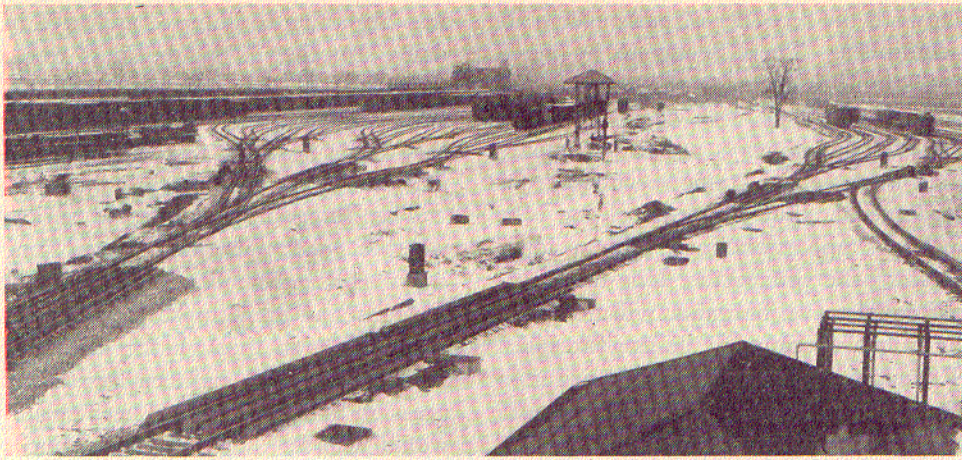


The Old Yard Is at the Left and the New at the Right



# The Erie Installs Retarders in Marion Yard

Capacity of yard increased and operating cost reduced

THE Erie has recently completed the installation of car retarders and power switch machines in its reconstructed westbound classification yard at Marion, Ohio. As a result of these improvements, the operating cost of handling cars through the yard has been reduced approximately 40 cents per car, and the capacity of the yard has been increased to such an extent that classification formerly handled at other yards is now being done in Marion.

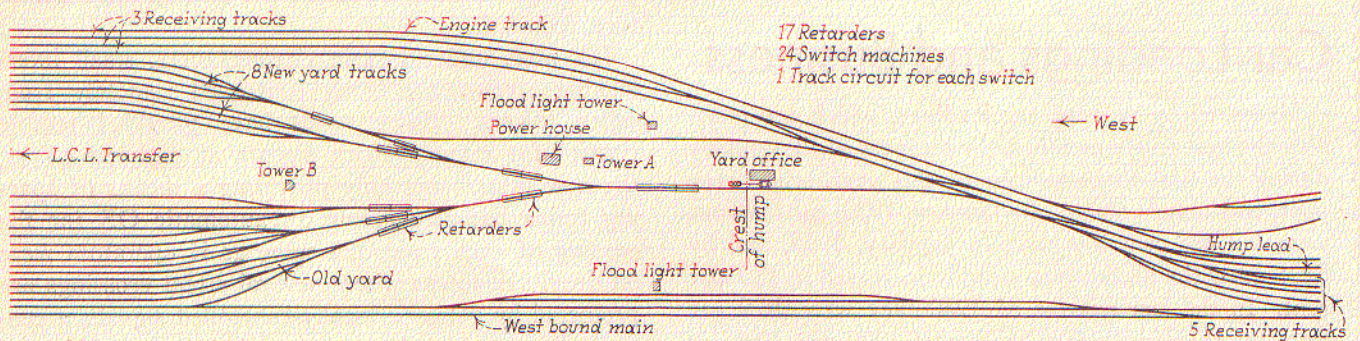
## Operating Problems

Marion is located 269 miles east of Chicago on the main line of the Erie from which point a branch line extends 144 miles southwest through Dayton, to Cincinnati.

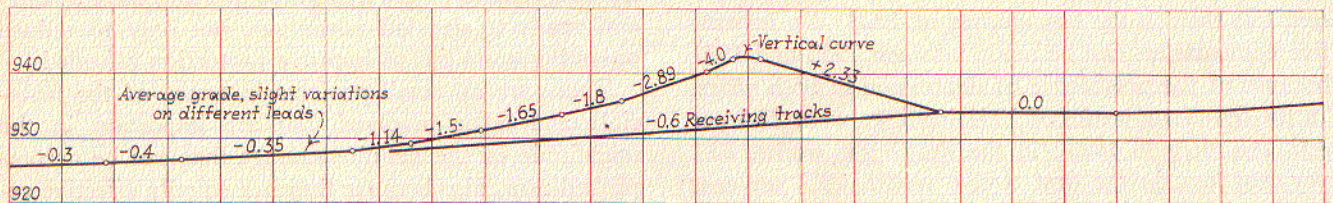
The St. Louis, Mo.-Cleveland, Ohio, main line of the Big Four connects with the Erie at Marion and operates jointly with it for 21 miles to Galion, Ohio. Within the limits of the interlocking at Marion Junction, the Erie is also crossed by the Toledo main line of the Chesapeake & Ohio, and the Sandusky-Columbus line of the Pennsylvania.

When coal traffic is moving, the Erie receives from 500 to 600 cars from these connections daily. In addition to this coal, the westbound traffic classified at Marion includes merchandise and manufactured products from the east, and numerous empty refrigerator cars for fruit and meat service.

The westbound classification facilities at Marion were



- 17 Retarders
- 24 Switch machines
- 1 Track circuit for each switch



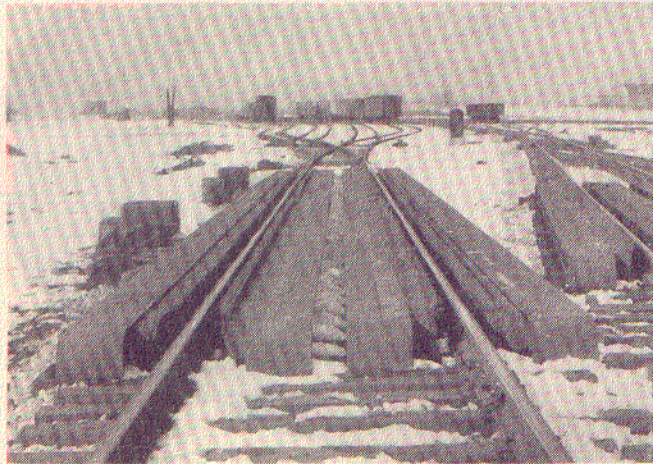
Plan of Yard Layout Showing Grades

improved in order that complete classifications could be made for connecting lines west of Marion and for the Chicago gateway, as well as for certain industrial districts and freight stations on the Erie in Chicago. Thirty separate classifications are now being made in the new layout with 24 yard tracks. Approximately 3,000 westbound cars can be classified daily, as compared with a maximum of 1,629 cars under the old system of rider operation in vogue a year ago.

### Yard Improvements

The old westbound yard included 16 tracks lying in a general east-and-west direction north of the main line. An l.c.l. freight transfer station was located just north of this old yard, and although it is planned to move these facilities elsewhere within the next few years, it was not necessary to do so in order to enlarge the yard, because the eight new tracks were located north of the l.c.l. transfer. Therefore, this arrangement leaves space for 12 additional tracks when the freight transfer is relocated.

The limitations occasioned by the location of the enginehouse and highways did not allow space for the construction of an adequate receiving yard east of the hump.



A Four-Track Group in the New Side of the Yard

Therefore, as a means of getting out of the way a westbound train that arrives when another train is being humped, a three-track receiving yard was constructed alongside and north of the classification yard. This arrangement has occasioned no serious inconvenience.

The new arrangement necessitated that the hump be relocated near the center of the enlarged track layout. New leads were built from the new hump to connect with the 16 tracks in the old yard and the 8 tracks in the new addition. The capacity of the tracks varies from 39 to 125 cars, with a total yard capacity on the classification tracks of 2,000 cars. The natural slope of the ground in this area is westward, and a fill varying from 3 ft. to 13 ft. required approximately 76,000 cu. yd. of clay, with a top dressing of cinders. New 110-lb. rail with treated ties and crushed rock-ballast were used down the hump and throughout the retarders and switches, while 100-lb. relay rail with gravel ballast were used on the yard tracks.

In designing the grades down the hump and throughout the yard tracks, consideration was given to the fact that many empty cars were to be classified. The climatic conditions and the fact that the prevailing wind is from the southwest also entered into consideration. As shown

on the diagram, the grades on the hump range from 4.0 per cent to 1.65 per cent, gradually reducing to a non-accelerating grade of 0.3 per cent on the tangent yard tracks beyond the switch leads.

The leads in the old yard were arranged on the V-ladder principle, whereas those in the new layout are in five groups of from four to six tracks each. Each group is served by one double retarder, while seven more retarders are located in three groups on the main leads and hump, as shown on the diagram. This grouping of the tracks reduced the number of retarders required to a total of 17, and, in addition, gives quicker separation of cars destined to the different tracks, thus speeding up the operation of the yard.

The 24 classification switches are power-operated, and track circuits and detector locking are employed to prevent a switch from operating under a car. Each track circuit extends a minimum of 20 ft. in the approach to the switch points, and 34 ft. back of the point. The switches, together with the retarders are controlled from two towers, with one operator in Tower A and two in Tower B. Teletype equipment is provided for making switching lists in the yard office and in each of the towers.

The retarders and power switches are of the electro-pneumatic type, and together with the signals, were installed by the Union Switch & Signal Company. The Model-28 car retarder used in this yard provides automatically for car wheels to drop back on the rails if they should inadvertently be pinched out of the retarder.

### Improvements in Yard Operation

With the operation in the old yard, a crew, consisting of a conductor, 12 riders and 3 switch tenders, was employed to handle 1,200 or more cars daily, the maximum being 1,629 cars. While the yard costs are not separated as between westbound and eastbound yards, the records show that the operating costs were about 94 cents per car a year ago when an average of 2,300 cars were handled daily in both east and westbound yards, which compares favorably with the traffic now being handled. The eastbound yard is operated by yard brakemen and car riders as before, the only improvement in layout or equipment being in the westbound yard. However, certain economies have been accomplished by improved methods of operation in the yard as a whole during the year.

As a result of these improvements in yard layout, equipment, and methods of operation, it has been possible to reduce the number of yard engines required; where 28 daily were required a year ago, the number now ranges from 11 to 18. Additional economies, including the reduced cost of operating the westbound yard, now equipped with retarders, has reduced the average operating cost for yard service from 94 cents a year ago, to 50 cents per car classified in both yards, and operating officers estimate that about 32 cents of the saving per car has been brought about by the new westbound yard layout and retarder equipment.

The yard improvements cost \$597,000, including \$240,000 for the retarders, power switches, signals, compressor equipment, Teletype system, floodlighting layouts, etc. On the basis of the present number of cars handled, an annual saving of approximately \$175,000 is made, which represents a return of approximately 30 per cent on the investment. Furthermore, as explained previously, the operating expense will be increased so slightly that the cost per car will be decreased rapidly as traffic grows and as the classifications now made at Hammond, Ind., are transferred to Marion.