Recommended Vital Circuit Design Guidelines for Reverse Switch Cut-Out Applications for Deactivating Grade Crossing Warning Devices

Revised 2025 (2 Pages)

A. Purpose

This Manual Part recommends vital circuit design guidelines for reverse switch cut-out applications for deactivating grade crossing warning devices.

B. General

1. A reverse switch cut-out may be required to eliminate excess grade crossing warning operation when a switch exists in a crossing approach. This is used when the switch is reversed and the crossing approach is occupied.

2. Where this application is used without wayside signals, consideration should be given to the use of a stick release timer, restart track circuit or other means of warning due to the possibility of a track circuit failure, resulting in shortened warning time.

3. The vital circuit design guidelines provided in this Manual Part shall also apply to equivalent vital electronic and/or software applications.

4. The vital circuit design guidelines provided in this Manual Part represent one method of design. Some aspects of the circuit design may vary depending on the design practices of the individual railroad.

C. Circuits

1. An example of a reverse switch cut-out circuit is shown in Figure 16305-1.

2. When the switch is reversed, energy is applied through the switch circuit controller (SW) reverse contacts, energizing the reverse switch repeater relay (RWPR), which then energizes the reverse switch stick relay (RWSR).

3. The RWSR bypasses the crossing approach relay (ETR).

4. The RWSR stick circuit is held through its own contact and the ETR de-energized.

5. The RWSR will remain energized until the switch indicates it is no longer reversed and the approach track circuit is unoccupied.

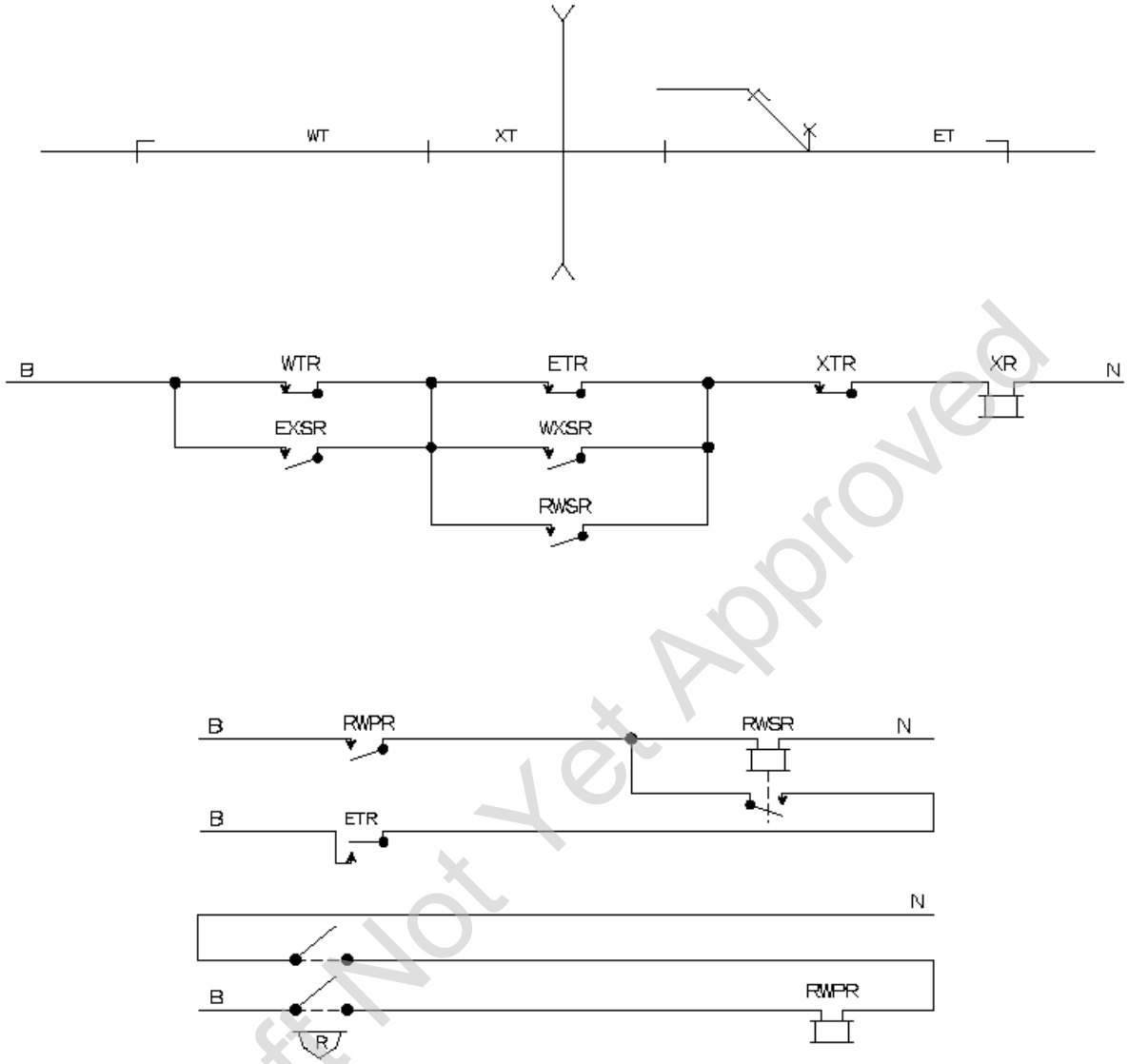

Figure 16305-1 Example of a Reverse Switch Cut-out Circuit