
**Recommended Vital Circuit Design Guidelines for Pushbutton Cut-Out for
Manually Terminating or Restarting Grade Crossing Warning Devices**
Revised 2025 (2 Pages)

A. Purpose

This Manual part recommends vital circuit guidelines for pushbutton cut-out applications for manually terminating or restarting grade crossing warning devices.

B. General

1. A manual pushbutton cut-out may be required to eliminate excessive crossing warning device operation when a portion of a crossing approach is occupied by a facing train movement which stops or conducts switching moves.
2. Where this application is used with preemption, consideration should be given to the effect the Pushbutton Stick Relay (PBSR) has within the preemption circuits.
3. Where this application is used with wayside signal systems, the PBSR should be checked in the wayside train control circuits.
4. Where this application is used without a wayside signal system, operational consideration should be given to the possibility that shortened warning time may result from operation of the PBSR.
5. The vital circuit design guidelines provided in this Manual Part shall also apply to equivalent vital electronic and/or software applications.
6. 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. Operation

An example of a pushbutton cut-out circuit is shown in Figure 16309-1. The spring returned STOP pushbutton is momentarily depressed energizing the slow-release Pushbutton Relay (PBR). Energy is then applied through the pushbutton, East Track Relay (ETR), Island Track Relay (XTR) and finally the PBR to energize the PBSR. A stick circuit is then established, bypassing the PBR.

The PBSR by-passes the ETR in the XR control circuit to energize the XR and deactivates the crossing warning devices.

The crossing warning devices may be reactivated by de-energizing the PBSR relay with use of the START pushbutton.

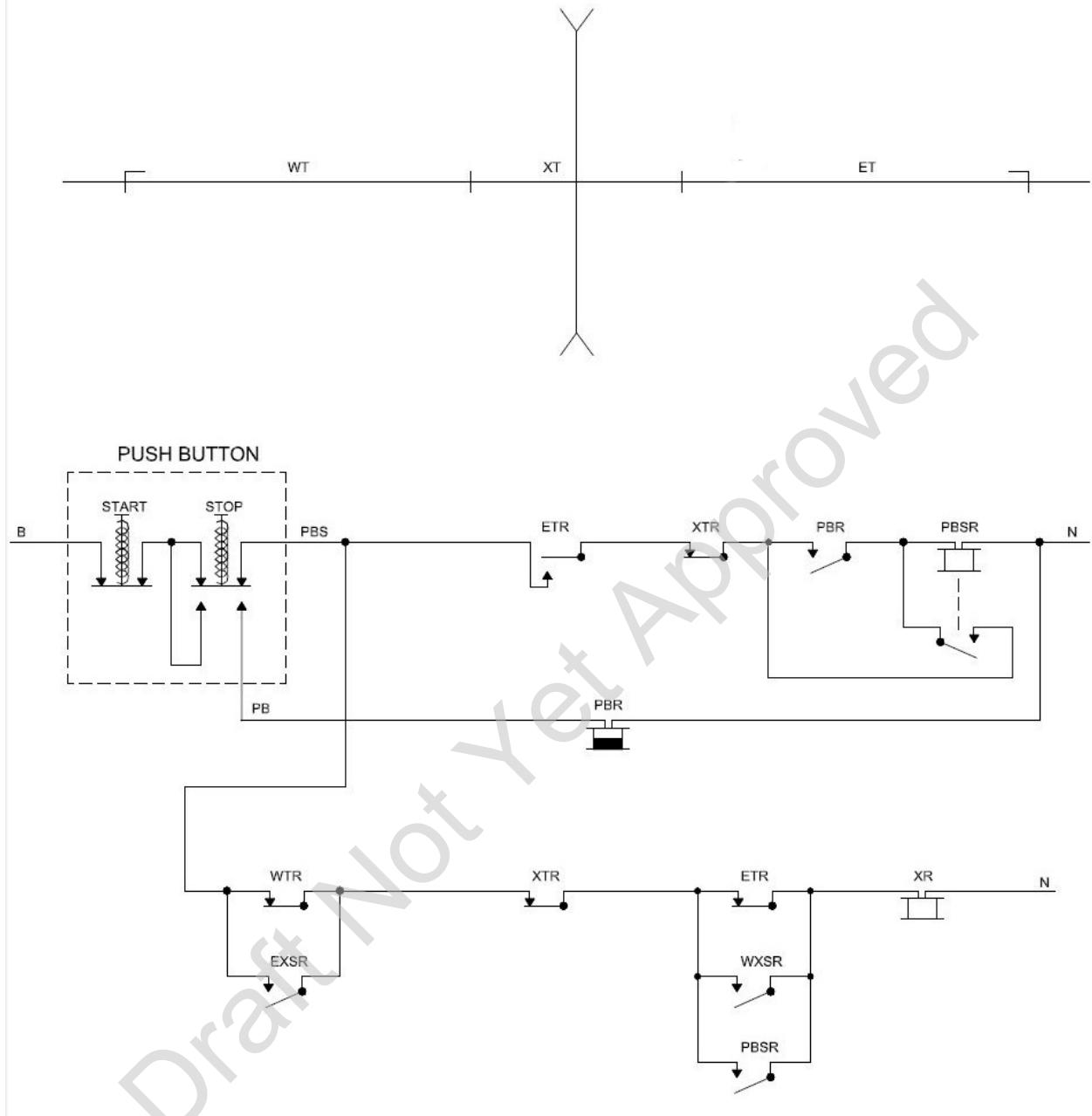


Figure 16309-1: Example PBSD circuit for East Track Cut-out