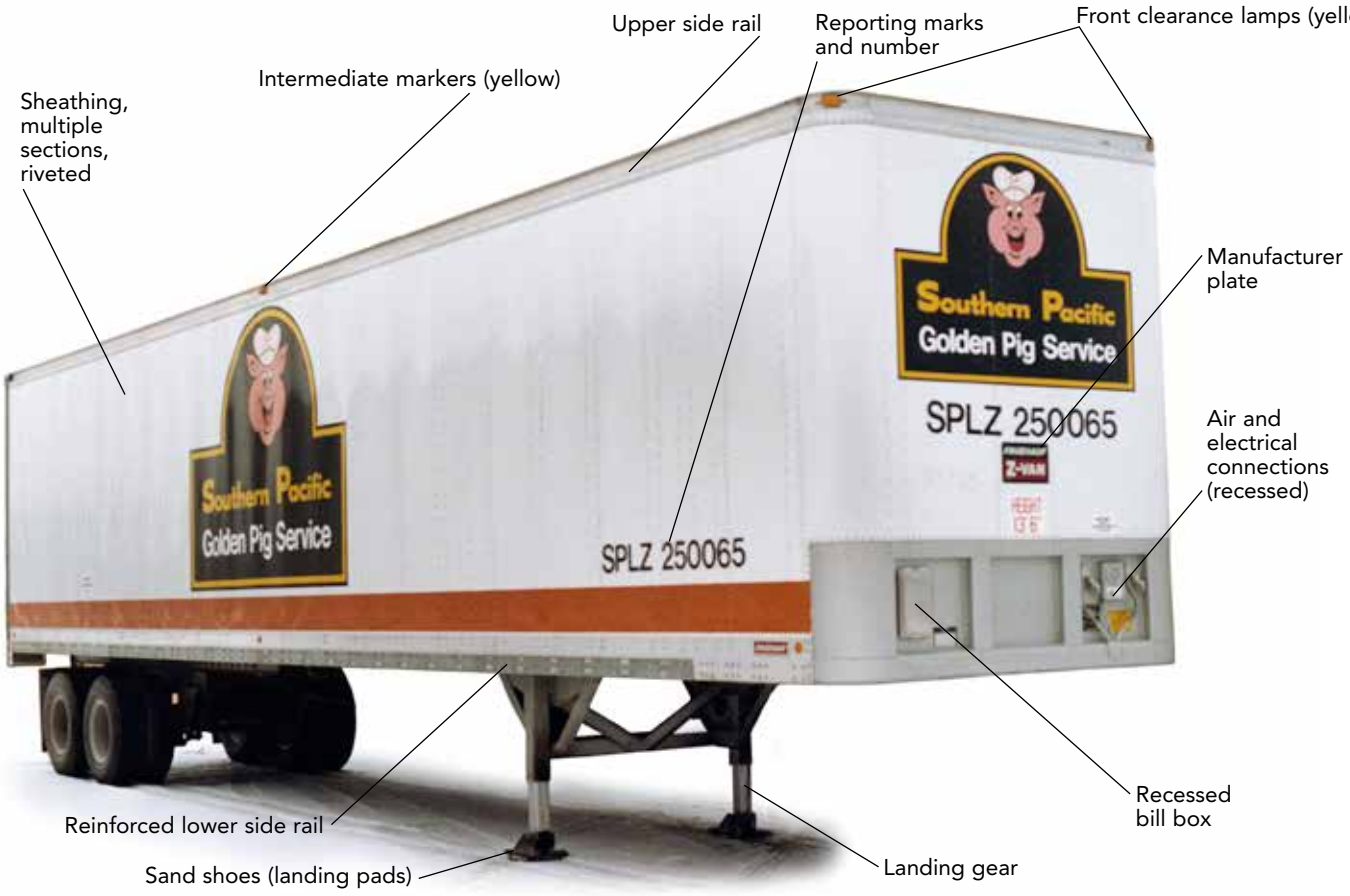
License plates on the rear indicate the state in which a trailer is registered. Until deregulation in 1980, trailers could have multiple plates and/or registration decals, needed for each state the trailer operated in. Diamond-shaped hazmat placards began appearing in the mid-1970s.

Early trailers

When the Chicago North Shore & Milwaukee kicked off the true era of piggyback operations in the mid-1920s, it had a fleet of 17-foot trailers. Each was 7 feet wide, with bodies 6 feet high (see photo 5 on page 7). Typical trailers stood about 11 feet tall, with a single axle at the rear.

By the 1930s, trailers had grown to 20 to 24 feet long. This meant the Chicago Great Western and other early piggyback lines could outfit 53- to 56-foot flatcars to carry a pair of contemporary trailers, **15**.

Single-axle trailers were still the most common (photos 2 and 3 on page 43), although twin-axle trailers began appearing in larger numbers by the late



This 45-foot sheet-and-post dry van, built for Southern Pacific in 1982 by Fruehauf.

1930s. Trailer size continued growing through the 1940s, with 32-foot trailers common by 1950, and 35-footers a few years later, **1 and 16**. Tandem axles became more common with 32-foot trailers, and were standard on longer sizes. Noses were becoming more blunt, with corners squared off to increase cubic capacity.

Fruehauf dominated the trailer manufacturing market through the 1950s, but several other builders were making trailers, including Baker, Brown, Highway, Kentucky, and Trailmobile.

40-footers

In 1957, just as Trailer Train was in its second year and piggyback traffic was experiencing rapid growth, the 40-foot-trailer became legal across the United States—coinciding also with the beginning of the new Interstate Highway system, **17**. The 40-footer—8'-0" wide and 12'-6" tall—was adopted quickly by the trucking industry, and railroads and leasing companies alike were acquiring fleets of 40-footers, **18**. By this time, trailers were acquiring a "modern" look. Gone were the rounded noses and rooflines of early trailers, replaced by squared-off noses. That size would remain the standard (with a height increase to 13'-6" in the mid-1960s) into the 1980s, **19**.

Refrigerated 40-foot trailers became popular in the 1960s as railroads' ice-bunker refrigerator car fleets were on the decline. Produce and meat traffic were shifting to trucks, and piggyback was a way of regaining that traffic. Two primary owners were Fruit Growers Express and Pacific Fruit Express, both of which had significant numbers of reefer trailers through the 1960s, **9 and 20**.

Trailer paint and lettering schemes during the 40-foot era were plentiful. Early colorful railroad schemes included Chicago & North Western green and yellow, Great Northern orange and green, Illinois Central orange and brown, Pennsylvania tuscan, and Union Pacific yellow and red, **21**. By the late 1960s, paint schemes were becoming more sedate, with lettering and/or a logo on plain white trailers.

Many railroads used the sides of their trailers to tout the names of either their piggyback service or that of named piggyback trains. These included Pennsy's TrucTrain, C&NW's Falcon, Seaboard Air Line's Razorback, Southern Pacific's Golden Pig Service, and Conrail's Trailvan.

Major builders during this period included Fruehauf, Strick, Dorsey, Great Dane, Highway, Trailmobile, and Utility.

Trailers grow … rapidly

In 1981, changes in state regulations made the 45-foot trailer legal across the country. Since most loads wouldn't "cube out" at 40 feet (hit their weight limit before the trailer was completely full), the move effectively made the general-purpose 40-foot trailer obsolete overnight. Truckload carriers in particular immediately started buying new trailers, with railroad owners jumping in as well.

1

CHAPTER FOUR

Trailer and container flatcars

Trailer Train's first flatcars were the 75-foot F39 cars inherited from the Pennsylvania Railroad. Unfortunately, by 1958, the cars were rendered obsolete by 40-foot trailers such as this beaded-side Norfolk & Western Fruehauf van. *J. David Ingles collection*

Flatcars were the standard means of carrying trailers and containers from the beginnings of piggyback operations through the 1980s, **1**. Through the years, these flatcars evolved from rebuilt older general-service cars to dedicated-service flats of progressively longer and lighter designs.

2

Louisville & Nashville converted these 43-foot flatcars for TOFC service in 1955 by adding rub rails and jack connections. Kentucky built the exterior-post 32-foot trailers. *Louisville & Nashville*

Early piggyback flats

The first piggyback operations used standard existing railroad flatcars—a natural choice. Although railroads converted some 40-foot flatcars for TOFC service, most early cars were 50- to 56-footers (53 feet was common). This allowed each car to carry a pair of the small (20- to 24-foot) trailers common through the 1940s, and then single 40-footers when they became legal in the late 1950s.

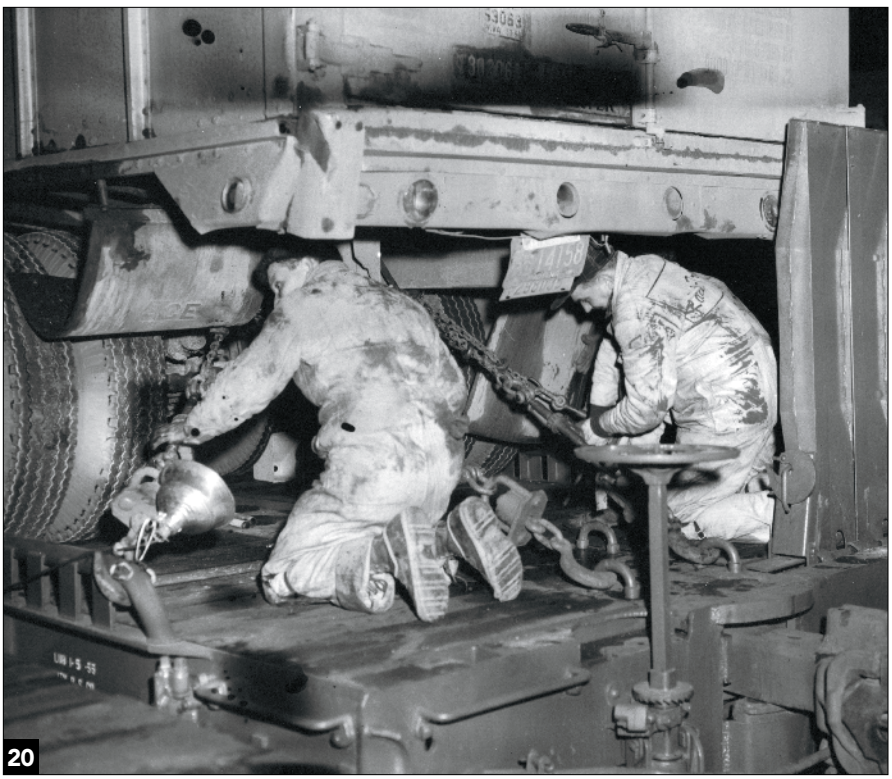
However, cars first had to be converted to carry trailers, **2**. How each railroad accomplished this varied widely, but many of the basic components and ideas were similar.

Central to car designs was that through the 1950s, the only way to load and unload trailers on cars was by driving them on and off strings of cars at end unloading ramps (more on those in chapter 8). To allow trailers to cross the gaps between cars, each car had a steel bridge plate at each end (on the

3

Workers tie down two short trailers on a 53-foot converted flatcar at the Chicago & North Western ramp in Green Bay, Wis., in 1954. *Chicago & North Western*

The pedestal jack has been positioned and raised under the trailer kingpin. The crew then attaches and tightens the chains. *Chicago & North Western*



Chains were attached at the rear of the trailer as well as the front. The bridge plate and brake wheel have already been raised. The portable lamp at left is needed at night. *W. A. Akin*

Dedicated piggyback trains were often scheduled to arrive overnight or in the early morning, as the goal is usually getting customers' trailers to their docks early in the day. (Chapter 10 goes into more detail on train operations.)

Terminal tractors

Small single-track ramps were likely to contract with a local trucking or drayage company to provide loading service. For ramps that had their own tractors, these were usually older equipment far removed from first-line service.

Larger terminals would have two or more tractors, and be much more likely to have specialized vehicles. In the days before companies like Ottawa and Capacity introduced specialized yard tractors (more on those in chapter 9), railroads sometimes came up with their own specialized solutions. One early version was a custom-order tractor built by Hendrickson for the Pennsy, **24**. The

21

Even after the coming of the automatic trailer hitch, railroads didn't completely trust them. The holes in the Budd-style wheel provided a handy anchor for chains. *Pennsylvania Railroad*

cab had rear-facing controls that allowed the driver to face the trailer for backing operations. It also had an open cab design so the driver didn't have to leave the cab to disconnect brake and electric lines. Most of these were two-axle tractors for better maneuverability.

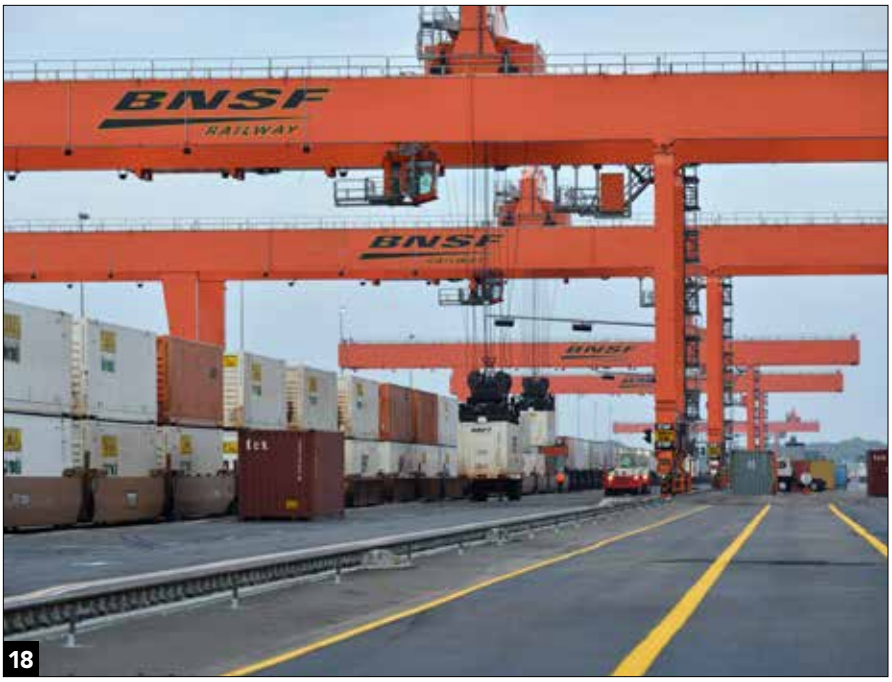
Changes

By the late 1960s, many small single-track ramps were being closed. Major terminals, especially those on larger railroads with extensive intermodal operations, were switching to cranes and side-loaders such as Piggy Packers for loading. However, plenty of small- and medium-sized yards (and some large ones) still used end ramps well into the 1980s.

One example was the Soo Line, at the time a medium-sized Class I railroad serving the upper Midwest. Through the 1970s, the railroad never operated a dedicated piggyback train, but it still handled plenty of intermodal traffic. In 1977, the railroad


22

Only a single worker with an air wrench is needed to raise and lower the ACF hitch and to lock the jaws in place on the trailer's kingpin. *Pennsylvania Railroad*



18

The five cranes at BNSF's Logistics Park Kansas City stand 90 feet tall, ride on rails, and are electrically powered. Each can work multiple tracks, or multiple cranes can work the same train. *BNSF*

19

A ground crew member works in tandem with the crane operator. Here, a worker lowers the trailer landing gear and unlocks the hitch to release the kingpin before the crane lifts the trailer.

it is part of a 1,500-acre center for distribution, transloading, and warehousing. It has six 8,000-foot live tracks, parking spaces for 1,800 trailers, and 4,300 container stacking spots.

Along with sheer size, a new type of crane is being used at these and other new terminals. Unlike the rubber-tired cranes that span a pair of tracks and a truck lane, these huge new wide-span cranes more closely resemble the large cranes used to unload ships. These cranes span up to eight tracks as well as truck lanes and part of the container storage area.

The BNSF cranes shown in photo **18** were built by Kone Cranes. They ride on rails, are electrically powered, and stand 90 feet tall and 275 feet wide. The first of these were installed at the railroad's Seattle yard in 2007. Because they can move containers directly to storage areas, the number of hostler and inter-facility truck moves are diminished. Multiple cranes ride on the same set of rails, which allows cranes to work on multiple trains at once or allows a single train to be worked by multiple cranes.

Basic terminal operations

Printed carlists and radio communications in the 1970s largely gave way to computerized lists and computer terminals by the 2000s. Yardmasters at modern terminals receive computerized lists of containers, trains, and railcars coming in, and know where they're bound for.

Intermodal managers and clerks can issue directions and orders to crane operators, yard truck drivers, and train-switching crews, all via computer screens (laptops or other devices). Containers are tracked by GPS, and optical recognition is used for incoming trailers, containers, chassis, and railcars.

How a train is handled depends upon the type of terminal and the type of train. Inbound trains may arrive in an adjoining yard track or directly to a working track. The entire train may be unloaded, or trains may be switched so that cars with boxes and trailers bound for other destinations are switched out.

For example, a mini-bridge container train from a port, say from Long Beach arriving at Chicago, with all containers from a single shipper, may have platforms blocked so that those heading to points farther east can be cut out while the rest of the train is sent to working tracks for unloading.

Another operation sometimes needed at an inland terminal is to take an inbound double-stack train and turn it into a single-stack, or transfer containers to other car types for forwarding to lines with restricted clearances.

Loading and unloading

The mechanics of how containers and trailers are loaded and unloaded varies widely by terminal. Facilities with

For a trailer lift, the crane operator lowers the arms, adjusts the spread to match the trailer size, and engages the lower clamps on the lower side rails. The trailer is then lifted and placed on the ground and the clamps and arms disengaged.

multiple tracks typically have a crane working each track, with side loaders assisting and moving containers as needed. Side loaders were common at smaller terminals.

It takes many crew members to make a terminal work smoothly, including crane and loader operators, ground crew members, tractor drivers, and train crews. Crane and side loader operators typically work as a team with another worker on the ground.

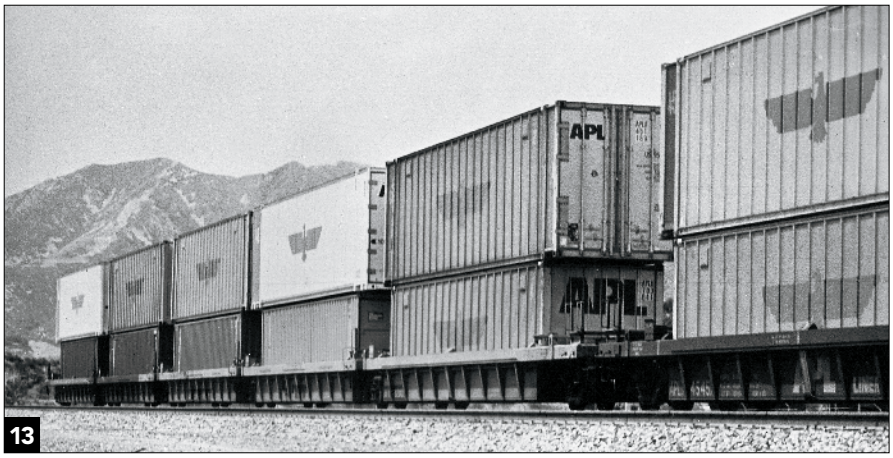
When a cut of cars is placed for unloading, a ground crew member walks the train in front of the crane or side loader, unlocking IBCs and trailer hitches, lowering trailer landing dollies, and securing twist locks on loaded chassis as needed, **19**. Drivers will have placed empty chassis along the cars as needed. The crane then proceeds down the line, lifting containers and trailers and placing them on the ground or on chassis. Drivers pull trailers and containers/chassis as they are loaded.

For loading, the process is reversed. Once drivers have placed trailers and containers, the crane will pick them up and place them on the railcars, following hand signals from the ground crew member. The ground member makes sure each car is secure with hitches set, IBCs are locked in double-stacks, and IBCs are placed on lower containers in stack cars prior to placing the top container.

Experienced crane operators can make a lift—placing one container or trailer in position—in under a minute. A good average is 60 to 90 seconds per lift. On a modern straddle crane, the operator is in an enclosed bay (early

For a container, the operator matches the crane's pins to the corner castings. Doing a pair of end pins first ensures that the other end will match when lowered.

Tugboats guide the 4,500-TEU *Mol Encore* (built in 2003) to a berth with multiple unloading cranes at the Port of Los Angeles. The port features 270 berths with 91 ship-to-shore container cranes. *Port of Los Angeles*



13

American President Lines signed a deal with Union Pacific to carry double-stack containers from Los Angeles to Chicago in 1983. This UP train is on Santa Fe's Cajon line in 1986. *Andy Sperandeo*

Busiest U.S. rail intermodal ports/terminals, 2013

1. Chicago area	5,669,000
2. Long Beach area	4,881,000
3. Atlanta	1,302,000
4. Dallas/Fort Worth area	1,268,000
5. Seatle/Tacoma area	1,035,000
6. South Kearny/North Bergen area	989,000
7. Memphis area	796,000
8. Kansas City area	632,000
9. Harrisburg, Pa.	610,000
10. Stockton, Calif.	561,000
11. Jacksonville, Fla.	540,000
12. Norfolk, Va., area	507,000

Figures are total originating and terminating containers and trailers that traveled by rail. Source: Association of American Railroads

Cabooses and four-member train crews were still standard through the 1970s. Because of the nature of dedicated piggyback trains (higher speeds with little or no en route switching moves), several TOFC trains were among the first to operate with fewer crew members, run without cabooses, and/or skip normal crew-change points to make longer runs. This meant negotiating with operating unions to do so.

Trains doing this included Central Vermont's *Rocket*, which in the late 1970s ran from Palmer, Mass., to St. Albans, Vt., with a two-man crew, no caboose, and a 15-car maximum pulled by a single locomotive.

In 1978, Milwaukee Road began running its *Sprint* from Chicago to St. Paul. Trains were 15–25 cars long, used three-man crews, and ran through normal crew-change points.

A similar train was Illinois Central Gulf's Chicago to St. Louis *Slingshot*. Started in 1975, the train used one locomotive, no caboose, two-man crews, and had a 15-car maximum length.

Containers and double-stacks

As international shipping moved to containers and away from time-consuming (and expensive) break-bulk operations from the 1960s into the 1970s, railroads began carrying more international shipping containers (see chapters 1 and 3). Most of these were imports, carrying consumer goods from Asian and European markets to the United States. Unlike truck trailers, which usually feature individual shipments, this new container traffic included large numbers of containers (by the shipload) from the same shipping company, bound for a single destination or region.

Initial operations included Sea-Land containers moving between Europe and the West Coast; ships docked in Houston and containers went by rail to California. Seatrain had containers traveling from Hawaii to the East Coast or Europe, with ships docking in California and traveling overland by rail, saving time over a trip through the Panama Canal. Other container traffic came from Asian companies docking at Los Angeles, Long Beach, Oakland, and Seattle, and European lines docking at New York, Charleston (S.C.), Virginia, Savannah (Ga.), or Houston.

As the 1970s dawned, railroads began devising more-efficient ways of hauling this traffic. Two basic types of service were being envisioned: land-bridge and mini-bridge.

Land-bridge service was envisioned as North American rail lines serving as the middle segment between two ocean segments: for example, containers traveling from China to Europe arriving by ship on the West Coast, traveling in a solid train across the country, and loaded aboard ship again on the East Coast (saving a trip through the Panama Canal or around Cape Horn).

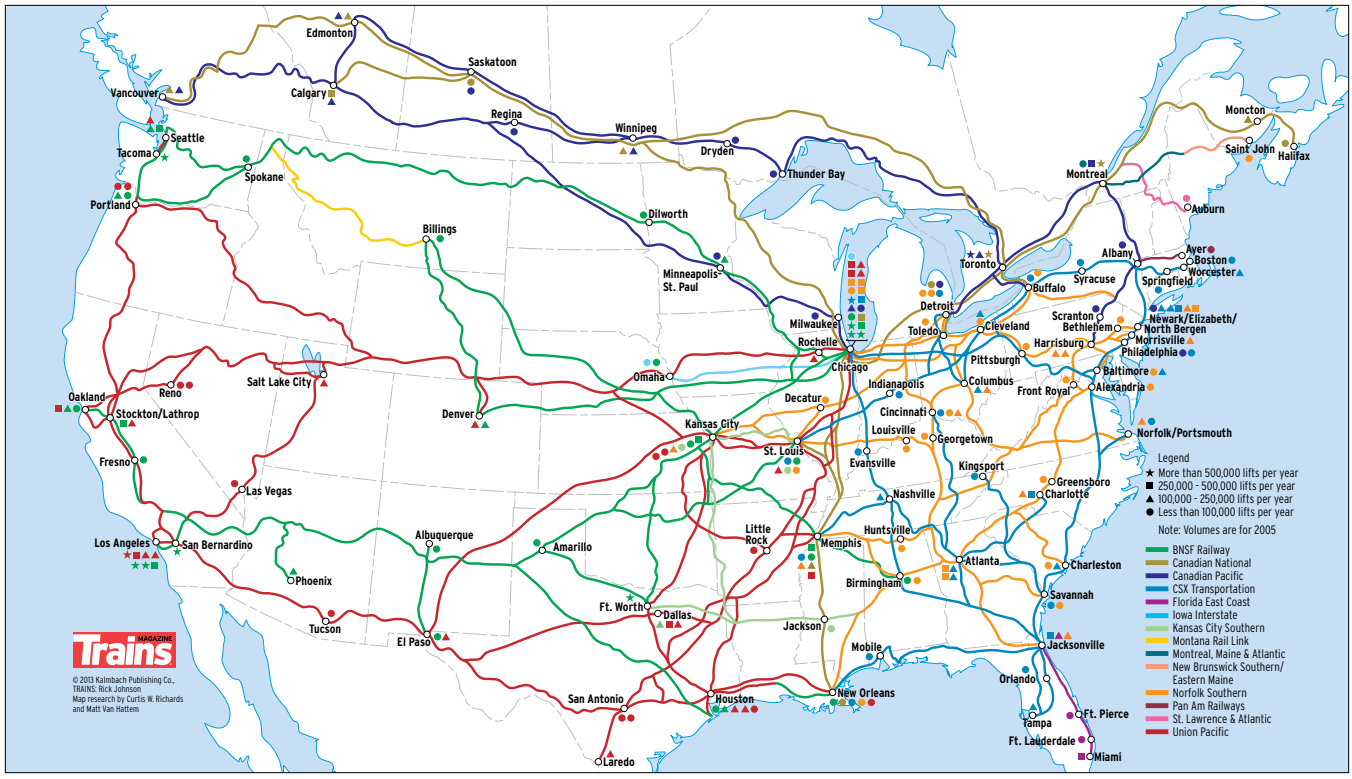
Mini-bridge service would become much more common. This is taking a trainload of containers from a single shipper at a port to a point within the country, where the containers are off-loaded and driven to their final destinations (for example, from Long Beach to Chicago).

Railroads were providing basic mini-bridge service by the early 1970s, but initially by carrying containers waybilled singly in existing trains. The difference between that and a true bridge service is rates: ocean shipping lines received a rate break for moving a trainload of containers.

The first true land-bridge service was carried out by Santa Fe and Penn Central. In August 1972, the railroads paired to carry SeaTrain Lines containers originating in Asia from Los Angeles to New Jersey, bound for Europe. The 60-car train used then-conventional 89-foot piggyback flats, **12**. The rail route saved about 10 days over all-ocean transport.

American President Lines (APL) began mini-bridge service in 1979, contracting with the Union Pacific and C&NW to move containers from Los Angeles to Chicago, albeit on conventional flatcars. As chapter 6 explains, the Southern Pacific had been working with ACF and Sea-Land to develop the first double-stack cars. They entered service in 1981, hauling containers from California to Houston, followed by APL double-stack trains in Thrall well cars in 1983, **13.**

Major U.S. intermodal routes and terminals, 2012



The Staggers Act of 1980, which deregulated railroads, greatly aided railroads in securing container traffic. Railroads were now able to negotiate rates with individual shipping lines without ICC approval. International shipping companies were also then able to solicit domestic backhauls for containers that otherwise would have been returning empty, which wouldn't have been possible before Staggers.

A combination of the move to containers, deregulation, and the development of double-stack cars led to an explosion of container traffic from the 1980s through the 1990s. In 1989, there were 100 scheduled stack trains in the United States; by 1996, APL alone had 250 bridge trains/routes in North America. The map above shows modern major U.S. double-stack routes, along with container terminals.

Trains carrying international containers are scheduled differently than piggyback trains, which are often hotshots because they're competing directly with the speed of trucks. For the most part, international double-stack traffic isn't as time-sensitive—a container has already spent several days at sea, so high train speeds aren't worth the effort or expense (see container schedule above). This means stack trains generally run on slower schedules than TOFC trains, and they are usually heavier and longer.

Trains carrying domestic containers receive faster service. And you'll often see double-stacks mixed with trailers and other domestic container traffic, depending upon traffic levels.

Some railroads initially steered clear of double-stacks, notably Santa Fe. That railroad's Chicago-Los Angeles main line was a speedway by railroad standards, and Santa Fe ran hotshot piggyback trains along the corridor. Heavy, slow double-stack trains didn't fit Santa Fe's operational plans. Although the railroad eventually started carrying some stack traffic, it concentrated on trailers until its merger with Burlington Northern.

Clearance issues in the Northeast—a problem with ordinary trailers in early piggyback days—were especially troublesome with double-stacks. Although many routes can now handle these trains, many double-stacks coming in from the West Coast would be single-stacked at Chicago or another inland facility before continuing to the East Coast.

The chart on page 122 shows the largest U.S. ports, where most international container traffic hits the rails. A perennial problem is that after their contents are unloaded, containers often make the return trip empty.

Typical international container schedule