GRADE SIGNAL CONTROLS

"How do you control operative grade signal markers with reference to track occupancy?" If practicable, please furnish simple circuit diagram.

Four Conditions

By W. K. WALTZ
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ALL of the grade signals we have in service are used as a part of the signal aspect, and consist of an illuminated letter "G" placed on the signal mast below the main operating unit. This grade signal is normally dark, and when such is the condition, the aspect of the main operative unit governs. When the grade signal is lit, the following rule of the operating department governs: "Indication—Tonnage trains may proceed at restricted speed, without stopping. All other trains must stop; then proceed at restricted speed. Name—Grade."

The following conditions must be set up before the grade signal lights:

(1) Main operative unit must be red.

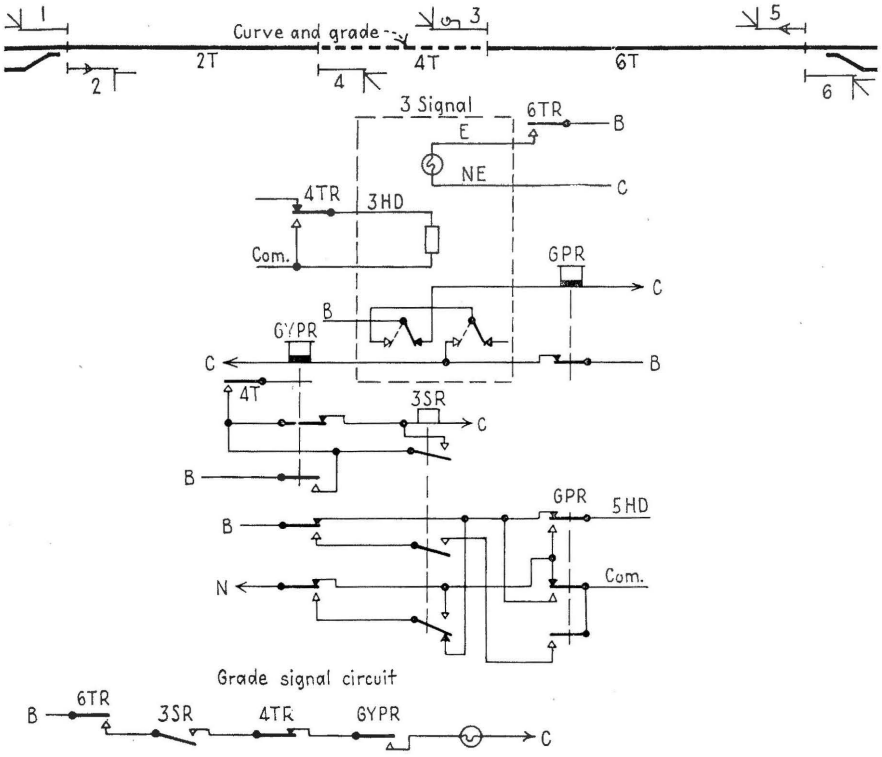
(2) Train must be on approach to grade signal.

(3) First track circuit ahead of signal must be unoccupied.

(4) Directional-stick relay must be energized (in A.P.B. system at intermediate signals).

With the increased length of trains and increased tonnage, the reduction of unnecessary stops becomes more important. We have found that grade signals circuited as set forth above do not reduce safety in any way. They do, however, reduce unnecessary train stops.

The length of the first track circuit is dependent upon the particular operating condition, taking into consideration the grade, curvature, terrain and general visibility. The average length of our first track circuits is 2,500 ft. The accompanying plan shows a typical location at an intermediate signal in an A.P.B. system. The 6TR relay is the ap-



Circuits at typical intermediate grade signal in A.P.B. territory on the E.J.&E.

To Be Answered In a Later Issue

(1) What method have you found to be the quickest and most efficient in removing old telegraph, telephone or signal wire from open pole lines—manually or by mechanized means? Please state your reasons.

(2) Do you install platforms at the front or rear of signal instrument cases to enable easy access to apparatus in the cases? If so, what kind of platforms do you employ, and what type of material have you found to be most effective in minimizing the accumulation of water and ice and the possibility of men slipping on the platforms?

(3) Do you or do you not consider it important to keep a record of the number of printer messages passing through a telegraph office? Why?

(4) At towers and outlying points in interlockings, what is the most effective type of horn, you have found, for calling maintainers or for other signaling purposes—air, straight electric, etc.? What is your practice with reference to the location, installation and control of, and the power supply for such horns?

(5) What use, if any, is being made of electronic equipment, such as oscilloscopes, etc., for locating distant faults, such as opens, crosses and grounds, on communication lines?

(6) Where a C.T.C. control office is to be located so that the code line must be in aerial or underground cable for a considerable distance—a mile or more, for example—what problems are involved, and what are the solutions from an engineering standpoint?

(7) What basic requisites have you set up with reference to efficient maintenance of telegraph office and telephone exchange equipment?

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.

proach section, 3SR the directional-stick relay which checks that the train occupying the block is not an opposing move, and the GYPR relay checks the main operative signal at Stop.

Over Back Contact of HR

By A. E. PARNELL
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THE simplified diagram herewith shows grade signal location S5226, between Bowie, Tex., and Saginaw, on our Wichita Falls division. When the main track through Alvord between signals S5226 and S5142, as well as track circuit 2-4T in advance of signal S5142, is occupied, the grade marker indicates a distinct type of signal as covered by our rules, and is used so as to not confuse enginemen with other types of signals, such as those with number boards, which are Stop-and-Proceed signals.

The grade marker on signal S5226 is connected to the circuit for the red lamp unit in the top "arm" of the signal, which is controlled over a back contact of the SHR relay. The SHR, in turn, breaks through every track relay up to signal S5142, as well as that for track section 2-4T in advance of signal S5142.

The COA "arm" on signal S5226 does not form part of the grade indication, but is a special unit provided for displaying a call-on aspect. It consists of a yellow light, normally dark, controlled by the operator at Alvord. When illuminated, with the top "arm" of the signal red, it indicates that a train may pass the signal and proceed at restricted speed to the train order signal at Alvord. Some roads call this an operator's advancing signal, and its purpose is that when trains meet at that particular station, the operator can use the special indication to bring the train up the main line if necessary. This proves useful sometimes when the dispatcher, for some reason or other, changes his mind and decides to put out an order that a certain train will take siding.

Includes First TR In Advance of Signal

By W. M. WHITEHURST
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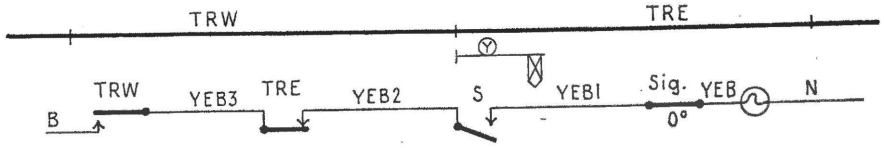
Central of Georgia, Macon, Ga.

FOR ascending grade conditions on the Central of Georgia, an indication of red-over-staggered yellow (Proceed at Restricted Speed) is displayed when it is desired to provide for elimination of the stop at a signal that would otherwise display a Stop, then Proceed at Restricted Speed indication.

As shown in the sketch, the yellow light unit on such a signal is arranged to be illuminated only when the top unit of the signal displays red, traffic direction is in effect and the first track circuit in advance of the signal is unoccupied. Approach lighting is provided for power conservation. The track circuit in advance of the signal is included in the control on the basis that, if the train ahead is within this distance of the signal, it is best that a stop be made at the signal, rather than pass it without stopping.



Control circuit for grade markers on the C. of G.

CORNER-POLE GUYS

"With reference to the installation of a guy on a corner pole in a pole line, what method do you employ to determine the proper direction and pull of the guy?"

Can Use "Bisector"

By R. R. DILLON
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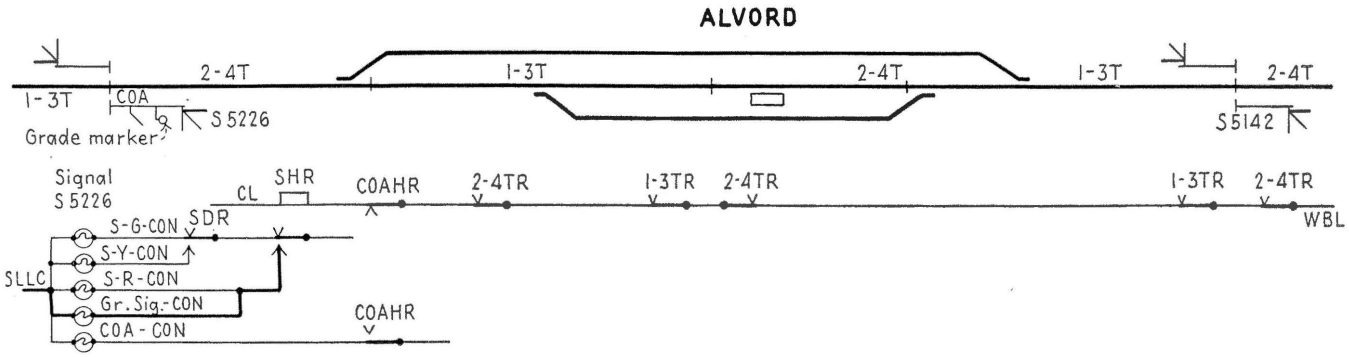
CORRECTLY locating an anchor and guy is a case of "bisecting" the line of force to which the pole involved is subjected. If the anchor is placed to one side of the true angle of force, this results in the top of the pole giving toward the angle of the anchor, thereby throwing slack into the pole lead, which results in a failure when the lead is subjected to a storm or to over-tensioned line wires.

One means of determining the proper direction and pull of a guy is by the use of a "bisector." Such an instrument is shown in the accompanying picture, the device being 8¾ in. long, 1⅜ in. deep, ⅝ in. wide, and weighing 5 oz. In using the bisector, the spiked tip at the left is driven lightly into the pole to be guyed, and the arms are aimed at other poles to the right and left in the line. The operator then adjusts the peep-sight barrel, shown at the top, over the center of each arm inturn until it is perfectly aligned with the right and the left



Grade signal location and controls on the Wichita Falls division of the Fort Worth & Denver City