

Editorial Comment

Too Many Yellows

THE use of the Approach aspect on several successive signals, in approach to a signal indicating "Stop" or "Stop-and-Proceed," is a practice that delays trains and is a violation of the basic principle of signal aspects. On account of the increased braking distance of trains, this objectionable practice of using successive yellows will, no doubt, be extended unless some better practice is made available. Some operating department officers do not understand the reasons for using the yellow aspect on several signals, and, therefore, in order to present a complete analysis of the problems involved, a detailed explanation of some of the basic principles will be discussed first.

The increased weights and speeds of trains have resulted in longer braking distance, which calls for corresponding increases in the length of automatic blocks in a three-aspect system, so that, when an engineman encounters an Approach aspect, there will be sufficient distance to stop his train before arriving at the next signal.

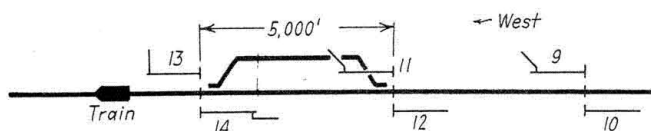


Fig. 1—A short block in station limits

The distance required to stop a train depends on numerous factors such as the speed, the weight of the train, the type of lading, number of cars, braking ratio, and weather conditions, as well as the grades and curves of the track. Therefore, each railroad must determine the train stopping distance applying to the various locations. For example, the minimum train-stopping distance may be 7,000 ft. on level, tangent track. Without discussing this phase of the matter further, the point of importance is that local conditions such as the length of a siding or the

distance between sidings may fix the length of automatic blocks which are less than the required 7,000 ft. For example, as shown in Fig. 1, the distance between signals 13 and 11 is only 5,000 ft. If a westbound train stops with the rear end a short distance west of signal 13, a following westbound train encountering an Approach aspect as signal 11 may not be able to stop short of signal 13, and may overrun far enough to hit the rear of the standing train. In such layouts, the usual practice is to change the controls so that, with a train in the block of signal 13, both the signals, 11 and 9, would display the yellow aspect. A following westbound train would encounter the yellow aspect on signal 9, and, in accordance, would reduce to half authorized speed, so that when arriving at signal 11, also displaying the yellow aspect, there would at this speed, be plenty of distance to stop the train between signals 11 and 13.

Where the distance between sidings is short, there may be various combinations which will call for successive yellows. Referring to Fig. 2, the block lengths through the siding layouts are less than train stopping distance and the intermediate signals are arranged as one pair of staggers. With a train in the block of signal 13, the red aspect would be displayed on signal 13 and the yellow aspect on signals 11, 9, 7, 5 and 3.

As applying to Fig. 2, say for example that an eastbound train, which is superior by direction, is to hold the main track at station C for a meet with a westbound train. If the eastbound train arrives first at station C, it holds signals 13 and 11 at red and signals 9, 7, 5 and 3 at yellow. According to the rules applying to the yellow aspect, the westbound train would be required to run at half authorized speed, not exceeding 30 m.p.h. for the several miles between signal 3 and station C. The difference between 90 m.p.h. and 30 m.p.h. for 6 miles is 8 minutes. When important trains encounter such delays, the operating officers want to know why there are so many yellows. If an engineman encounters such a set up every once in a while, he may decide, some day, that he can just as well keep rolling at normal speed for a few more miles, but the circumstances, on the certain

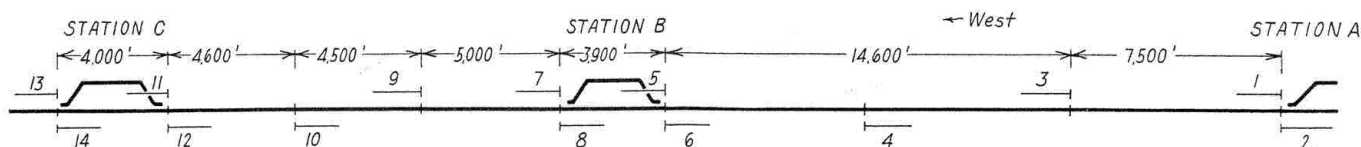


Fig. 2—Showing reasons why short block requires approach aspect on several successive signals

day, may be that the first yellow is a real one, and means just what it says, i.e., that the next signal is red.

Considered from all angles, this use of the Approach aspect on several successive signals is not good practice, and should not be tolerated except as a temporary measure, if better practices can be applied. One means for obviating successive yellows is to adopt a fourth aspect. For example, as shown in Fig. 1, with a train occupying the block of signal 13, signal 11 would display the Approach aspect, yellow, and signal 9 would display a fourth aspect, Advance-Approach, which could be yellow-over-yellow. In accordance with A.A.R. Code Rule 282A, an engineman encountering the Advance-Approach aspect, yellow-over-yellow, on signal 9, should get his train under control and reduce speed so that if signal 11 is still displaying the Approach aspect, he can stop his train between signals 11 and 13. The controls for the fourth aspect require additional circuits. If the fourth aspect is to be made up of two lights, an additional lamp unit is required. The existing yellow can be flashed as the fourth aspect; this being the practice on the Illinois Central.

Using only the three aspects, red, yellow and green, the Wabash solved the problem of the short station-to-station block by using one double location of intermediate sig-

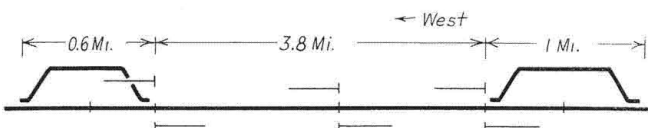


Fig. 3—With overlap in station limits

nals with overlaps half the distance of the station limits, as shown in Fig. 3, and as explained in detail on page 186 of *Railway Signaling* for April, 1941.

Some roads contend that enginemen will not observe the overlap markers as required in the Wabash scheme,

and further, that the expense for the fourth aspect signals and extra controls are not justified. On the other hand, in this post-war period, the airplanes, trucks and buses are going to give the railroads keen competition, and, therefore, trains must be operated on schedule.

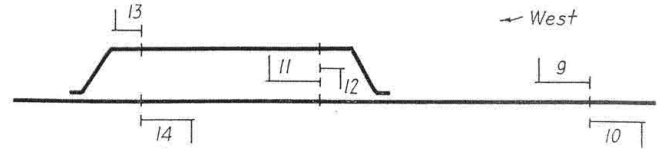


Fig. 4—To eliminate short station block

Some means, therefore, should be devised to obviate this undesirable practice of using the Approach aspect on too many successive signals in a three-aspect system. One way to eliminate a short block in station limits is to use leave-siding dwarf signals and main track high signals at sidings, as shown in Fig. 4. One objection to this

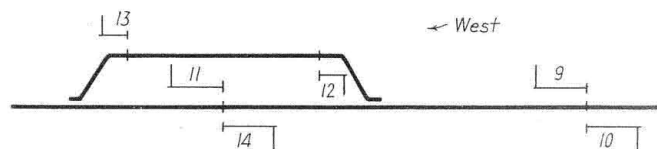


Fig. 5—Signals at center of station layout

arrangement might be that an eastbound train, for example, which is to hold the main track for a meet, would have to wait west of signal 14. In order to relieve this delay, at least half the time for trains of both directions, an arrangement, such as shown in Fig. 5, might be considered. These are only a few of the schemes which are being talked about, and are given here primarily to arouse discussion which may lead to a logical means of obviating short blocks or other conditions which result in the objectionable practice of too many yellows.



Short-arm gates at crossing on the Atlantic Coast Line in Wilson, N.C.