nected and still be satisfactorily operated by the five-bar generators. Ten or 12 probably would be the maximum. If high-impedance telephones and selectors are used, 40, 50 or even more could be bridged to the line.

As to the length of the circuit, a 15-db. line consisting of all open wire, No. 9 B&S copper, would be approximately 250 mi. long. If 10 mi. of 16-gage paper-insulated cable is inserted in the line, the length would be cut to about 135 mi. and, if the circuit was all 16-gage cable, the length would be only 20 mi.

INSULATION OF RAILS

"How do you insulate the rails for the installation of track circuits on steel-deck bridges, where the track is laid directly atop the bridge structure without wood ties?"

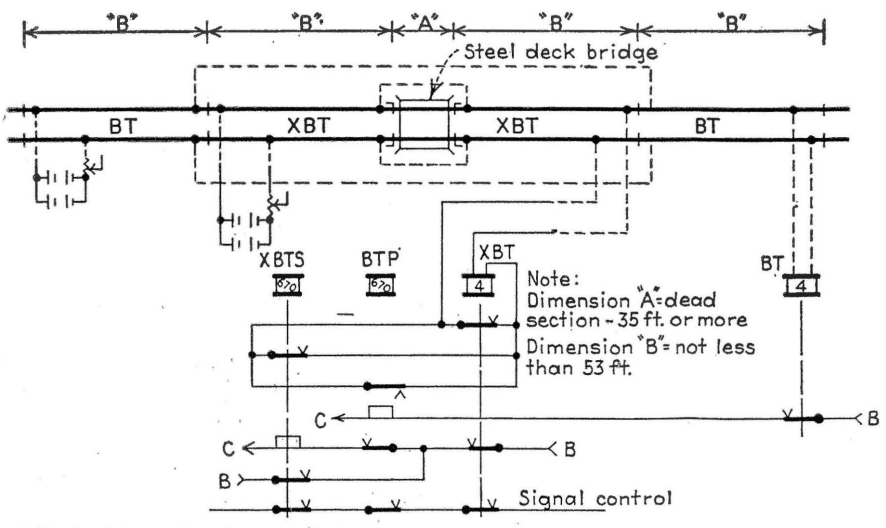
Used Trap Circuits

By H. L. Folley

Engineer Telegraph, Telephone & Signals
Chicago & Illinois Midland
Springfield, Ill.

On the Chicago & Illinois Midland, we believe that many failures would be caused by employees working on steel-deck bridges if we attempted to install track circuits. Consequently, we install conventional trap circuits, a typical example of which is shown in the accompanying plan, to compensate for the dead sections.

For fire prevention, the C. & I.M. has installed metal decking on all pile-trestle bridges. A 4-in. gap is maintained in the metal to insulate the rails. We have found that bridge employees lay tools and equipment, such as power drills, power wrenches, lining bars, etc., across the insulating gaps in the decking, thereby causing track circuit interruptions. We have attempted to control this condition, but find that non-signal employees continue to create conditions causing failures. In my opinion, similar conditions would obtain on track-circuited steel-deck bridges. Even though it would be necessary to span the insulation at two or more points to cause a failure, I believe such failures would occur.



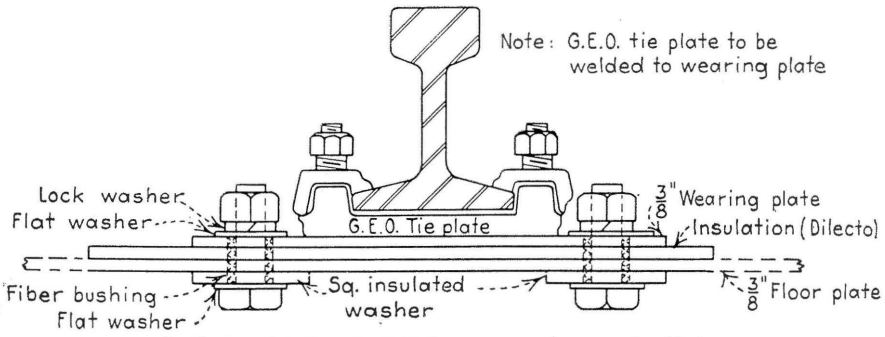
Typical trap circuit over steel-deck bridge on the Chicago & Illinois Midland

G.E.O. Construction

By E. Bouchet

Superintendent Signals & Interlocking
Union, East Pittsburgh, Pa.

The accompanying drawing shows how we insulate rails on steel-flooring bridges and, while the system may be expensive, we find it is very satisfactory. The insulation is extended beyond the wearing plate, which keeps cinders from shorting out to the bridge deck. Also, the bolt head is insulated under the bridge and is protected from the weather. The G.E.O. tie plates are welded to the wearing plate, and the wearing plate is bolted as shown on the sketch to the bridge flooring. Rail fastening can be changed to suit conditions. We have used this system for some time and find it very satisfactory.



Rails insulated with G.E.O. construction on the Union

COMMUNICATIONS TROUBLE

"What is the most unusual and interesting case of communications trouble you have experienced in recent months?"

On Printer Circuits

By H. M. Robertson

Equipmentman, Telegraph Department
Union Pacific, North Platte, Neb.

Recently we were experiencing considerable trouble with our North Platte-Grand Island and North Platte-Omaha printer circuits and, also, some annoyance on our Morse wires, due to ground currents. As our rectifiers are wired common ground, and we did not have enough wires, it was impossible to work these circuits full metallic. Thus, we tried a stunt that worked out very well, and helped all the circuits concerned. It kept them all in operation, whereas there have been times when things were just tied up due to these conditions. We had a simplex lying dead at the time to Omaha, so we patched from our ground jack to this wire and had Grand Island and Omaha do the same. I placed a milliammeter in the patch at North Platte, which sometimes read as much as 110 mills positive or negative difference in the grounds, but it smoothed it out enough that we experienced no more difficult from this cause.

Moose Tangled in Line

By W. G. Benston

Assistant Supt. of Communications
Alaska Railroad, Anchorage, Alaska

During the month of February which, in Alaska, presents unusually heavy