EDITORIAL COMMENT

Signaling Construction Methods

FOR several years during the recent depression, the construction of railway signaling facilities was at a minimum, being confined principally to comparatively small projects. As a result, there was little opportunity to improve on former methods of handling large signaling construction programs. In the meantime, new types of signaling apparatus have been developed, portable machines have been perfected for doing parts of the work, and many railroads now have an assortment of material-handling equipment available for use by the signal forces. Such equipment as "strong-arm" drilling machines, No. 2 shovels and concrete boards, expert but slow carpentry of trunking, and case wiring at the field locations, belong to the past, and may well be compared with more modern practices when planning an extensive program.

Power drilling machines, adapted for the application of any of the types of bonds applied mechanically, are not only available but have been developed to a high stage of operating perfection so as to give reliable performance. The previous procedure of setting stakes, constructing trunking and capping to fit, running wires, and making up bootleg connections in the field is a thing of the past. It is quite true that there is considerable pick and shovel work in digging trenches for underground parkway cables, but the time-consuming work of cutting, fitting and connecting can be minimized. Rather than handle reels of heavy cable in the field, measurements are made at the field locations, and at construction headquarters, lengths are cut as required; the cables are then connected to the bootleg risers, complete with rail connections in place, ready for distribution to field locations.

The old back-breaking job of mixing concrete for foundations by hand can be obviated by either of two methods. Several roads which prefer precast foundations are using large-capacity power mixers to pour the foundations in a central yard. On account of the uncertainty of scheduling wrecker derricks, as well as the expense for the wrecker crew, it has been found more practicable to use bridge derricks or ditcher cranes for setting these foundations in place. An added advantage of a ditcher crane, as compared with a wrecker derrick, is that the crane is mounted on rails on a flat car and moves under its own power back and forth on these rails so that the job of setting a foundation, as well as a case, can be completed with one spotting of the train. Furthermore, with the flexibility explained above, the setting can be done accurately without too much work in pushing the foundations by hand to exact location as they are being lowered. A further advantage of this procedure is that only one work train is required. With a well-organized crew, a foundation and a case can be set and masts and ladders unloaded in five minutes, and such a saving in time is highly important for a work train on the road, when all costs are counted and consideration is given to interference with or time lost in getting out of the way of other trains.

Other roads which prefer to pour the foundations in place, especially where the soil is soft or loose, have devised an arrangement including a ¼-yd. capacity gas-engine driven mixer which can be transported on a push car pulled by a motor car. This mixer is set off at a location by means of a portable track set on pipe supports. By use of such an arrangement, a crew of five men can place a 4-yd. foundation in about 45 min., and can average 7½ foundations a day. With this procedure, one work train distributes the concrete materials and the water, which is handled in steel drums. After the foundations are complete, another work train sets the cases and unloads the masts, ladders and signals. In this instance, the cases can be set by using a hand-operated crane attached to the side of the door of a box car, thus eliminating the expense for a power derrick and crew.

On projects extending over a considerable mileage, involving many foundations, some roads have found it economical to set up a power mixer on a flat car, together with water tanks and cars for cement and gravel, in order to pour the concrete directly from the train into the forms. After the foundations are completed, a second work train sets the cases and unloads the masts, signals and ladders.

On projects of any great extent, practically all of the roads have abandoned the practice of wiring the cases in the field, because too much time is lost on account of bad weather, as well as in traveling back and forth on motor cars. As a general rule, the cases are now wired at a central point on the job or in the plant of the manufacturer before shipment. Another method of securing the same result is to wire up the terminal boards in a shop and install these boards after the cases and signals are set in place. Any of these methods assures standardization of wiring arrangement and of workmanship, as well as effecting decided economies.

In the old days when high signal masts were used, especially with semaphores, it was the practice on some roads to assemble the masts, ladders and mechanisms complete at headquarters and load them on cars for setting by a derrick. However, with the short masts used with light signals, several roads simply unload the masts and ladders from other cars of the train when the foundations and cases are set. Later the masts are erected by means of a portable, light-weight gin pole, with blocks and tackle, and the signal heads and ladders are then placed with the same equipment. On the other hand, one road which wires the terminal boards at headquarters, assembles the cases, masts, ladders and signal heads complete and loads them on flat cars to be set by a derrick.

Some roads have been able to get materials distributed without incurring full charges of operating a train over a division. In some instances a local freight train can be used for distributing certain materials, and can handle a derrick for setting foundations and cases for a few locations, without causing two much overtime. On divisions where the preponderance of loads is in one direction, light engines with cabooses are run in the opposite direction. In such cases a light engine can be used to make up a work train for one direction, thus charging the signal construction account with only the overtime, if any, of the crew.

In organizing construction forces, certain roads have arranged their programs so that certain crews or men are assigned to one part of the work from the beginning to the end of the project. For example, one gang does the drilling and bonding throughout, another installs the parkway cable, while a third erects the signals, etc. Such an arrangement requires less effort on the part of the men, as well as promoting efficiency.

Thus it is evident that, although construction has been limited in recent years, railroad men here and there have developed improved construction methods. By assembling these ideas and adopting those that are applicable to local conditions, any road can carry out a signaling construction program that, in speed and efficiency, will equal, if not excell, the records of previous years, such as 240 miles of single-track automatics constructed in 240 working days.

OPEN FORUM

This column is published to encourage interchange of ideas on railway signaling subjects. Letters published will be signed with the author's name, unless the author objects. However, in order to encourage open discussion of controversial matters, letters may be signed with pen names at the request of the author. In such instances, the correspondent must supply the editor with his name and address as evidence of good faith. This information will not be disclosed, even on inquiry, unless the correspondent consents.

Be Informed on New Developments

To the Editor:

Yes, radio transmission in connection with signaling! Does this seem radical? Well, in two or three years from now it may seem old fashioned. How can we ever use radio in the signal game? And where would we use it if we could? Well, right now I am experimenting with a 1¼ meter transceiver, and expect to make a practical test in the field just as soon as I can get a license or permit to do so. Take, for example, any interlocking plant where traffic is heavy, or any place where you would like to make tests or checks, a mile or two apart, and have no line connection to do so. Would a 1¼ meter transceiver come in handy if you could make it work? My suggestion to the signalmen is to get posted as to the requirements of the Federal Communication Commission, so that they can use a transceiver, and then get a license. Every maintainer or signalman who wants to keep abreast with the times should know the fundamentals of radio, because our game is leading right up to the corner; radio in signaling is just around the corner.

As an example of rapid developments in recent years, consider what has happened in C.T.C. or some of the train control work, then look into the future, and see what you must know to be a Class-A signalman. Of course, if you want to be, in the future, like some of our older boys are today, helpers, or if you wonder why so many of the newer men, hired recently, are running around you for the better jobs; well, just perch yourself up on that easy chair and sleep and you won't have to sleep long to see why. Let's get ready, let's be prepared for any new apparatus developed.

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New Books

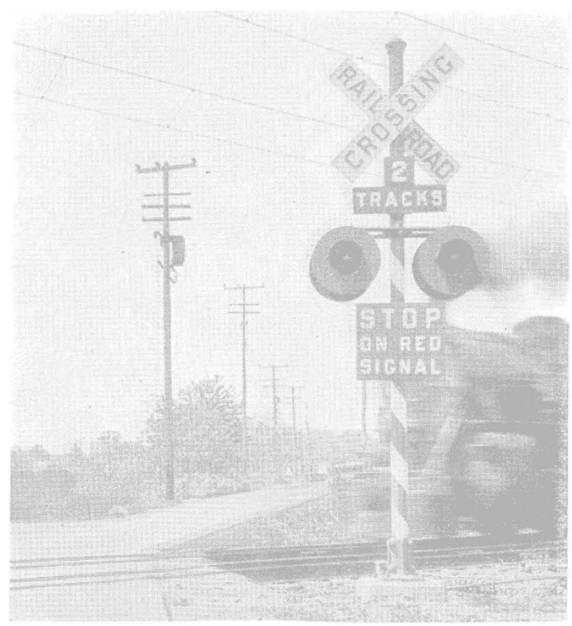
Inductive Coordination of Electric Power and Communication Circuits. *L. J. Corbett. Published by J. H. Neblett Pressroom, Ltd., 500 Sansome Street, San Francisco, Cal., 1936. 174 pages; illustrated; 6 in. by 9 in.; $3.00.*

This book brings together under one cover the essential features of the inductive coordination problem and includes the results of original researches, amplified by a broad survey of the entire field.

The treatment is not mathematical, the physical relations being emphasized in treating this subject in which the constants of apparatus and circuits in any particular situation may have such wide variations. However, it pre-supposes a knowledge on the part of the reader of the general principles of electrical engineering.

Considerable space is given to power system wave shape and the harmonics which affect it, particularly those which become residuals. The flow of residual currents and their control are outlined with the aid of diagrams.

It should be of interest and value to electrical engineers in power, communication and signal service.



The crossing signal installation on the Reading