Centralized Traffic Control Indications

"What indications are necessary or desirable on the control machine of a centralized traffic control system?"

Complete and Permanent Switch, Signal, OS, and Approach Indications are Desirable

By W. F. Zane
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A CENTRALIZED traffic control machine should have complete light indication. The indication should be displayed on the machine during the entire time that the field conditions, which produced this indication, remain. The track diagram should receive indications from each OS point and there should be approach indication of a train entering controlled territory. The switch indication should be a normal, and a reverse, light. The signal indication should be a left-, right- and normal-indication.

It is necessary that the face of the control machine at all times be an exact picture of the field conditions in order to effect the desired economies made possible by these installations. Proper indications help to permit the party handling the machine to execute other duties. If he is a dispatcher, he will have other things to do; if he is an operator, the chances are he will have to handle telegrams and possibly sell tickets, all of which is possible in connection with the operation of one of these machines. The economies effected by such an installation are increased by placing its control under some person already employed, instead of at a point where the result of its installation would be an increase of force.

Visual Approach Indication Most Important

By J. H. Schubert
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THE number and kind of indications depends upon the mileage, number of functions operated, density and type of traffic, and other duties which the controllers may have to perform aside from the operation of the machine.

Where high-speed passenger-train traffic is present with freight train movements, and passing tracks are controlled under single-track operation, the following indications should be provided to obtain the best results.

First and most important, visual approach indications should be provided. This indication should remain until the train enters the home signal limits. Where there are several approaches to the controlled territory, this visual indication should be supplemented with a single-stroke gong.

Next in importance is a visual indication of the occupancy of the track between home signal limits of adjacent passenger tracks, this indication to remain until the block is clear. Where one or more passing tracks are in controlled limits an indication should be provided showing when the passing track is occupied.

Indication of the operation or position of controlled switches and directional indications of signals are desirable, but not necessary. However, these indications can generally be furnished with very little additional cost and, therefore, they should be supplied.

Where an automatic train graph is used some of the above information is shown on the graph, but where train movements are heavy and the controller has other duties to perform, he cannot take the time to check the train graph before lining up his movements without delay to trains. Variations in some of the above indications may be desirable, depending upon the traffic conditions to be met.

Only OS Indications Are Needed

By B. J. Schwendt
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AFTER three years of quite intensive operation of a centralized traffic control system, it is our experience that only the OS indications are really necessary. In the installation mentioned, information as to the approach of trains is brought in by telephone from offices at each end of the CTC section, otherwise it might have been necessary to provide approach-annunciator indications.

There are no indications that the signals have cleared or have returned to the Stop position, and none have been found necessary. In fact, if such indications were provided and it was found that a signal failed to clear or failed to return to Stop, there is really nothing that could be done about it by the dispatcher in charge, so why spend any money to provide apparatus to bring in such information? If the signal failed to clear when intended by the operator, the worst trouble that could happen would be a train stop. By rule, the train crew would telephone in very shortly and explain to the operator or dispatcher that the signal was "red" and ask for insructions. As a general proposition nothing else could be done about it by the operator or dispatcher if he knew the signal was standing "red," except to call the maintainer; and this might possibly get the maintainer on his way to the signal failure a few minutes ahead of the time he would otherwise be called if the operator waited for the train crew to report the case. It is hardly worth spending money to get this result.

The situation is similar with regard to indications on switch machines—that they have operated, or have not operated. If they operate satisfactorily, the information is useless. If they do not operate satisfactorily, the signal will not clear and the train crew, stopped by the signal, will again, by rule, telephone in and ask for instructions. The best an indication could do would be to let the dspatcher or operator know a few minutes in advance that the switch had failed to operate. This would have given the operator a chance to try it again. Many times a stone or other obstruction in the switchpoint drops out when the switch is operated a second time and, therefore, an indication in this particular instance would help matters as it might eliminate a train delay.

In all systems developed to date these additional indications require additional apparatus and necessarily cost money in the first instance and ever afterward cost money to maintain. In the interest of economy, any apparatus that does not serve a useful purpose and justify its keep, should be excluded. In my opinion as to requisites, OS indications are the only ones necessary and all others can be placed in the list of "adjuncts."

If we recognize that indications for signals are necessary on the control machines of a centralized traffic control system, it is going to be quite difficult to explain to anyone why it is not also necessary to

have similar indications at some point applying to the signals of an automatic block signal system.

Centralized traffic control was made possible primarily by eliminating unnecessary apparatus. The longer we continue to eliminate this unnecessary apparatus, the longer we will have the benefits now received from centralized traffic control.

Rail Bonding in Street or Road Crossings

"What type of bonding should be used in road or street crossings?"

Unbroken Rail Most Desirable

By R. B. WORKMAN

Signal Maintainer, Colorado & Southern, Trinidad, Colo.

IT is my opinion that there should be no bonding in road or street crossings. When a bond is broken in service, the crossing planks or paving have to be torn up to replace the bond. Such crossings prevent proper inspection of bonds, because they cannot readily be seen and often a maintainer will pass them up rather than dig them up for inspection. The welded or plug-type bond applied to the outside ball of the rail is not so good, because trucks often break them off. Furthermore, the joints in crossings often receive less attention from the track department. As a consequence thereof the angle bars become loose and, with the rails and angle bars rusty, a broken bond almost always means a signal failure.

The bonding-through of road and street crossings should be considered before the steel is laid, that is, by laying the steel so that the joints come on the outside of the crossing. On city streets where a 33-ft. rail will not reach through the crossing a 66-ft. rail should be used. Where a 66-ft. rail will not reach, take three 33-ft. rails laid end to end with ¼ in. expansion at both joints, gas weld them together and apply the angle bars when cool, setting the bolts firmly. Then use this 99-ft. length of rail in place of the three 33-ft. rails. In this manner all joints and bonds are on the outside of the crossing, thus benefitting not only the signal department, but also the track department.

Annual Inspection and Use of 66-ft. Rails

By W. L. CONNORS

Signal Engineer, Buffalo, Rochester & Pittsburgh, Rochester, N. Y.

WE USE 66-ft. rails through highway and street crossings and are in most cases able to avoid having joints in crossings. This is desirable from a track maintenance, as well as from a signal maintenance, standpoint. In wide streets or where crossings are at an acute angle, making it impracticable to have all joints outside of the crossing, we bond the joints in the crossing with our standard stranded bond, using two on each joint, one outside above the bolts and one inside below the bolts.

Crossings in which joints are located are taken up once each year for inspection and if necessary the bonding is renewed. The maintainers make a voltmeter check of track circuits, especially those having joints in crossings or platforms, on their regular inspections and as much oftener as necessary to keep acquainted with the conditions of the bonding. We have very little trouble with broken bonds in crossings.

Exposed Welded Bond Desirable

By J. W. CALLENDER

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THE full length of the rail bond for this application should be visible, so that any break may be detected easily and quickly, and the necessary repairs made, in the shortest time possible. The bond should be of a type that does not necessitate tearing up the crossing when replacements are made. It must fasten as closely as possible to the ends of the rail, to provide a maximum of broken-rail protection, since broken rails are not so easily detected under crossing planks as they are out in the open. I have found the welded bond to be highly desirable for this class of service. Preferably there should be two such bonds for each joint.

It is desirable that the rails be cut so that a minimum number of joints are required in the crossing. Often all such joints may be eliminated.

Gas-Weld Bond Found Desirable

By C. F. STOLTZ

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AVERY convenient and economical type of bonding for use in road or street crossings is the gas-weld type applied to the head of the rail, since it can be installed by chiseling, or prying away, the crossing plank, thus eliminating the necessity of tearing up the planking. These bonds are always accessible for inspection. Where the above type is not available, the joints in the crossing should be bonded with solid copper or Copperweld bonds or bond wires applied to both sides of the joint to insure greatest permanency. The use of iron wires for bonding joints in crossings should be avoided.

A broken bond may be detected by the use of a milli-voltmeter applied across the joint. The responsibility for maintaining the bonds in planked crossings rests with the maintainer as should that for all the bonds in the track circuit. It may require the co-operation of the track forces to effect a replacement of some types of bonding, but the responsibility for the condition of the bonds, and for seeking the co-operation of other departments when necessary, rests entirely with the maintainer.

Is a Breather of Any Value?

"Is a breather of any value in preventing frost formation and vapor condensation on the internal parts of relays? How may these troubles best be eliminated?"

Relays Are Sealed, Breather Not Used

By F. B. WIEGAND

Signal Engineer, New York Central, Lines West, Cleveland, Ohio

IN my opinion a breather is of no value in preventing frost formation and vapor condensation on the internal parts of relays.

We have practically no trouble with relays sweating and we use nothing but the sealed relay, no breather being provided. It may be possible that we would have little or no trouble if we had relays with breathers.