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American Railway Engineering Association

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Report on Assignment 6

Facilities For Expediting Freight Traffic Through Yards and Terminals

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This is a final report submitted as information.

From time to time this committee has reported on the subject of Expediting Freight Traffic Through Yards and Terminals. Its latest report is contained in the Proceedings, Vol. 39, 1938, page 224, in which are listed all references to this subject appearing in the AREA Manual, Proceedings and Bulletins. The committee has reviewed this earlier material and desires to supplement with the following subject matter:

1. Revamping of Yard Facilities to Consolidate Operations and Avoid Extra Moves and Retrograde Movements

Fundamentally, the handling of a car through a terminal should be accomplished with the least number of moves and such moves should be made in the direction of destination.

Some large terminals are made up of a number of relatively small units or yards which have been added from time to time to supplement the original facility as the volume of traffic increased and/or the stepped up, on line, movement of trains caused a congested condition within the terminal.

Usually the several units are used to the best advantage possible. However, it may be found that tracks of sufficient length to receive or make up trains are not available; much reshuffling of cars is necessary; and extra moves are made from unit to unit (and in some cases returned) during the process of terminal handling.

Extra moves and retrograde movements result in terminal delays. Reduction in the number of such moves may be accomplished by the consolidation of yard units and rearrangement of facilities to provide tracks of proper length.

2. Improved Communication Systems

Great strides have been made in developing new systems of communications and in improving older types. Communication systems both on line and in yards and terminals will speed the operations on the railroad.

(a) *Radio and Inductive Train Communication Systems.*—The use of either of these systems provides a method of rapid communication between fixed points, between fixed points and railway vehicles, and between railway vehicles. In general, the communication systems provide contact between the following facilities:

Offices, yard buildings and stations.
Offices, yard buildings, stations and other points on the ground.
Offices, yard buildings, stations and locomotives, cabooses and other railway equipment, including marine equipment.
Locomotives, cabooses, marine and other railway equipment.

(a–1) *Radio Communication* (space radiation).—Radio or space radiation uses the air to carry the message. Space should be provided in the buildings and moving equipment for the sending and receiving sets and other equipment used in connection therewith. Also, provide room at the humps and other places in the yards and right-of-way for the aerial and for the standards on which are mounted the speakers and receivers. This system is described in the Proceedings of the 23rd Annual Session of the AAR Communications Section (Nov. 19, 20, 21, 1946), pages 460 to 481.

(a–2) *Inductive Train Communication.*—This system provides a method of communication using modulated carrier waves which are transmitted over a path made up of the tracks and existing line wires parallel to the tracks. Wayside stations are coupled to the track and to the line wires paralleling the track. Vehicles transmit and receive by induction. This system is described in the proceedings of the 23rd Annual Session of the AAR Communications Section, pages 549 to 570.

(b) *Walkie-Talkies.*—The "walkie-talkie" is a portable sending and receiving radio set which can be carried by an employee and used in communicating with the fixed stations or moving vehicles. It is used in connection with the radio communication system.

(c) *Carryphone.*—The carryphone is a portable inductive set which can be carried by an employee and used in conjunction with the inductive train communication system the same as the "walkie-talkie" is used in the radio system. Carryphones can be used satisfactorily up to about 100 ft. from pole lines.

(d) *Two-Way Loud Speakers Using Paging and Intercommunication Units.*—This provides rapid communication between the yardmaster, switch engine crews, switch tenders and car inspectors for the purpose of coordinating work and the elimination of delays to switch engines, making up of trains, movements out of yards and to and from the engine servicing facilities, repair tracks, ice house, etc.

The master control equipment is generally placed in a tower situated so the yardmaster, who uses the equipment, has an unobstructed view of all operations within the yard.

The two-way communication speakers are usually mounted on standards 5 ft. to 6 ft. above the ground and located along the yard leads and other points where instructions are to be given to men working about the yard.

The paging loud speakers are usually mounted on telegraph poles and directed at the area they are to cover. These speakers are normally used for issuing instructions or to page switching crews or others outside the range of the two-way speaker units.

(e) *Teletype.*—The use of teletype machines has been expanded by combining with modern punch-card machines. Teletype is used on many roads for the transmission of advance train consists to the "next" yard and the furnishing of passing report information to general offices. With the use of punch-card machines, punched cards are prepared for each car on the line containing all necessary information and from these cards teletype tapes are automatically prepared, producing switch lists, wheel reports and yard records. Likewise, information is automatically and promptly furnished to car service and traffic departments.

(f) *Voice Recorder for Car Lists.*—Another recently developed device substitutes a voice recorded list of car initials and numbers for the customary hand-written train check. Under this operation the yard clerk taking the check is located at a fixed point in the yard where the trains or drags of cars pass by at yard speed. As the cars pass by he calls into a telephone handset the car initials and numbers which are registered on a recorder at the general yard office or other convenient point. The recording is then played back by a clerk in the general yard office who arranges bills in outward train order. After being played back the recording may be filed. The advantages of this are that the check is in the office as soon as the last car of the drag has passed. The voice recorded check has proved advantageous as to accuracy, the hand-written train checks often being hard to read.