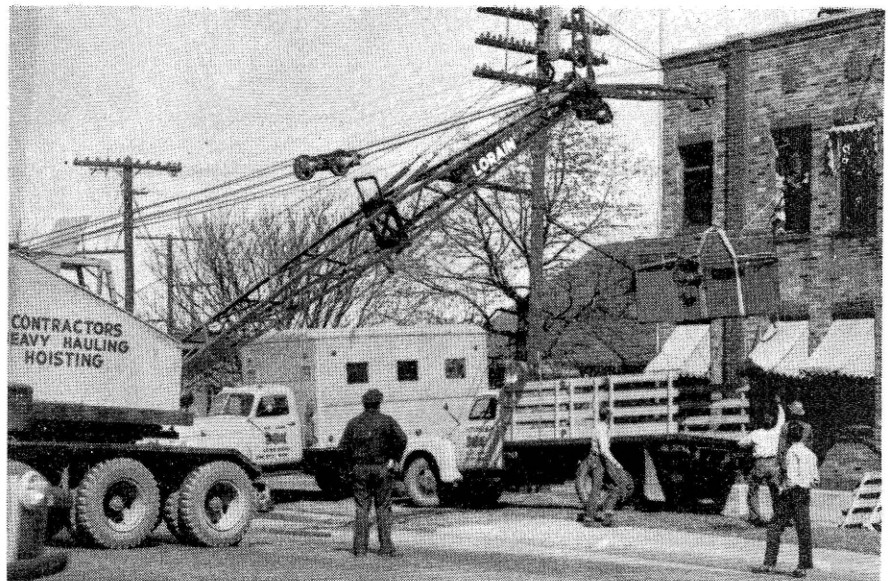
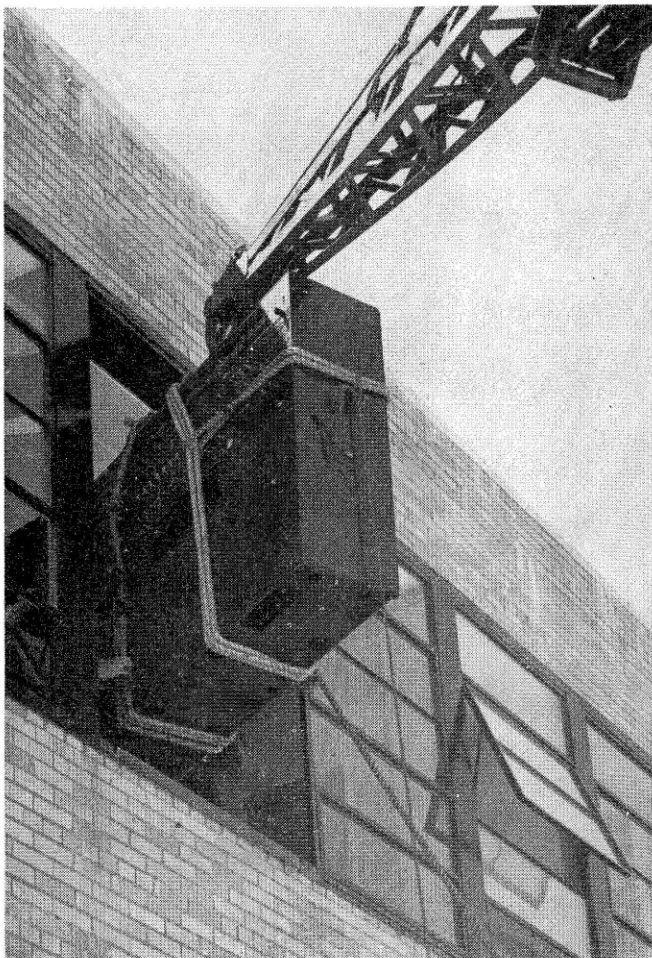


A truck-mounted power-operated hoisting crane was used to reach into the window to pick up a section of the machine, and lower it to truck



Frisco Moves C.T.C. Machines

Without Interrupting Traffic



At new building crane was used to put machine through window and onto floor

CO-ORDINATION and advance planning enabled the St. Louis-San Francisco recently to move its C.T.C. control machines from one building to another—a distance of two miles—in Springfield, Mo., all within the space of six hours, while at the same time keeping the system in service. These machines control 205 mi. of C.T.C. The move was necessitated by the transfer of the dispatcher's office from the second floor of a building at the company's North Springfield Yards to the new division and terminal offices of the Frisco recently completed as part of the modernization and improvement program at the Kansas Avenue Yards. The Kansas Avenue Yards are in the northwest part of Springfield, approximately two miles from the North Yards.

Truck Mounted Crane

On "moving day," the signal forces had the problem of moving the C.T.C. machines from the old office to the new one, and at the same time keeping the C.T.C. in service. Both offices are on the second floor of the respective buildings, and windows are large enough to permit the passage of C.T.C. machines. A truck-mounted, power-operated hoisting crane, owned by a local contractor was used to reach through the window opening, pick up a section of the machine, back out, and lower it onto a truck. As shown in the picture, this crane has a dog-leg extension arm which is adapted for handling of objects through windows. On arrival at the new office building, the crane was used to pick up each machine section and set it through the

(Continued on page 491)



Current for the field - exploration radio unit was supplied by this special On-an gasoline-driven generator set

ous communication between trains and the nearest control office and also between adjacent stations. The rolling topography in the Marion-Salamanca territory permitted a spacing of 13 to 32 mi. between the stations. The most efficient site for a station seldom coincides with the 24-hr. wayside office from which it must be controlled. Therefore, several of the stations are remotely-controlled by wire from a 24-hr. office. Others, at greater distances from 18 to 28 mi., are inductively controlled by means of specially designed circuits.

Extensive Radio Exploration

East of Salamanca a great deal more difficult terrain is encountered than between Marion and Salamanca. Consequently, extensive radio exploration was necessary to determine the most efficient sites for the radio stations. Tentative locations were selected following an intensive study of U. S. topographic maps covering the area involved. The final sites were determined with the aid of a maintenance-type radio-equipped exploration truck, fitted with a 40-ft. aluminum extension ladder. The upper section of the ladder was fitted with a sliding aluminum

pipe having a fixed-station antenna attached to the top end. Elevated at a tentative base station site, a height of approximately 63 ft. was obtained. As trains approached the radio range during the tests, contact was established and a man aboard the Diesel would hold the press-to-talk-button. The variation in signal strength was read and plotted from a vacuum-tube voltmeter connected to the receiver in the truck. The Diesel would report as it passed each mile post, determine if it had been called, then hold the "talk" switch again to the next mile post. This procedure would continue until the train was definitely out of range, as field strength sometimes increases again as a change in terrain may offer a more favorable path to the station site. By plotting the results of such tests, stations were erected at locations where the 15 to 20-watt radiated signals from any two adjacent base stations overlapped sufficiently to assure an adequate signal strength of 5 microvolts in the receiver of a mobile station in the overlap area. On the mountainous Delaware division, 106 mi. in length, the average base station spacing is about 9 mi. On the remainder of the project east of

Salamanca, the average spacing is 15 mi.

Installation of these modern radio train communication facilities on the Erie has been carried out and is progressing under the jurisdiction of F. H. Menagh, the road's superintendent of communications. A detailed article on the first part of the installation between Marion and Salamanca was published in the December, 1948, issue.

Frisco C.T.C.

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window. One-inch hemp rope was used to make slings around each machine section, in which to place the crane hook, as shown in one of the pictures.

Before the moving program started, test sets were set up in the new office building. The first 56 mi. east of Springfield uses conventional d. c. line codes, and two carriers are used to control additional sections of 63 and 85 mi. Therefore, one test was arranged to handle one d. c. section and another to handle one carrier section. Before a section of C.T.C. machine was cut loose from the line at the old office, the men in charge of the corresponding section of test panel were advised by telephone of the position of switches, aspects displayed by signals, and the locations of trains on the corresponding section of railroad. This information was then placed on the model board of the test set, by using tags. If necessary to make train movements in a section of territory, controls were sent out by means of the test sets, under direction of the dispatcher. However, in all instances, each section of machine was moved to the new office in 15 to 20 min., and within 15 min. after it arrived, it was cut back into regular service, and the corresponding section of test panel was cut out.

C.T.C. Uninterrupted

The moving program was started at 8:30 a. m. and was complete at 2:30 p. m. Throughout this time, however, none of the C.T.C. on the entire territory was out of service, and no train delays were incurred. The machines were separated so that one d. c. and one carrier section were moved at the same time, involving the simultaneous use of two test sets, one for the d. c. section and one for the carrier section. In each instance the test set control was in effect only for a short time, from 30 to 45 min.