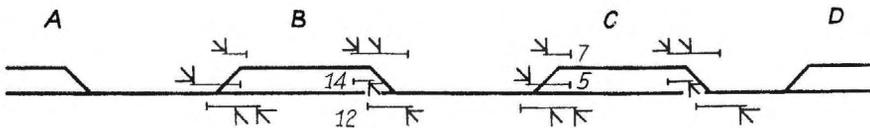


was shunted by a crossing train, and that, therefore, there was none left to be transmitted to the passing track. Peculiarly enough, this failure, which resulted from having in-

stalled too few joints, was overcome by bridging an insulated joint. The limiting resistances had to be re-adjusted according to the changed transformer connections.

Operation by Signal Indication on Single Track

"In a single-track territory, on which train movements are directed by signal indication without train orders, as shown in the sketch, the operator at A controls the switches and signals at siding B, and the operator at D controls the switches and signals at C. An



adequate arrangement of A.P.B. automatic block signaling and circuits is provided between the sidings B and C. With such an arrangement, would you, in addition, provide special check locking or similar circuits in the control of signals No. 5-7 and No. 12-14, which govern movements to the single track between the two sidings C and B?"

Problem Solved by Circuit Changes

J. H. CRAIG

Signalman, Atchison, Kan.

From the sketch and the wording of the question, I take it that the operator at D may clear signal 5 or 7 any time and is entirely independent of the operator at A. Likewise, the operator at A may clear signal 12 or 14 any time without consulting the operator at D. Now with only A. P. B. signaling between signals 12-14 and 5-7, it would be possible to clear signals 5 or 7 and 12 or 14 at the same time. Therefore, trains that are directed by signal indication may each have a clear signal to enter a block against an opposing train. And should each train enter the block at exactly the same instant, each may have a clear or proceed indication. The moment either train enters the block between B and C, the opposing signals are set in stop position.

I would correct this situation by breaking the control relay for signal 12-14 through the back contact of the control relay of signals 5-7. Signals 12-14 now cannot be in proceed indication unless signals 5-7 display their most restrictive aspect. Likewise, the control relay for signals 5-7 should break through the control relay of signals 12-14 in their most restrictive position. Signals 5-7 now cannot display a proceed indication unless signals 12-14 display their

most restrictive position. It is impossible now for signals at either end of the block to display a proceed indication unless the signals at the opposite end display a stop indication.

There is also another solution to this problem. Arrange for the operator at D to control signals 12-14 and break the control through signals 5-7 in their most restrictive aspect. Arrange for the operator at A to control signals 5-7 at C, and break the control through signals 12-14 in their most restrictive position.

Check Locking Essential

W. H. STILWELL

Signal Engineer, L. & N.,
Louisville, Ky.

The purpose of signals is to provide, first, safety, and second, facility in train operation.

An adequate system of A. P. B. automatic block signals will normally provide safety, but false proceed indications do occur occasionally as the result of storms or otherwise. If trains are operated by timetable and train orders, there is small chance for a false proceed indication resulting in a collision. If we take away the safeguards of timetable and train orders and operate by signal indications alone, some additional safeguards should be provided in the signal control circuits. Some form of check locking is essential.

In handling trains between stations B and C, there must be cooperation between the operators, in order that superior trains may be given preference. The check lock would compel co-operation, and, from this standpoint alone, it would seem justified. I would, therefore, favor the installation of some form of check locking.

Joint Co-operation Required

L. S. WERTHMULLER

Assistant Engineer, Missouri Pacific,
St. Louis, Mo.

Where train movements are directed in both directions on one track by signal indication without train orders, it is necessary to provide some circuit arrangement other than the typical A.P.B. signal circuit in order to insure the train movements are made in the order desired. This can be accomplished in any number of ways, but in the track and signal arrangement shown in the sketch, the clearing of signals 12, 14, 5 and 7 should require the joint co-operation of the men at both control stations.

While the A.A.R. has no requisites for movement by signal indication other than those covered in requisites for centralized traffic control, the actual operation of trains under either system is the same and the centralized traffic control requisites, in so far as they apply to safety, should be met in any installation of this kind.

Cold Weather Concrete Mixing

"When making concrete foundations, as for example at highway crossing signal installations, during cold weather, what is the most practicable method of preparing the mixture and protecting the foundations to prevent freezing?"

Use Heat

G. E. BECK

Supervisor of Signals, N. Y. C.,
Toledo, Ohio

For winter concrete there is no adequate substitute for heat. The water, sand and stone should be heated. For hand mixing, a piece of iron plate can