South Shore Reconstructs Interlocking

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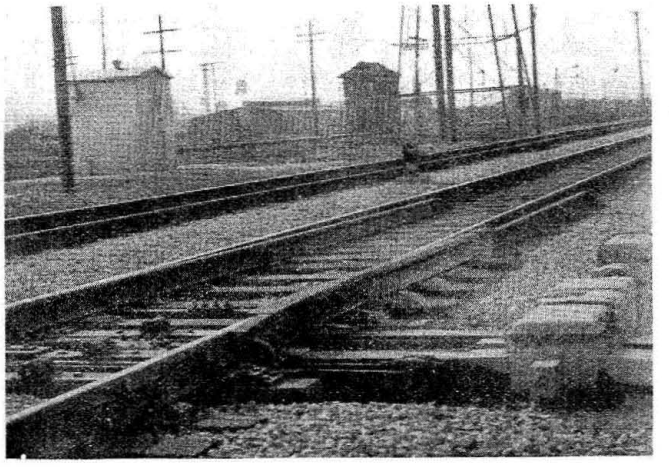
THE Chicago, South Shore & South Bend has completed its track realinement project at Burnham, Ill., brought about by a revision in the state highway layout. At this point the South Shore's double track runs east and west and, approaching from the west, runs parallel with two other railroads on its south and a highway on its north, but about a quarter of a mile west of Burnham the line formerly made a reverse curve, crossing the highway at grade and causing a separation of approximately 500 ft. between the South Shore and the other railroads. The South Shore, as well as the other two railroad lines are all crossed at Burnham at about right angles by a single-track line of the Pennsylvania.

The revised state plans called for rebuilding the existing highway and the construction of a new 60-ft. highway running north and south, nearly parallel with the Pennsylvania. This would involve two additional sets of grade crossings, one with the South Shore alone and one with the other two railroads 500 ft. south.

By eliminating the reverse curve and moving the South Shore tracks south about 80 ft. in the vicinity of Pennsylvania crossing, the South Shore grade crossing with the old highway was removed, and only one grade crossing of three railroads is involved for the new highway, and a tangled traffic situation is considerably simplified.

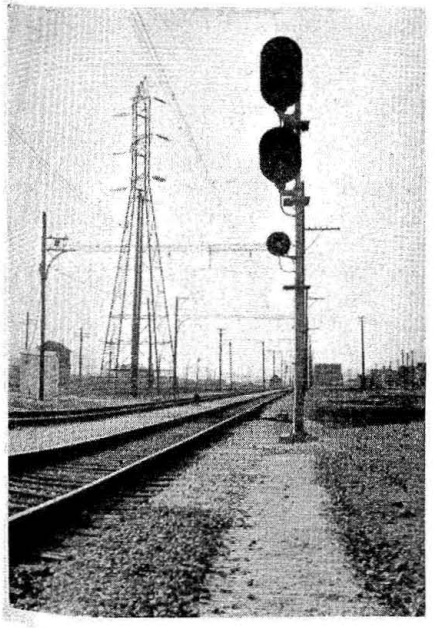
The South Shore is protected by normal and reverse running derails at the Pennsylvania crossing controlled by a part of the 53-lever mechanical interlocking machine which also serves the crossing of the Pennsylvania and two other roads. Color-light signals with a call-on unit on the home signals were added some time ago; tail-lever circuit controllers were applied to the necessary levers for their control. It was decided that while the track changes were being made, it would be advisable to remodel the South Shore's part of the plant and make it all electric. This was done by the addition of forced-drop electric locks and tail-lever circuit controllers to the machine and installing d-c. low-voltage switch machines on the derails. The signaling for the other roads was not changed.



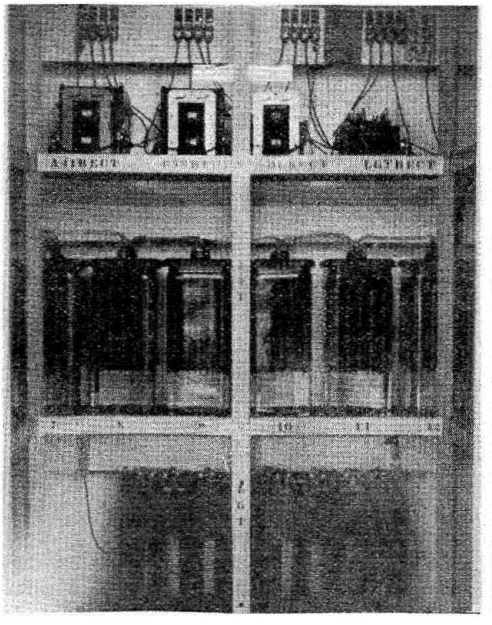
Electric switch machines operate the derails

Available space in the tower was inadequate to house the additional control and operating apparatus, therefore, a small cabinet was built in the lower part of the tower to house the KR relays, approach, call-on sticks, locking, track repeaters, track-repeater sticks, home signal HR relays, and a transformer to light the track model. To accommodate the rest of the equipment, two concrete houses were used, one at each end of the plant, about 500 ft. from the tower.

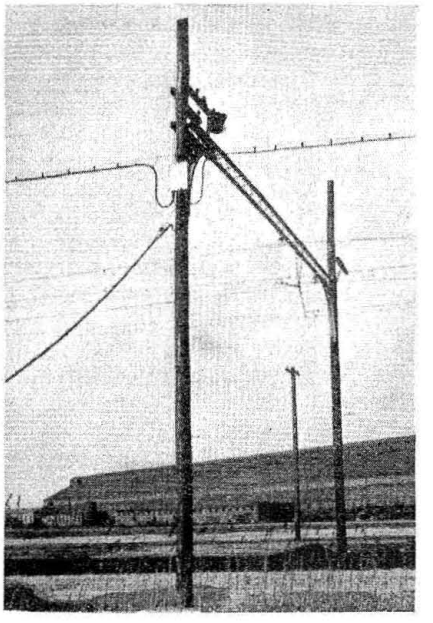
Each house contains two sets of switching operating batteries, one set for the entering derail and one for the back-up derail. Each of these batteries are made up of 12 cells of 160 amp. hr. capacity cloride accumulator type. All line circuits are operated from one set of five cells of the same size and type while standby signal lighting is provided by a set of eight cells of the nickle-iron alkaline type in each house. All batteries are trickle charged by copper-oxide rectifiers. The plant operates



New color-light signals on South Shore



Retifiers and battery in case



Aerial cable replaces open wires

on d-c. throughout except for track circuits and normal signal lighting which are fed from the a-c. supply. Each house also contains the track relays, transformers and resistors associated with its particular section of the track and the dwarf signal home relay, the call-on home relay, and the signal-lighting transformer. Detector track circuits extend on each track from the home signal to a back-up dwarf signal, with approach circuits to all four signals, annunciating in the tower.

All wires from the houses to the tower are in 16-conductor parkway cable and are carried directly from the function in the house to the bottom shelf of the tower relay cabinet which is arranged as a terminal board, using bakelite six-unit terminals.

Previously the control circuits through this territory for a distance of over a mile were carried as open line wires on "alley" bracket arms attached to the catenary poles on the north side of the tracks. As a part of the improvements, this open line was replaced by a 27-conductor aerial cable supported on the catenary poles on the south side of the track. The messenger is ⅜-in. galvanized stranded steel messenger with cable straps. At each break of the line cable, an aerial junction box is used; a cable made up of No. 14 single-conductor insulated wires extends to the function.

The line drops, on entering the houses, are terminated directly on lightning arresters, mounted above the top shelf near the cable entrance. The outside local wiring at the houses (to track, signals and movements) is in parkway, bootlegs being used for the track connection.

A new illuminated track model was added in the tower. This model shows all signals and track circuits, and in addition to the customary approach and detector track lights, the locked or unlocked condition of each derail is indicated by a light, which is extinguished when the derail is locked in either position, and lighted when unlocked. The purpose of this feature is to give the towerman a visible indication that the switch machine is in operation, so that in case the complete throw is blocked by ballast or snow, he can put the derail back in its original position before the thermal cutout operates, which requires a manual reset. The model board is suspended from the ceiling and wires to it from the relay cabinet on the floor below are brought up through conduit along the wall in back of the machine, across the ceiling and into the model from the top. Conduit is also run from the top of the tower relay cabinet to the machine for carrying lock wires. Clockwork time releases are used for route releases; emergency releases of the sealed push-button type are provided to give a call-on signal indication in case of a signal power failure.

Railroad Exhibits at the 1934 Fair

MORE than sixty of America's leading manufacturers, railways, and other organizations have joined hands to present, at A Century of Progress Exposition of 1934, a stupendous exhibit revealing the swift advancement and evolution of transport in the past 100 years. To emphasize the speed with which change is coming needs only to be pointed out that many of the features of this year's fair could not be shown last year for the reason that they did not then exist.

One example, to point out the newness of the leading features, is the six-car stream-lined 110-miles-an-hour diesel driven train which will be exhibited by the Union Pacific. As this is written this train is still in the Pullman shops, in course of manufacture. A similar train, consisting of three cars, was completed earlier in the year and is now in service in the west on the Union Pacific.

What the development of such a train means to the world of transportation can be illustrated by the following contrasting facts: A standard, conventional steam train of six cars weighs about 600 tons; the new six-car unit, 85 tons. A standard steam locomotive, high-speed passenger type, weighs 312 tons; the new type power unit, 20 tons. To operate a 10-car train of standard weight and construction, at 90 miles an hour, would require a 4,500 horsepower unit, which does not exist. Under the new streamline construction, with lighter cars, a 500 horsepower unit will do the job. The average modern locomotive has to be refueled every 100 miles; the new train, every 1,200 miles.

Nearby will be another new streamlined train, the famous Zephyr, property of the Burlington. This also has been placed on the rails since the World's Fair closed last fall. It, too, is diesel-motored and has flashing speed. The Zephyr, a three-car unit, is built of a new metal, stainless steel, shines almost like a mirror, and weighs only 80 tons, no more than a standard sleeping car. To emphasize the strides that have been made in railroad development the Burlington will also show for contrast early models of a steam locomotive and and express car.

The Delaware & Hudson railroad will bring to the fair a museum piece, an ancient locomotive dating back to 1827, to be shown alongside one of the company's most modern and massive high-speed engines. The Baltimore & Ohio will have two 600 ft. tracks in the outside transportation exhibit. On one track an exhibit illustrating the historical side of the railway coach and its evolution from 1830 to the present time will be shown. A new train with coaches equipped with "4-way conditioning" will be shown on the other track. This includes humidifying, dehumidifying, air-cooling and warming. Inside the Travel and Transport Building, the Baltimore & Ohio is planning extensive additions and improvements to its exhibit. The old "Atlantic" engine will be placed on a turn-table constantly in motion.

The Chicago & North Western will have both outdoor and indoor exhibits. Outdoors, in North Western Park, will be one of the company's big high-speed modern locomotives. Inside the Travel and Transport building it will have a "surprise show." Some mystery surrounds this but it is understood that it will be built around the scenic wonders along the line—the North Woods, Lake regions, Black Hills and other vacation spots.

The Pennsylvania System is contributing a replica of the famous "first engine," by John Stevens. This was built in 1825 by John Stevens, of Hoboken, N. J., and was operated on a circular track. Momentum was accomplished by use of a cogwheel which meshed with a cogged center-rail. The wheels were not flanged but were held on the rails with strange gadgets.

The Chicago, Milwaukee, St. Paul & Pacific is moving a part of its exhibit this year to the Great Dome of the Travel and Transport building. Here, in larger space, it will display one of its large 521,200-lb. 12-motored electric locomotives and a stream-lined air-conditioned coach; also a huge animated relief map showing mountains, streams, tunnels, bridges, etc. This map, 64 ft. long, portrays the characteristics of the country, from Harlowton, Mont., west to the Puget Sound country.

The Missouri, Kansas & Texas will have an exhibit showing the life and activities along the lines of the "Katy" system.