

## C.T.C. INDICATION CODE

*"In your coded C.T.C. systems, do you have automatic recall of indication code on transmission of each control code? Why?"*

### Yes--For Three Reasons

By J. R. DePRIEST

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IN the coded C.T.C. systems used on the Seaboard, the automatic recall feature is utilized. This feature provides for an indication code to be transmitted from the field location following each control code received by that particular field station, even though the control function does not change. By utilizing this feature:

(1) The operator of the control machine is furnished with up-to-date information each time a control code is sent to a particular field station.

(2) If an indication code is interrupted due to line or other trouble and does not reach the control machine, the operator can quickly check field conditions without wait-

ing for another change in field condition to transmit an indication code.

(3) In the event of equipment trouble that has caused one station to continuously transmit an indication code or cause "pumping action", a control code can be transmitted to each field station after the thermal relay has stopped the "pumping action", to determine which station caused the "pumping action". After transmitting a control code to a field station, a short interval of time is allowed to determine if an indication code is returned by the recall action of the control code. Of course, one of the stations will not respond, due to the thermal relay having opened the transmitting circuit of the field LCS unit. Therefore, the trouble experienced was caused by equipment at the particular field station where no indication response was obtained.

## BOOTLEG RISERS AND BONDS

*"What is your practice with reference to the installation of bootleg risers and bonds for track-circuit connections where rails are laid flush with street paving in urban areas? Please furnish sketch if practicable."*

### Concrete Block With Cover Plate Flush With Street

By E. S. WILLIAMS

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IN Evansville, Ind., we have an installation of highway crossing protection signals at 10 crossings on a single-track line, which runs down the center of streets through the city. The majority of track is flush with the street paving, thus requiring special bootleg risers for track-circuit connections. These risers are concealed below street level, unaffected by vehicular traffic, and can be inspected readily at any time.

Each riser consists of a 16-in. by 10-in. by 10-in. precast concrete block with a 3-in. hole in it, and a steel top cover plate 1-in. by 10-in. by 10-in., attached to the block by

three anchor bolts and nuts. The Number 9 underground track wires are brought up through the hole in the block, and soldered to the center of a 30-in. Cadweld bond, both ends of which are attached to the rail with a No. 2187C single-mold ratchet clamp. Replacements can be made at any time by removal of the cover plate.

The parkway cover plate is bolted in place on top of the riser block flush with the street paving, this plate being drilled with three  $\frac{5}{8}$ -in. holes on  $7\frac{1}{2}$ -in. triangular centers. Each hole is counter-sunk  $1\frac{1}{2}$  in. wide by  $\frac{5}{8}$  in. deep, this having been done with a bottoming-drill bit. The plate is held firmly to the top of the block by three  $\frac{1}{2}$ -in. by 10-in. anchor bolts sunk in the block when cast, and three  $\frac{1}{2}$ -in. nuts tightened flush with or slightly be-

### To Be Answered In a Later Issue

(1) Where printing telegraph equipment must be located in small offices where men are busy at other work, such as in retarder control and yard communication towers, what practices can be employed to minimize annoyance caused by the noise of the printing telegraph equipment when in operation?

(2) What telephone facilities do you provide in crossing watchmen's towers and houses, so they may be advised of the approach of trains, and so they may warn ahead of a defect which may be noticed on a passing train, and the train stopped at an appropriate spot for inspection?

(3) What are the basic principles and functions of multi-unit, tetrode, pentode, diode, variable-mu, triode, and multi-electrode vacuum tubes?

(4) What kind of paint and how many coats have you found to be most effective in protecting and keeping dust down on concrete floors in battery rooms? How often should such floors be painted?

(5) In the maintenance of track circuits, what is the best way you have found to check drive-in plug-type rail-head signal bonds for tightness, broken strands, etc.?

(6) How do you mark dwarf signals, to enable their being better seen by trainmen climbing on and off cars during darkness, and thus minimizing chances of personal injury?

(7) In extremely cold climates, can small electric heaters be installed and effectively used in electric switch machines to prevent frost trouble? If so, what type of heaters do you recommend, what is their rating, and how are they supplied with power?

If you have a question you would like to have answered, or, if you would like to answer any of the above questions, your comments will be welcomed. Address: "What's the Answer?" Department, Railway Signaling and Communications, 79 West Monroe Street, Chicago 3, Ill.