

## **Rail Intermodal Container Access**

Input from various manufacturing and food processing firms in the South East Minnesota region noted a consistent desire for better access to railroad container transportation. The issues revolved around congestion and a poor rate structure for import and export container shipments through the Twin Cities, no direct or expedited service to the Pacific southwest ports of Los Angeles/Long Beach, increasing trucking costs to reach Chicago or Kansas City, and poor equipment availability in terms of empty containers. Several food shippers faced a further complication with the need to access refrigerated equipment. In spite of all these issues, virtually every interested shipper saw a great potential for better market access, especially foreign exports, if additional container terminal capacity or the start-up of a nearby facility could be arranged.

### **History and Background**

Containerization arose from a trucker's desire for better transportation freedom along the East Coast. Malcolm McLean, despite numerous federal and business roadblocks, started a coastwise shipping business in the mid-1950's and quickly realized a competitive advantage. His concept of truck vans moving by ship rather than road quickly morphed into a system of standardized, sealed containers, free of rolling gear, to be loaded at specialized terminals onto specially equipped vessels. Loading and unloading cranes became dockside gear instead of ship gear, improving efficiency and simplifying the vessel operations. McLean's idea became the basis of the first international container shipping firm, Sea Land. By the 1960's the ocean carriers were adopting the concept wholesale. A direct result was a huge boost on dockside productivity, drastically reduced dwell times for cargo in warehouses and intermediate transfer points, improved security, and reduced damage to cargo. What began as a premium service soon was driving prices down and opening up a new era in international trade.

Containerization allowed the retirement of a whole industry of intermediate shipping agents who would touch an international shipment and add costs, including truckers, brokers, consolidators, packers, warehouses, wharf companies, stevedores, ocean shipping carriers, shipping and customs agents, bankers insurer, and foreign agents. Sea Land and others demonstrated a trend toward single source shipping services, aided by the cargo staying in their hands throughout the entire trip. The United States was a driving force in this evolution, particularly with deregulation in the 1980's, land transportation innovations such as the land bridge and double stack articulated container trains, and electronic transmission of data. This led naturally to the advent of the third-party worldwide logistics provider in the 1990's, which finally succeeded in making both domestic and international shipping truly seamless and totally reliable, at a competitive price.

Figure 1: Ocean Carrier Marine Container Terminals



Figure 2: Double Stack Container Train



This trend also led to intense competition in price and service between the ocean carriers. By the late 1990's, U.S flag carriers had all but disappeared. Increased trade, spurred on by deregulated pricing, led to larger ships and terminals to capture more efficiencies. The resulting lower costs then allowed competing rates to fall even lower, in what for almost three decades became a continuous downward spiral. Shippers themselves kept up a relentless pressure as big chain retailers and off-shore manufacturers gained dominance in industry after industry. The incessant cost pressure caused the concentration of cargo into major trade corridors, often anchored in the western U.S. at a few major inland cities such as Chicago and Memphis. As the trend continued, shippers in intermediate markets found themselves at a disadvantage in terms of cost, service, and availability of the containers or 'boxes' they needed for shipments.

### **The Inland Dilemma**

The Class I railroads, in particular BNSF and Union Pacific west of Chicago (including their predecessors), at first came to the intermodal revolution reluctantly. The ocean shippers first commissioned and implemented land bridge services and then double stack unit trains. As the traffic grew and the container services became major profitable business centers for the railroads, they in turn consolidated their investments into the major long-distance corridors and the end-point terminals. They retired a host of small "piggyback" terminals in various cities, opting instead for a few major container yards spaced 400-500 miles apart or more. This maximized their return on a highly mechanized, capital-intensive operation and reduced total labor costs. They and shippers relied on truckers to do the final distribution and deliveries, and to collect cargo back into the major terminals. In a period of low fuel prices and intense competition between deregulated truckers, this was a good financial strategy.

Enter the mid-2000's and the world began to change. Fuel prices shot up, putting truckers at a cost disadvantage. At the same time, new "hours-of-service" rules, carrier safety rankings, and more restrictive insurance terms began to reduce driver's ranks and productivity, creating a trucker's shortage even in the middle of the Great Recession. Declining infrastructure conditions and increasing urban congestion further hindered trucking from the large inland terminals and the centralized distribution centers. In response, importers began to unload cargo near the ports, and began trucking them to smaller, regional distribution centers (DC's), reducing their exposure to inefficiencies and disruptions in the conventional supply chain. The shorter hauls to and around the regional DC's allowed better utilization of scarce truckers who are working fewer hours over a smaller range. Ocean carriers also moved toward reducing their costs, giving incentives to customers not to move containers inland and leaving them empty without export loads. This pattern of empty container imbalances had always created a repositioning problem for the ocean carrier who owned the box. They realized that nothing was

more inefficient than the cost of moving an empty container on a train or a ship back to its origin with no revenue being produced. Once they had fewer containers in the inland terminals, they also generated savings in maintaining fewer chassis, and improving container utilization by not having them idled away from the main corridors.

The railroads did their part to cooperate in this increasing inland service dislocation. Always conservative in capital investment, the rail carriers protected their major terminal investments and maximized their profits by pricing smaller and intermediate terminals above the competitive rates they maintained on containers moving through the major urban terminals. A prime example is the Twin Cities, where the basic container rate to ship a container from the West Coast to Minneapolis or St. Paul is as much as \$700 higher than for a container moving on to Chicago, making it a break-even cost proposition to truck the container back to the Twin Cities after it has passed its ultimate destination. This reflects both the extreme congestion in the Twin Cities terminals that would require major investments to fix, and the desire by ocean and rail carriers to maintain economies of scale while minimizing empty equipment positions outside the major hubs.

This led to the dilemma of small market and inland shippers, particularly exporters. Just as new specialty manufacturing and unique products such as identity-preserved grain and feed supplements were increasing their overseas markets, the supply of containers began to dry up. That meant higher transport prices for the exporters and a threat to their new markets. The same driver shortages, supply system unreliability and high fuel costs that were reshaping the high-volume import traffic were also working against the inland exporters keeping new business. The immediate alternative was to truck an empty container in from Chicago, load it, and return it there, or truck it directly to a major hub like Chicago and Kansas City and pay the cost of transloading the cargo from truck to container, a penalty in cost, time, possible cargo loss or damage, and paperwork.

This situation has rekindled a desire with inland, small market shippers for more and closer container terminals that would theoretically restore their shorter truck hauls and their access to empty containers. This situation was already occurring on the East Coast, where road authorities have begun subsidizing rail container operations in order to get trucks off of grid-locked freeways. In contrast, western railroads, heavily invested in their large terminals, high-velocity train networks and short of excess capacity, were hesitant to explore options that might reduce their unit profitability and raise labor and equipment costs.

### **Possible (alternate) routes to success**

In the face of these challenges, some alternatives have proven successful. A possible formula for success is outlined below..

1. Short Line or motivated Class 1 RR;

Not enough can be said about a rail operator with an entrepreneurial spirit who is focused on new business development.

2. Anchor Customer;

A single large import customer can be a key toward paying the bills of a small operation, and generating empty boxes for exporters willing to partner with that business.

3. Realistic service expectation (less than JIT or daily, virtual ramps, cost and operations sharing);

Even if a small terminal is on a major mainline, the railroad may not want to stop a train daily for a few cars. A short line or branch line operation will want to collect enough cargo to make the long haul connection attractive to the Class I. The service expectations of the exporters and importers need to coincide with the efficiency expectations of the carriers.

4. Consistent volume & Consolidator;

The volume of shipments needs consistency to remain not only attractive to the carrier, but predictable in order to maximize efficiency and contain operating costs. This applies to terminal operations as much as to train operations. A local party, possibly a consolidator or third party logistics firm, can serve an invaluable service by coordinating shipments and volumes.

5. Carload lots outbound;

An exporter cannot expect to ship short-distance or less-than truckload lots from the local container terminal. Expectations to the contrary, the local container terminal does not qualify as a full-service shipping point similar to a warehouse or a UPS store.

6. Balance of traffic in and out;

For each container load in, a container load of outbound cargo has to be ready. An imbalance of trade will doom a small terminal much faster than a major container yard.

7. Mix of traffic and customers;

In order to create a consistent and balanced cargo flow, and grow the business, diversification is a key strategy. The larger and more diverse the pool of shippers, the more options present themselves to cover available equipment.

8. Long distance moves (import/export model);

A container train is most profitable operating as a regular unit over long distances, maximizing speeds, crews, fuel, and track space. Import and export trade over the same port is the best transportation model to produce this high utilization of assets.

Two small Wisconsin container operations are examples of what might be done with proper collaboration and cooperation. Ashley Furniture in Arcadia, Wisconsin, has their headquarters and a major furniture plant and warehouse on a branch of the Canadian National (CN). They have developed a double-stack container operation that is private but sustainable. They ship anywhere from 60-150 containers per week, receiving components and low-cost furniture from the Far East, and exporting other finished furniture lines to balance the moves. They provide the terminal crews and chassis for the operation, while CN services the plant two or three times per week.

Chippewa Falls, WI, is a small public terminal originally opened in 2012 to import retail goods for Menards, the Eau Claire-based national home improvement chain. Menards transportation management and logistics specialists arranged other businesses to provide export backhauls, initially Distillers Dried Grain supplements from local ethanol plants. CN and other firms extended the business with additional ocean carriers and shippers, doubling the size of the operation in the first year. Although it is only a small fraction of the 50,000 lifts per year that CN would like to have, the low cost operation and balance of trade make it workable. Gate operations are provided by a remote office through a card reader and a speaker, while train operations are provided twice a week with connections to Prince Rupert Sound on the Canadian Pacific Coast. Track was used at an existing yard, and only partial paving of the truck yard and loading apron were added. Container stuffing of the export containers are done both on dock and at remote sites as convenient.

Figure 3: Loading DDGS into Export Container, Chippewa Falls Container Terminal



Figure 4: Container Top Handler Loading Double Stack Cars



Other low-cost operations models exist around the country. A key to these are having a low entry cost with minimal investment in the initial terminal facility, but scalable to a larger size if the situation warrants. Container handling machines, while expensive, can often serve multiple functions such as these reach stackers or a rubber-tired crane. The footprint of the terminal does not need to extend beyond available land or tracks if the start-up is planned with some flexibility.

Figure 5: Small Multi-track Container Terminal with Reach Stackers





Figure 6: Small Multi-track terminal with Rubber Tired Gantries (RTG's or rolling cranes)



The lessons learned from industry interviews and observations do not minimize the challenges, but do emphasize the opportunities in collaboration between shippers and the carrier in a local area. These points are the takeaways that might work in a small market area such as Albert Lea in Minnesota, where an existing downtown rail yard, mainline access to a Class I railroad, local switching availability, local logistics firms, and existing container shippers might make such an effort workable.

- Consolidate & Collaborate: Both cargo and shippers need to cooperate and be willing to coordinate efforts
- Recognize Costs: The operation has to make economic sense, whether in lowering railroad or terminal costs or establishing long term shipping or service commitments.
- Partner: Short lines, shipping lines, economic development agencies, public sector (for the sake of economy-the 'Big Picture') should all be at the table and contributing
- Utilize Logistics Firms; They have established customers and carrier contracts, and are in a position to generate business for the terminal.
- Recognize Limitations of Logistics Firms: They are for-profit businesses and will operate out of self-interest. They cannot substitute for the engagement of the partners.
- Look Ahead: Opportunities are coming. As other firms and commodities emerge in an area, it may create the tipping point for a new terminal venture that doesn't currently

exist. The upgrading of rail lines and establishment of new double stack corridors may also be the key to new and sustainable intermediate terminals.