

# Circuits for Crossovers

## On the Baltimore & Ohio

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FOR protection on hand throw crossovers between signaled tracks in automatic block signal territory, the Baltimore & Ohio has developed and is progressively installing a crossover circuit arrangement which combines the functions of a switch-repeating WP, circuit, and a conventional track circuit.

Under normal conditions, the circuit functions as a switch-repeating WP circuit as follows; energy feeds from the positive terminal of the battery on wire XTBI, through the upper contact in switch circuit controller on switch A, on wire XTBI, through the upper contact in switch circuit controller on switch A, on wire XTBI, to portion of crossover rail marked Q. From the other end of this rail section, the circuit continues over jumper to rail marked Z. From the

troller on switch A, wire XTN to the negative side of the battery. When either switch is thrown, thus opening a normal switch circuit controller contact, both relays become deenergized, thus opening the HD signal line control circuits for signals on both tracks. The signals are thus held at their most restrictive aspect until both switches are restored to their normal position, provided this is done when the crossover is unoccupied.

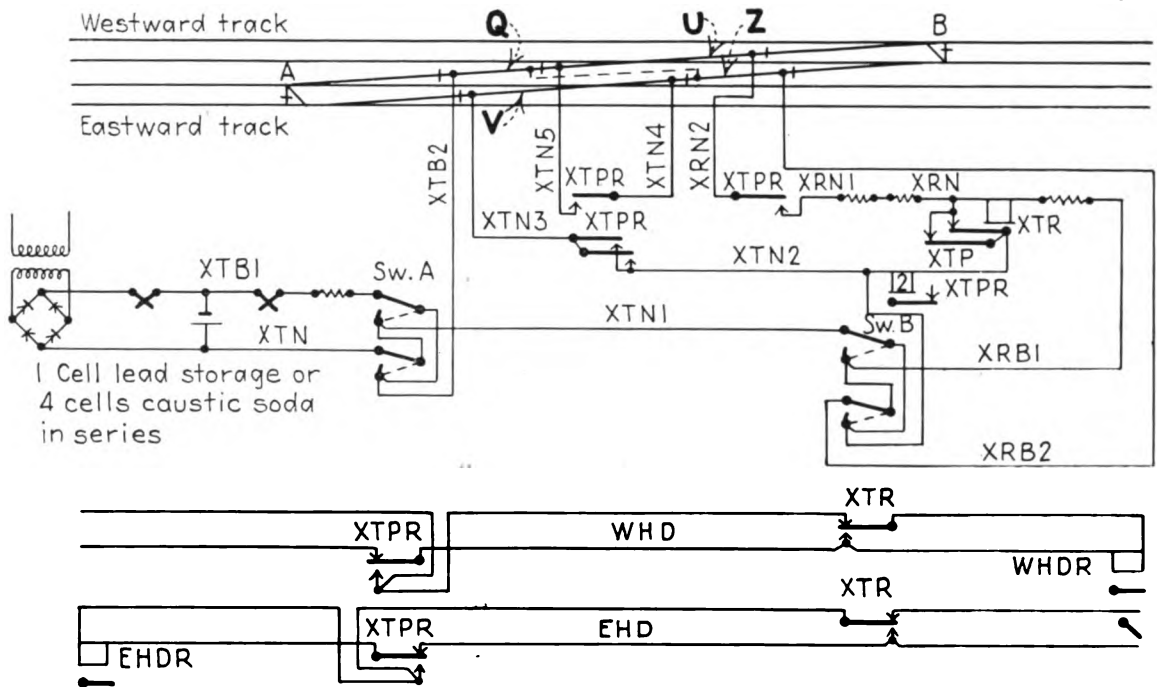
When the switches are placed normal, relay XTR is picked up by a circuit which extends from the coil of that relay to the left on wire XRN1, back contact 1 of relay XTPR, rail section U, back contact 2 of XTPR, rail section V, back contact 3 of XTPR, wire XTN2 to lower contact in circuit controller, etc., in the manner of a conventional track circuit. If a car or a locomotive is left standing on the cross-

through front contact of XTR closes the circuit to energize XTPR, thus restoring the circuit to its normal WP condition.

This circuit arrangement has been installed on a number of hand-throw crossovers in signaled territory on the Baltimore & Ohio, and is being progressively installed on the remainder. An important advantage of this circuit is that the six insulated rail joints now in service on each crossover are used without the necessity of relocating them, and no additional joints are required. There is no dead section in the crossover circuit when functioning as a track circuit as exists in some schemes where the insulated joints are placed at the ends of the frogs.

This is a single circuit arrangement which reduces construction and maintenance costs as compared with using two track circuits. If desired, because of rusty rail, the circuit through the rails in this scheme can be overenergized, without danger of false proceed signal aspects, because the crossover battery is not connected to frogs or rails in the signaled tracks, except when the HD signal control circuits on both adjoining tracks are open

This circuit for hand-throw crossovers between signaled tracks in automatic block territory combines the functions of a switch repeating and a conventional track circuit



opposite end of this rail, the circuit extends on wire XRB2 to lower contact in circuit controller on switch B, on wire XRB1 through coil of relay XTR, through its own front contacts, on wire XTP through coil of relay XTPR, then through upper contact in switch circuit controller on switch B, on wire XTN1 through lower contact in switch circuit con-

over, relay XTR, will be under wheel shunt. As long as XTR is down, the signal line circuits are open and HD relays shunted. On the other hand, if no car or locomotive has been left on the crossover, as soon as the switches are placed normal, relay XTR is energized by the circuit which includes rail sections Q, V, U and Z. A circuit

at the crossover, and the HD relays are shunted by the back contacts of the relays in the crossover circuit. Normally, the crossover battery is insulated from the rails in the signaled tracks. The WP circuit feature avoids the necessity of breaking HD line circuits through switch circuit controller contacts directly, which sometimes results in grounds.