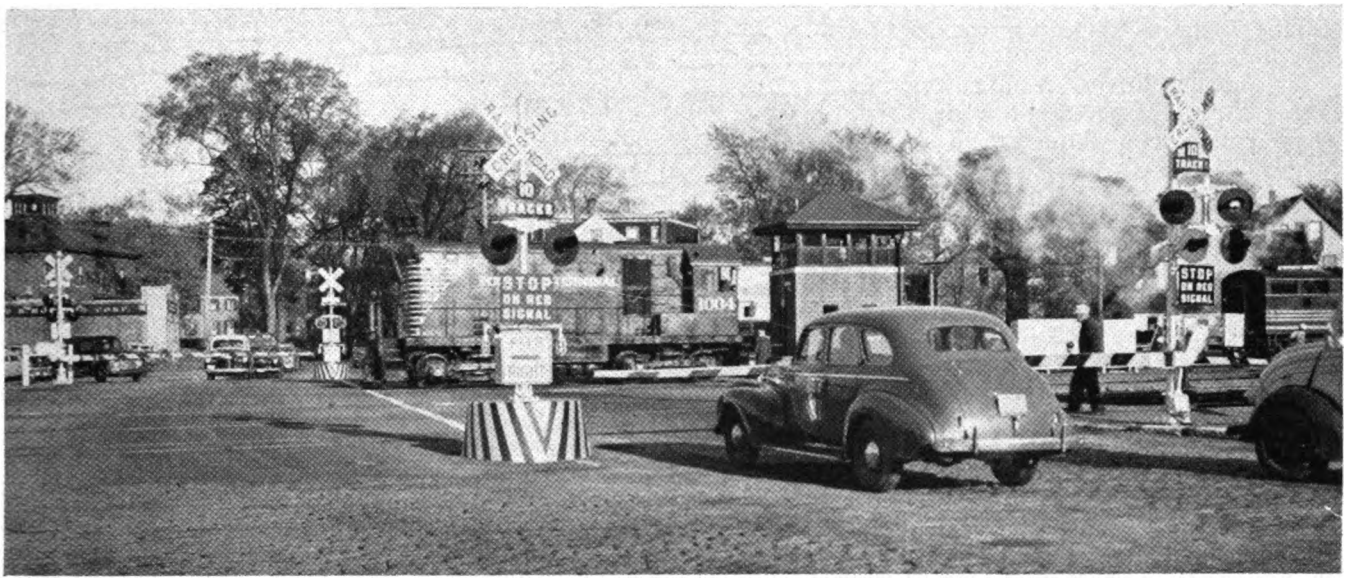
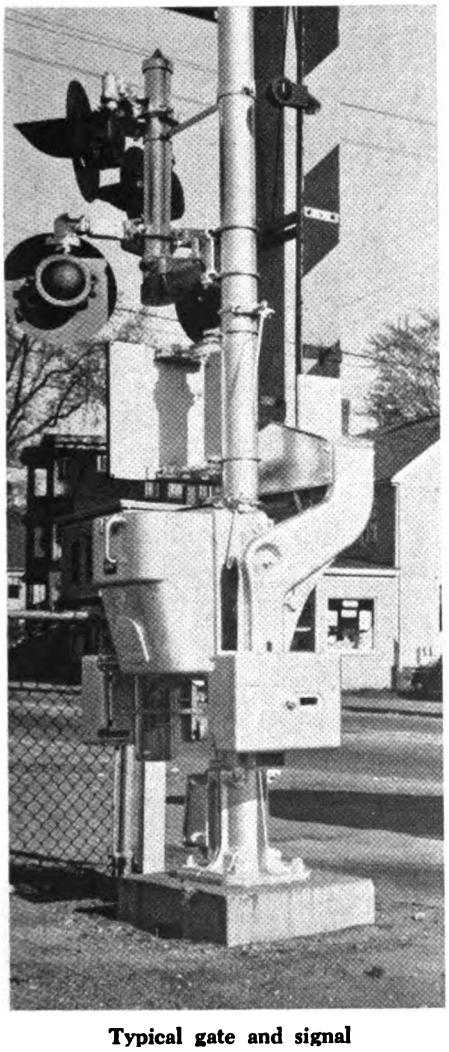


View showing signals on gate mast and on foundation in center of the street

Portland Terminal

Solves Crossing Protection Problem



Typical gate and signal

Flashing-light signals and gates with traffic islands and fences improve safety for heavy street traffic at an important crossing near Portland Terminal passenger station

AT the east end of the plaza of the passenger station in Portland, Me., Congress street crosses ten tracks of the Portland Terminal Company, which handles through freight and passenger trains of both the Boston & Maine and the Maine Central. This street not only carries heavy local street traffic but also through traffic of the Maine Turnpike is routed over this street. This street is also used by a large number of pedestrians. A 24-hour count in January showed 4,774 motor vehicles, 1,487 pedestrians and 294 train and switching movements over the crossing. In summer, this traffic is appreciably heavier.

For many years this crossing was protected by two flagmen, one man on the north side of the tracks and another on the south side, 24 hours every day. As the number of motor highway vehicles increased, the watchmen had difficulty in stopping the flow of highway traffic when trains were approaching, as well as to keep from being struck themselves by vehicles. Complications were increased by the tendency of vehicle drivers to cut across the paved plaza, and thus enter the crossing at an angle, so that the crossing watchmen could not stop them. The pedestrians would also cut across corners to get over the tracks and thus increase the hazard.

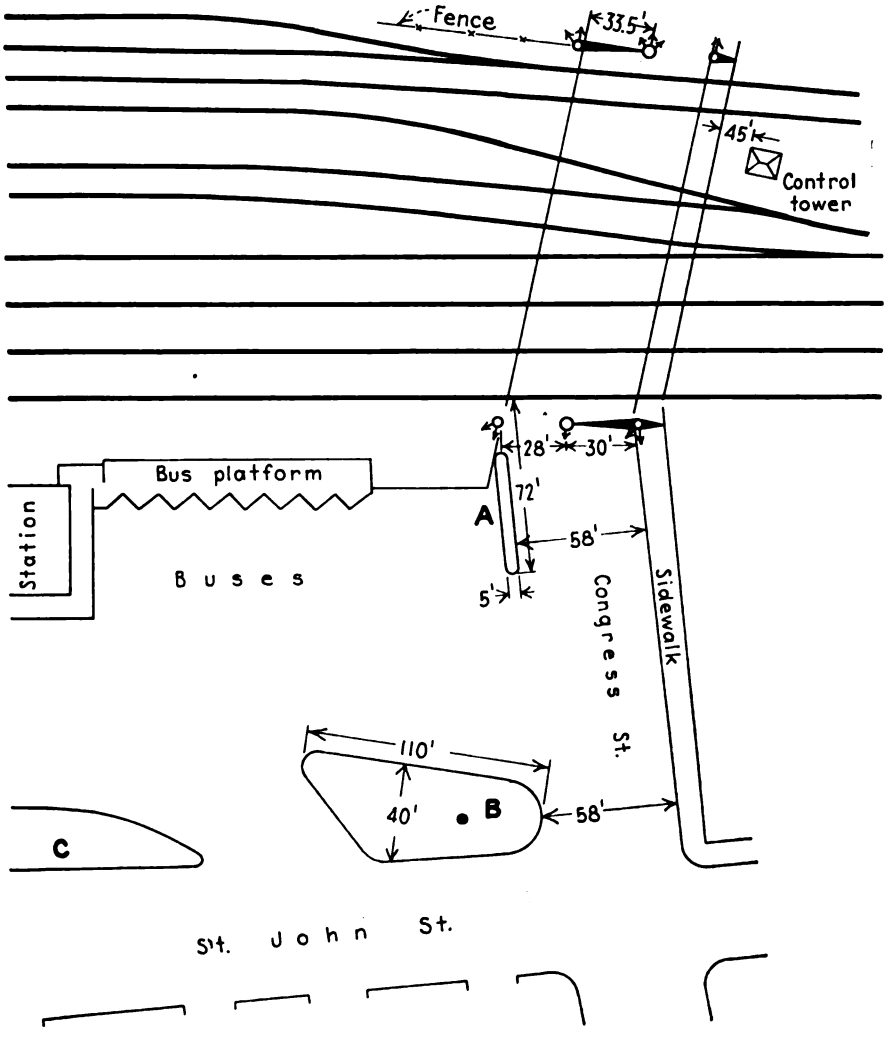
Street Traffic Is Channeled

Portland city officials and officers of the Portland Terminal Company made an extensive study of this crossing and developed a system of protection, which, on application to the Maine Public Utilities Commission, was approved by that body. As shown in the pictures herewith, the basis of the protection is an arrangement of flashing-light signals, bells and electric gates. The success of this protection is that street traffic is now "channeled" where the

flashing-lights, bells and gates are in the path of traffic approaching the crossing.

To prevent drivers from cutting across the plaza pavement, a cigar-shaped concrete abutment, 5 ft. wide, 50 ft. long and curb-height, was constructed at "A" on the west edge of the street, just south of the tracks. Also large concrete islands "B" and "C" were constructed in the plaza along the edge toward St. John street. These islands channel traffic in and out of the plaza but discourage drivers from entering Congress street. As a means of getting vehicles to move quickly across the tracks, the entire crossing was rebuilt and paved with black-top.

In order to "channel" the vehicular traffic to the right-hand lane in Congress street, flashing-light signals were installed on large concrete foundations in the center of the street near the tracks on both the north and south sides. Gates, with arms long enough to reach from the curb to these concrete islands in the center of the street, were installed to obstruct the right-hand lanes approaching the tracks from each direction. On the north side of the track and west of the crossing, a 4-ft. woven steel fence was installed along the right-of-way property line to prevent pedestrians from cutting across the tracks.

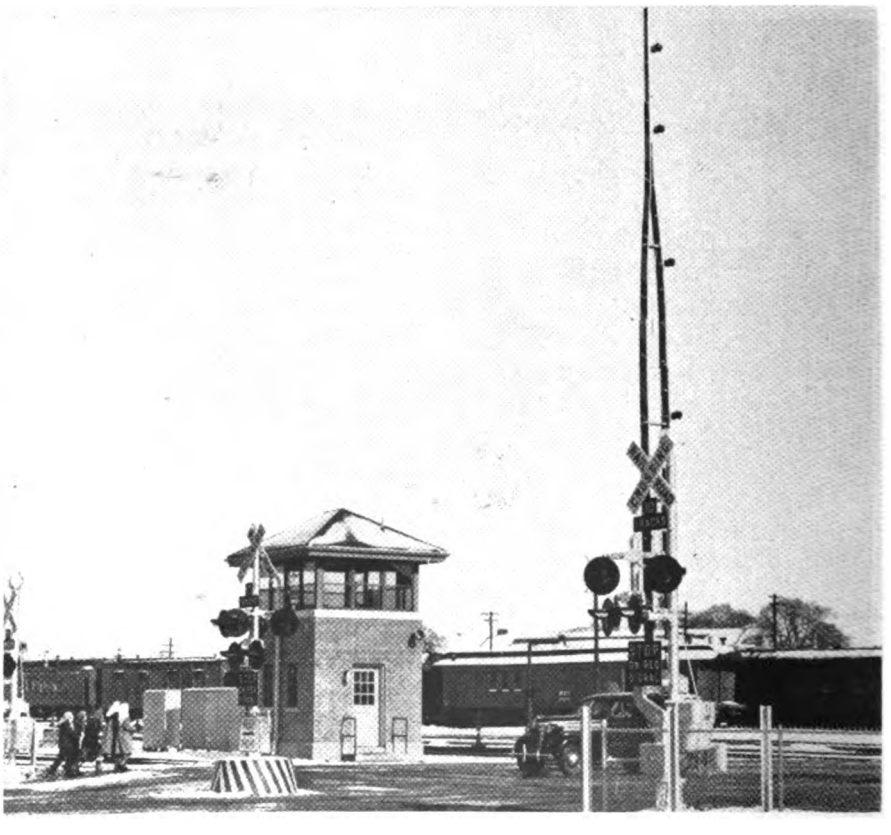


Islands A, B and C are curb high

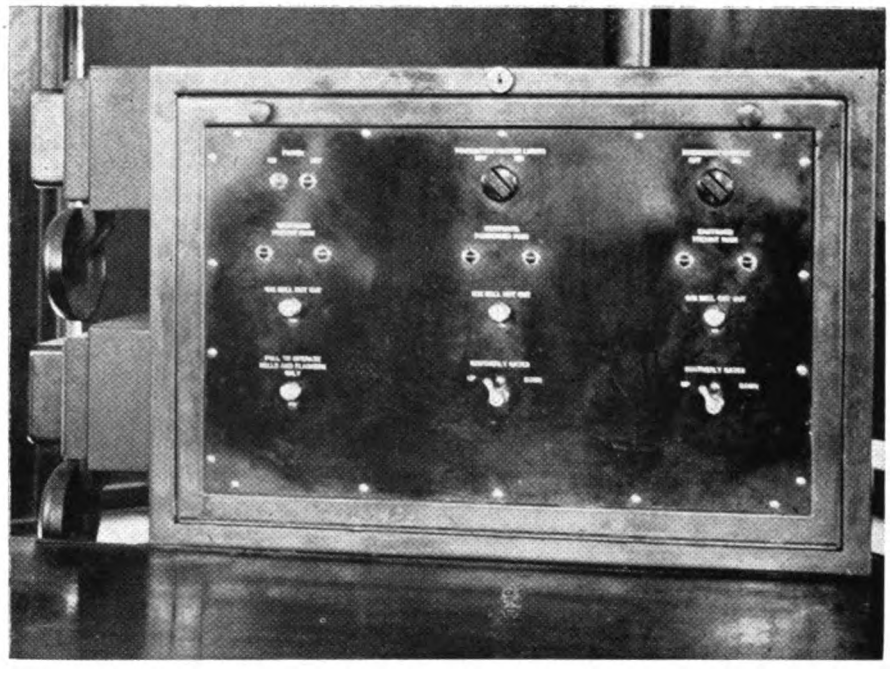
Signals And Gates

The official sidewalk is only on the east side of the street. The southward gate mechanism is in the parkway between the sidewalk and curb. This mechanisms has two arms, one across half of the street, and the other across the sidewalk. The mechanism on the north side of the tracks to the west of the street is at the property line, and the arm thus obstructs the path of pedestrians, as well as vehicles. A separate mechanism operates a sidewalk arm only on the north side of the track on the east side of the street.

Passenger trains enter and depart from the station at relatively low speeds. Freight trains pass around the station on the tracks on the north side. Numerous switching moves are made while switching in



On the north side of the track a 4-ft. fence, along the right-of-way line, prevents the pedestrians from cutting across the tracks

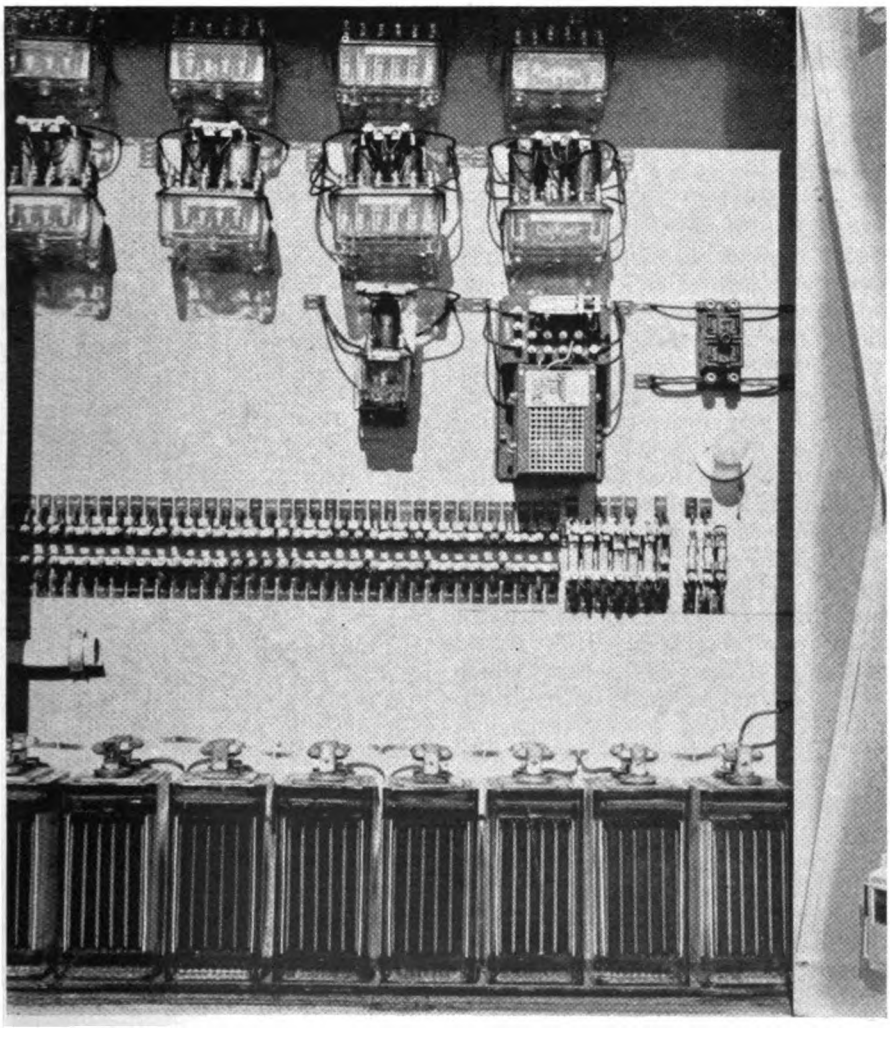


On the control panel, one lever controls the flashing light signals on the north side of the tracks and second lever controls signals and gates on the south side of the tracks

the station and in the area to the east. Therefore, automatic control of the crossing protection is not practicable. For this reason the new flashing-light signals and gates are controlled by a manually controlled machine in a new brick tower east of the street line and just south of the freight main tracks, as shown in the plan.

On the control panel, one lever controls the flashing-light signal and gates on the north side of the tracks, and a second lever controls the signals and gates on the south side. Annunciator lamps and bells indicate the approach of trains on the passenger and freight main tracks. Small knob-type switches control the marker lamps on the signal foundations in the center of the street pavement. These signals and gates have now been in service for one year, and the city authorities are well pleased with the improved protection. In 12 months of service, these gates were operated 68,005 times.

Two sirens were installed on the new tower building which are controlled by crossing towerman, in case of emergency. When these sirens are sounded, all trains and engines moving toward Congress Street must, if possible, come to a full stop before proceeding over the crossing, such a stop to be made as quickly as possible, consistent with safety. Following such a stop, trains or engines may proceed over crossing only after receiving a hand signal or a permission from crossing watchman.



The relays, rectifiers and storage batteries for operating the gate motors are in a large sheet-metal case

Power Supply

The gates are operated by d.c. from 8 cells of 200-a.h. Exide battery. One set of 6 cells feeds the control circuits and acts as a standby for the lamps on the north side of the crossing, and one set of 6 cells feeds the control circuits and acts as a standby for the lamps on the south side of the crossing. The lamps are normally on a.c. These batteries are on floating charge through Fansteel rectifiers. The flashing-light signals and gates were furnished by the Western Railroad Supply Company, and the relays by the General Railway Signal Company. This project was planned and constructed by signal forces of the Maine Central, under the jurisdiction of E. N. Fox, signal engineer, and under the supervision of L. M. Lentz, signal supervisor, and Arno Ellis, signal foreman.