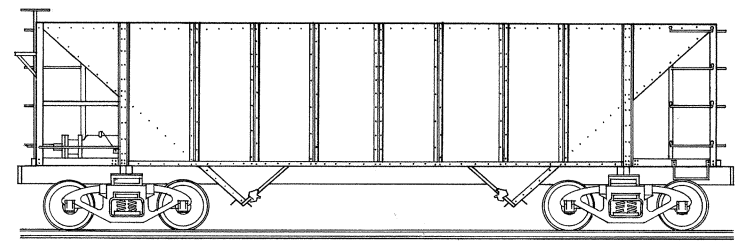


# TRANSPORTATION TECHNOLOGY

## NARROW GAUGE AND THE EBT

The East Broad Top Railroad was constructed just before the start of an 1870s-1880s American railroad development phenomenon referred to by historians as the "Narrow Gauge Fever." The term "narrow gauge" refers to any railroad with a space between the inside edge of the rails less than the standard four feet, eight and one-half inches. The proponents of narrow gauge railroads touted lower construction costs and greater operational efficiencies with the use of smaller, lighter railroad track, locomotives, and equipment. Unfortunately, the economic realities encountered by most narrow gauge railroads did not satisfy the expectations of their promoters and builders.

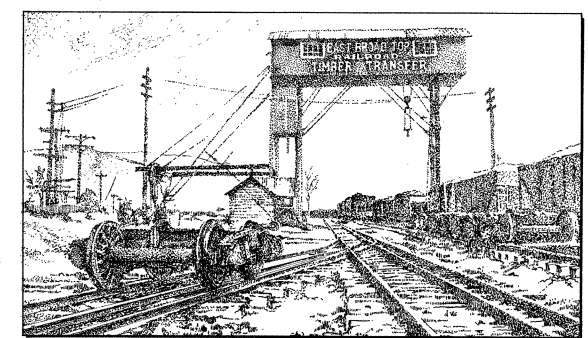
Narrow gauge freight cars were said to have a better tare (empty)-to-net (weight of cargo) ratio than standard gauge cars. The true handicap was that they simply held less payload per car in an industry in which profit was based on volume. Another disadvantage to narrow gauge was the manual transfer of general merchandise freight that was required at interchange points where the track gauge changed, which consumed valuable time and labor. Although some slight construction cost savings were alleged, the use of narrow track gauge never delivered the savings that were promised, and the movement was generally considered a failure. The EBT responded to these challenges by developing technological answers to the two biggest problems faced by all narrow gauge railroads—maximizing ton-miles, and smoothing transfer of freight.



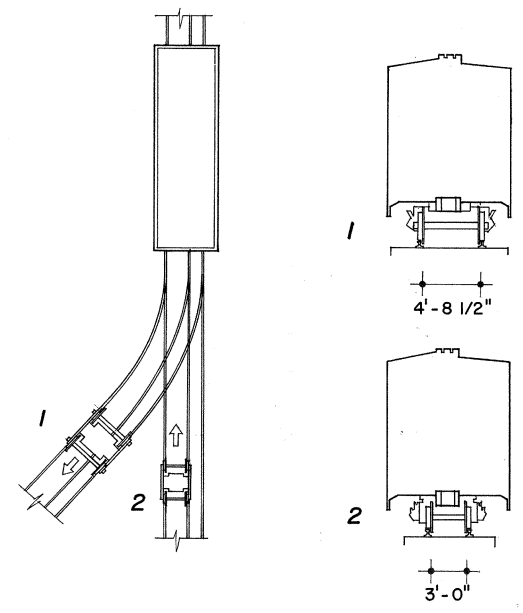
Based on drawing in *East Broad Top*, by Lee Rainey and Frank Kyper, 1982.

## HIGH CAPACITY HOPPER CARS

Coal represented more than ninety per cent of the EBT's traffic volume. In 1913-1914, the EBT purchased its first all-steel coal hopper cars from the Pressed Steel Car Co. of Pittsburgh, Pa. These forty two-bay hoppers had a capacity of 60,000 lbs., and were essentially a scaled-down version of a standard gauge car. The EBT was not satisfied with the capacity of the cars, however, and embarked upon a car reconstruction program. Between 1927 and 1936, the Car Shop rebuilt the PSCCo. two-bay cars into a three-bay configuration that raised the capacity to 70,000 lbs. Later, the EBT constructed their own 70,000 lb. steel hoppers, and boosted their capacity to 80,000 lbs. by adding a fourteen-inch high steel band around the top edge of the car. All told, the EBT purchased or built 288 steel hopper cars, the only fleet of such cars ever built for narrow gauge service. Utilization of these cars enabled the EBT to move a greater volume of coal per freight train, and increase revenue by better utilizing the throughput capacity of the railroad and the coal preparation plant.

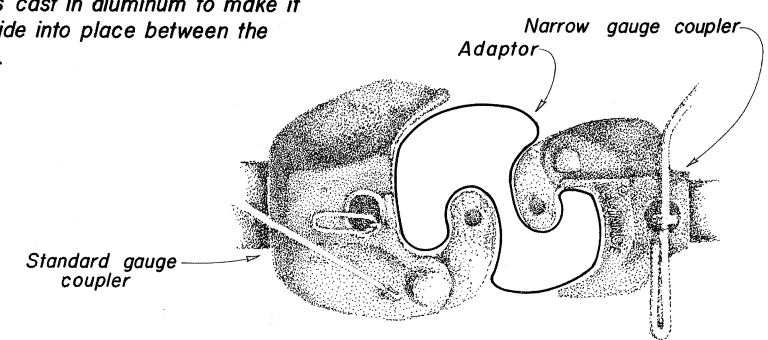
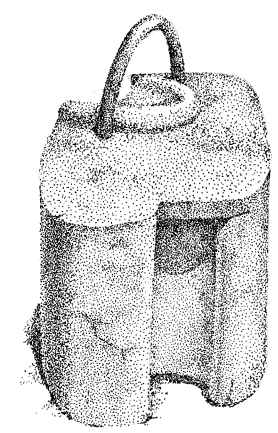


Based on photograph in *East Broad Top*, by Lee Rainey and Frank Kyper, 1982.



## ALUMINUM COUPLER ADAPTOR

Freight car truck gauge was not the only compatibility problem encountered by the EBT when it began to use the timber transfer. Narrow gauge end couplers are three quarters the size of standard gauge couplers, and are also mounted slightly lower. In order to make the couplers compatible, the EBT employed a coupler adaptor, which was cast in aluminum to make it easier to lift and slide into place between the dissimilar couplers.



## THE TIMBER TRANSFER

In the early 1930s, EBT general merchandise freight traffic began to suffer from competition from highway freight trucks. In 1933, the EBT converted the unused former McKelvey Brothers Lumber Company railroad timber transfer crane, located at the Mount Union freight yards, into a freight car truck (wheel set) transfer apparatus. The timber transfer straddled two tracks on which incoming standard gauge freight cars were spotted. The crane lifted one end of the car, and the standard gauge truck (1) was rolled out from under the car, through a switch, and onto a side track. The standard gauge truck was replaced with a narrow gauge truck (2) from the main track. This truck swapping process, which took less than half an hour, was repeated for the other end of the car, and reversed when the car returned to Mount Union to travel off-line. The wide standard gauge cars were not as stable on the narrow gauge trucks, as their higher center of gravity and greater width made them sway from side to side. Specially modified trucks were used to better absorb the motion of the cars, which still had to be handled carefully over the road. All kinds of standard gauge cars came through the timber transfer, including traffic bound for the construction of the Pennsylvania turnpike in 1939 and 1940. The timber transfer eliminated the breaking up and reloading of boxcars containing general merchandise freight between boxcars of different gauges, and encouraged shippers to continue to use the EBT instead of highway transportation.

