CURRENT AND FUTURE OPERATIONAL CHALLENGES OF INTERMODALISM

BY
LORENZ ROBINSON
American President Lines

Any discussion of intermodalism has to recognize that the container is the backbone of the intermodal system. The container industry is only about 30 years old. When containers first came into being, the steamship lines were involved in a very simple type of port-to-port service. The ships would come into the dock and unload the containers. The problems in handling and delivering the containers inland were not the shipowners' problems.

Then there were new innovations like landbridge, transcontinental moves, mini-landbridge from one coast to another, and micro-bridge which took the cargo from a coast to an interior point. We have now evolved to the point in intermodalism where just-in-time service, through bills of lading, and single carrier liability are realities.

Intermodalism has caused changes in the types of ships used to carry containers. The ships have gotten larger, starting off with ships capable of carrying 500 TEU to ships today with capacities of 4,500 TEU (twenty-foot equivalent units), a nine-fold increase. The bridges and engine rooms have been automated, enabling crew reductions of about 50 percent. "Steamship" is a misnomer because just about every ship is now diesel powered. Diesel engines are about 30 to 50 percent more fuel efficient than steam vessels. Instead of just one crane operating on a ship, as many as four cranes operate on a single ship.

Containers themselves have evolved from lengths of 20 feet to lengths of 35, 40, 45, 48 and even 53 feet. The standard width of containers was 96 inches for a long time, but now there are 102-inch wide containers. The height of containers has increased from 8 feet to 9-1/2 feet.

The inland rail shipment of containers evolved from the use of piggyback service to double-stack service. Overnight, the train went from carrying a maximum of 100 FEU (forty-foot equivalent units) to as many as 280 FEU as an average.

The shipping public has benefited from the evolution of intermodalism. The inherent advantages of containerization are reduced theft, damage and cargo handling.

Lower rates to shippers have resulted from economics of scale and improved productivity. For example, a shipment of a 40-foot container from Korea to New York in 1984 would have cost $4,623 Today the average is about $4,003. Domestic service improved as well. In 1980, it would cost about $1,625 to ship a container from the Midwest to Los Angeles. By 1984, the cost was down to $1,350, and to $950 today. Along with costs, transit times have been cut. Shipments from Asia to the East Coast have been reduced from 30 - 35 days to as little as 15 days.

The main thing today is to increase productivity. Intermodalism, with its inherent advantages to shippers and consumers just cannot progress much further without significant productivity improvements.

What are the challenges of the present and future?

Let's first look at the bigger ships, as large as 4,500 TEU. Typically, ships in a liner service would run in a deployment of 4, 5 or 6 matched vessels on a 28, 35, or 42 day turn around, which is 4, 5 or 6 weeks. As ships have gotten bigger, requiring 2,000 - 3,000 container lifts in each port, as many as four cranes are used to work these ships which is perhaps the practical limit.

Despite the larger ships, more containers to be lifted and a limit on the number of cranes, it is still desirable to maintain a 4, 5 or 6 week cycle. To provide this service, labor productivity needs to improve. In Asian ports, they get 30 - 45 container moves per hour as an average. In the U.S., we are lucky to get 25 lifts.

In terms of crane productivity, we are improving the hoist and trolley speeds. Dual hoist systems are being installed with two trolleys working in tandem, one from the ship to a platform and one from the platform to the ground. The entire movement can be automated.

The steamship lines are going to have to introduce operating discipline. Every line has a cargo cut-off, where if your cargo is not at the terminal by a certain day and time, it can not make the ship. Otherwise, you have cargoes dribbling in at all times up to the sailing time.

Better inbound stowage is needed. You often have "cherrypicking" where a crane handles 10 boxes at one hatch, and then it moves to another hatch to get 5 more, and so forth. It takes about 10 minutes each time the crane is moved. This lost time cannot be made up.

The big ships have facility problems. They require that deeper and wider channels be dredged. It takes a Congressional authorization and years to accomplish a project. A ship can wait for the tide, but every hour you wait is costly and may disrupt your sailing schedule.

On the rail side, we need 20 feet of tunnel and bridge clearance. Many ship lines are using greater numbers of 9'6" containers. Stacking two of these containers is 19 feet of boxes. You have 10 inches that the boxes are sitting off the rail. You have to have 20 feet, and there are a lot of major rail routes that do not have 20 feet through tunnels and under bridges.

In some cases, there is self-help going on to improve rail access. APL, UP and the Port of Oakland are each putting up $5 million, or one-third of a $15 million project, for 46 rail improvements between the port and the Nevada border.

Some of the cities in which APL operates, and Los Angeles is the best example, are approaching highway gridlock. If one of our large ships drops off 2,000 containers, 1,400 to 1,500 of those containers may have to go to the railroad.

In L.A., one railroad is four miles away and the other is 25 miles away. A trip to this far yard is a 50-mile roundtrip. We need on-dock or near-dock rail facilities to help relieve the highway gridlock, improve fuel conservation and increase the availability of trucks.

When double-stack service started, loads were increased by up to 400 FEU's per train. We are now looking at this reverse. A lot of the products moving in boxcars and in trucks can be moved in containers on double-stacks. So, to provide faster, more frequent service we are considering running three or four 100 FEU stack trains daily instead of one daily 400 FEU train.

There are trade-offs that have to be looked at in intermodalism. The most obvious one is the cost of land versus the cost of labor and equipment. If you want to store all your containers on wheels in a port, as is typically done in a rail yard, it takes a lot more land in the port. Land is getting more expensive and ports are running out of land, so I think you are going to see movement towards either a lot more ground stacking or a mix of wheel and ground storage. In our case, about 65-70 percent of our traffic is intermodal, and it does not make sense to take a container off the ship, store it on the ground, and then an hour later pick it up to take it to the rail yard. So we are forced to use chassis operations to store containers. But, every chassis takes up room.

For every three loads from Asia that go east of the Rocky Mountains, there is only one export load coming back. What complements this 3 to 1 imbalance in international moves is domestic business which is heavily weighted westbound. But for us to go to on-dock or near dock rail facilities, the rails are going to have to get used to handling the international business, and ports are going to have to adjust to handling domestic business.

Looking to the future, we will have direct ship to train transfers with rails right under the cranes, which will eliminate the need for trucking or storage. Other improvements could involve automated cranes to load and unload trains. Also, there may be automated container freight stations.

INTERMODAL TRENDS AT WEST COAST PORTS AND THE ROLE OF THE U.S. ARMY CORPS OF ENGINEERS

BY
JAMES R. HANCHEY
U.S. Army Engineer Institute for Water Resources

The Corps of Engineers has long been active in developing the nation's harbors and waterways. Studies of improvements for both deep- and shallow-draft navigation projects are directed by the Congress and the Administration, primarily to assist in determining the scope and dimensions of required navigation improvements to assure the continued viability of the nation's excellent system of ports and waterways.

Some of the world's largest and most modern deep-draft ports are found along our nation's West Coast. The principal West Coast ports for container traffic include Seattle/Tacoma, Oakland, and Los Angeles/Long Beach. The rapid growth of the West Coast ports makes them an ideal example to illustrate the