This attachment, if made of the movable type, should either rest on a crosspiece or a stop placed on the bottom side of the car sill. Most important of all, secure this to the car in such a manner that it will not come off and do, itself, what it is intended to prevent.

# Direct-Wire or Coded Circuits

*"What are the determining factors in deciding whether to use direct-wire or coded circuits for the control of an outlying layout including, for example, three switches and six signals?"*

## Three Factors

E. W. Reich
Signal Engineer, Reading, Philadelphia, Pa.

The determining factors in deciding whether to use direct-wire or coded circuits for the control of an outlying interlocking layout are: (1) distance from point of control, (2) condition of existing pole line, (3) future extension of remote control area.

Assuming that savings to be effected will be the same with either scheme of control, it has been our experience that coded circuits for control of a layout consisting of at least three switches and six signals is far more economical than direct wire unless the point of control is located at a distance less than three miles from the area controlled.

Direct-wire control of the minimum size layout referred to in the preceding paragraph would require not less than 30 aerial control wires, providing the circuit arrangement would be such that all indications be positive in so far as their control is concerned, and it follows, therefore, that the cost of erecting these aerial wires and strengthening existing line would more than compensate for the additional cost of code apparatus.

Control circuits for both switches and signals at any one interlocking connected to a C.T.C. system are complete in themselves and as a consequence, the entire circuit structure is simpler with C.T.C. and less likely to develop faults which may reflect in the operation of a considerable portion of the remotely controlled system.

C.T.C. form of control is, of course, far more flexible, in that future extensions generally merely require an extension of the code circuits.

In view of strides made in the development of C.T.C. apparatus and the reliability of this form of control employing coded communication circuits, it is felt that the field for direct-wire control has been very much reduced and that the future will find this limited to small layouts in close proximity to existing interlockings.

## Economy in First Cost

W. H. Hartman
Assistant Signal Engineer, C. & O. Richmond, Va.

For any outlying layout, irrespective of the number of switches and signals, where speed of manipulation is not a governing factor, the choice between direct-wire or coded circuits should be determined on the basis of economy in first cost, and for this purpose the determining factor is the distance between the control station and the outlying layout. This is due to the fact that the cost of equipment is higher for the coded system, while the cost of line circuits or cable conductors is higher for the direct-wire system.

It is, therefore, usually necessary to estimate on both systems in order to determine which will be the more economical, except when the distance is such as to leave no room for doubt.

## Local Conditions Govern

E. B. Pry
Supt. Telegraph & Signals, Pennsylvania Pittsburgh, Pa.

It is our feeling that local conditions will largely govern this matter. In some cases the outlying location may be rather close to the point of control and conductors are available in existing cables to take care of only the coded control arrangement, in which case it would be more economical to install the coded control rather than direct wire control as an additional cable would be required for the latter arrangement. Where no wires are available and it is necessary to provide conductors, it appears to be a matter of distance as to where the additional wires necessary for direct wire control would cost more than the coded equipment.

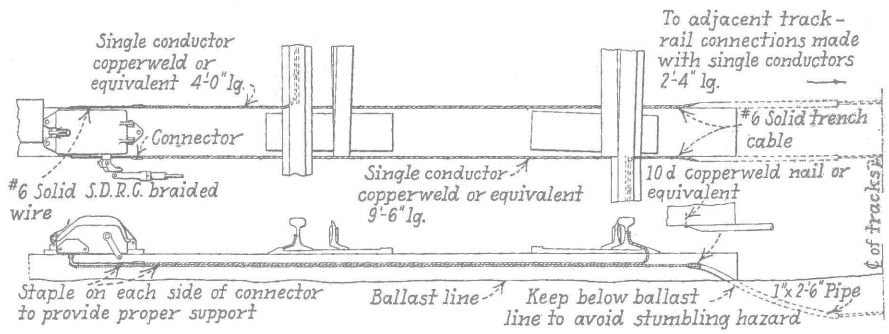
# Switch Box Connections

*"What are the advantages and disadvantages of using stranded bare cable stapled to the side of a tie, for connections between switch circuit controllers and rails?"*

## New Construction Tested

B. J. Schwendt
Assistant Signal Engineer, New York Central, Cleveland, Ohio

The accompanying sketch illustrates an arrangement using conductors stapled to the side of track ties for connections between rail connections and switch circuit controllers. We have had this arrangement on trial for several years at a number of test locations. So far they seem to be standing up nicely. The construction seems to be more permanent than the old scheme of wires in trunking, or the use of trench or parkway cable with bootleg outlets.




New arrangement of switch box connections