

COMMITTEE G: Education & Training Communication & Signal Section, AAR

A-1 Bond Wire

Approved January 1972

Definition: A metallic connection attached to adjoining rails to insure electrical conductivity.

Symbol: None.

Description: Bond wires are made up of several strands of wire rather than one solid wire. This provides the flexibility necessary to reduce bond breakage due to vibration and rail motion caused by trains moving over bonded rail joints. Below are shown a few of the many methods of installing bond wires.

Bond wires, like most signal components, are available from many suppliers. They do not all look alike, but all perform the same function. Some are welded to the rail head, others are hammered into holes in the rail web, Figure 1.

Some are hammered into $\frac{3}{8}$ in. holes drilled in the rail web, Figure 2.

Some are hammered into the holes in rail web and

in the joint splice bar, Figure 3.

Purpose and Application: The electrical signal circuit, called the track circuit, depends on current flowing from a source of energy through the rails to a relay. Quite often, when new rail is installed in the track, it is possible to complete an electrical path between the rails by tightening the splice bar or angle bar bolts. Unfortunately, that path is not reliable due to such things as corrosion build-up and dirt between rail ends, angle bars and bolts creating resistance to the flow of current. A bond wire is needed to insure a dependable electrical connection between rails.

General Information: It is most important that you become familiar with your company's instructions and requirements.

Detailed Operation: None.

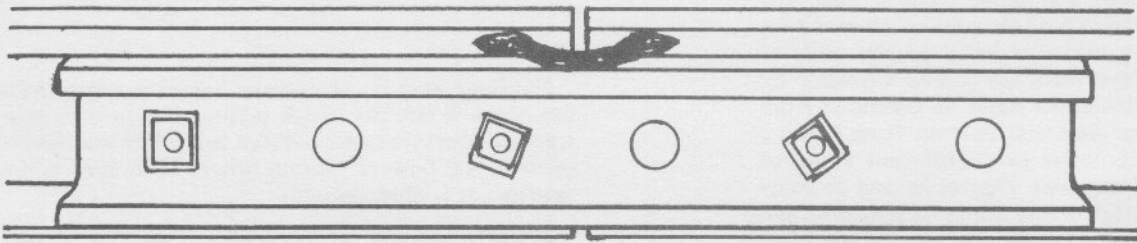


Figure 1

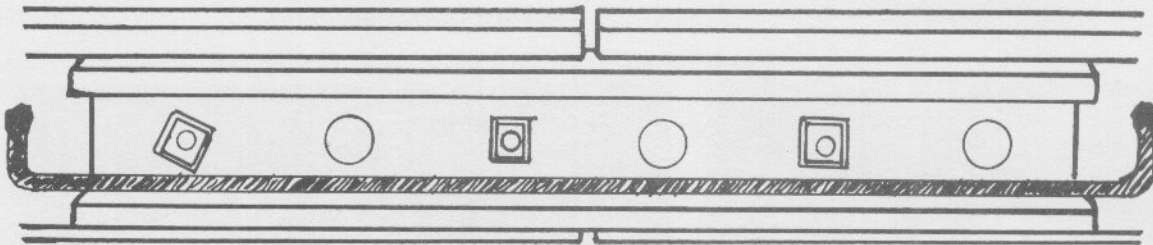


Figure 2

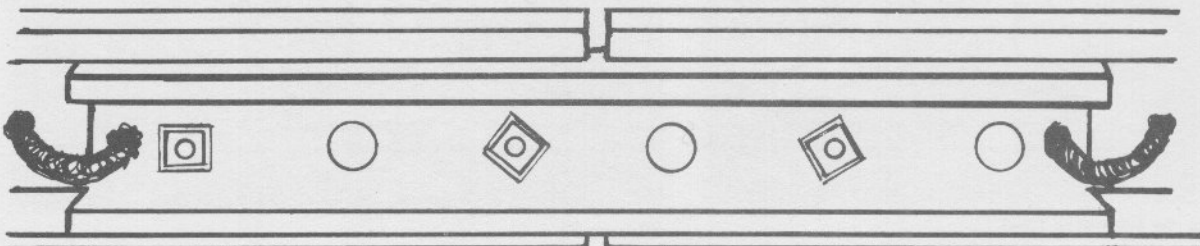


Figure 3