TRAFFIC AND SAFETY INFORMATIONAL SERIES FREQUENTLY ASKED QUESTION #17

WHAT ARE THE RECOMMENDED SAFE DRIVING PRACTICES AT RAILROAD CROSSINGS?

RECOMMENDATIONS FROM OPERATION LIFESAVER

Operation Lifesaver, a nationwide public education program dedicated to reducing crashes at rail crossings, recommends the following driving tips (https://www.oli.org):

- The only safe and legal place to cross railroad tracks is at designated crossings.
- Always obey warning signs and signals, and always look for a train before proceeding.
- Ensure you can clearly see down the tracks in both directions before proceeding.
- Do not get trapped on a crossing. Before crossing, be sure there is space on the other side to completely clear the tracks.
- Leave at least 15 feet between the front and rear of your vehicle and the nearest rail.
- Always expect a train.
- Trains may be closer and traveling faster than they appear and can run on any track at any time.
- Avoid crossing while lights are flashing or gates are down. It is illegal and dangerous to go around lowered gates.
- Never try to beat a train.
- If your vehicle gets stuck or stalls at a crossing, get everyone out and far away immediately.
- To report a problem or emergency, call the number on the blue and white Emergency Notification System (ENS) sign on the crossbuck and share the crossing ID number with the dispatcher. (Call 911 if no sign is present.)
- Be aware that trains cannot stop quickly. It takes over a mile to stop a train once the emergency brakes are applied. When a train engineer can see you, it is too late for the train to avoid a collision with you or your vehicle.

These tips represent safe driving procedures for at-grade crossings between railroad tracks and public or private roadways. The consequences of not following these procedures can be significant. Some at-grade railroad crossing statistics are discussed below.

AT-GRADE RAILROAD CROSSING STATISTICS

Transportation agencies (railroad and highway) install a series of controls at at-grade railroad crossings. Unfortunately, studies based on observations of rural roadway/railroad crossings have shown that these controls are sometimes ignored. A study by Shinar and Raz in 1982 observed drivers on rural roads at different at-grade railroad crossings with a variety of control strategies. It was found that all drivers stopped when lights were flashing, but 40 percent then crossed the tracks while the lights were still flashing. A study by Meeker and Barr in 1989 found that 67 percent of drivers actually crossed the railroad tracks in front of an approaching train. A more recent study by Meeker in 1997 supported these findings, showing that 67 percent of all drivers crossed the tracks when only flashing lights were used, but 38 percent of drivers also drove around lowered crossing gates.

The consequences of making a mistake at an at-grade railroad/highway crossing can be fatal if a train/vehicle crash occurs. In 2020, 33 crashes occurred at at-grade railroad/highway crossings in Iowa.

These crashes did not result in any fatalities but did produce 9 personal injuries. In the United States, 170 fatalities occurred at at-grade railroad/highway crossings in 2020. Overall, approximately 34 percent of these fatalities occurred in rural areas. Note that these statistics summarize crashes that occurred at at-grade railroad/highway crossings with and without active traffic control. The study results mentioned in the previous paragraph may, in part, explain these numbers.

AT-GRADE RAILROAD/ROADWAY CROSSING CONTROLS

There are generally two types of at-grade railroad/roadway crossing controls: passive and active.

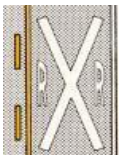
Passive Control Devices

Passive control devices consist of signs and pavement markings designed to identify at-grade railroad crossings and direct driver and pedestrian attention to them. Drivers and pedestrians can then take the appropriate actions. Passive controls can include the following:

Advance warning signs are placed in advance of the grade crossing at a distance that varies with the posted speed or the 85th percentile of the approaching traffic (see Section 2C.05 of the *Manual on Uniform Traffic Control Devices*).

A *railroad crossing sign,* commonly referred to as a crossbuck sign, is normally located at the crossing no closer than 15 feet measured perpendicular from the nearest rail and 6 to 12 feet from the edge of the shoulder or traveled way. At multiple-track crossings, the number of tracks shall be shown with a supplemental plaque.

A *stop or yield sign* is installed in conjunction with the crossbuck sign, either as part of the crossbuck assembly or as a separate sign/post. The yield sign is the default installation, unless an engineering study finds that a stop sign is needed.

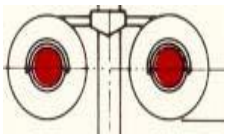


Pavement markings are placed on the approach lanes of the roadway in advance of an at-grade railroad crossing where signals or gates are used or where the posted or statutory speed limit for traffic is 40 mph or greater.

“Do Not Stop on Tracks” signs and stop signs can be used where detailed engineering studies determine that there is a need.

Active Control Devices

Active control devices at at-grade railroad/roadway crossings inform motorists of the presence of trains at or approaching the crossing through the use of flashing lights and gates. Active controls can include the following:



Horizontally mounted *alternate flashing lights* are used to warn motorists of the presence of a train. Where the speed of trains is 20 mph or greater, the lights must flash for a minimum of 20 seconds before the train arrives at the crossing. Bells or other audible warning devices may also be used to provide additional warning.

A *descending gate arm* that extends across the approaching lanes of traffic can be used to block traffic at the crossing. Gates are used in addition to flashing lights. The gate arm shall start its downward motion not less than 3 seconds after the flashing lights start to operate, reach its horizontal position at least 5 seconds before the arrival of rail traffic, and remain in the down position as long as the rail traffic occupies the grade crossing.

The active control devices described above are also usually combined with any or all of the passive devices described previously, excluding the stop/yield signs.

Different gate designs may be used. Dual gates block traffic only in the approach lanes in both directions. Four-quadrant gates, on the other hand, block traffic in both directions on both sides of the tracks. This design prevents vehicles from driving around the gates, which can occur with a dual gate design. Four-quadrant gate designs, however, can trap vehicles on the crossing. For this reason, the lowering of the downstream gates lags the upstream gates by a specified delay to allow vehicles to clear the tracks if necessary.

REFERENCES

Shinar, D., and S. Raz. 1982. Driver Response to Different Railroad Crossing Protection Systems. *Ergonomics*, Vol. 25, pp. 801–808.

Meeker, F. L., and R. A. Barr. 1989. An Observational Study of Driver Behavior at a Protected Railroad Grade Crossing as Trains Approach. *Accident Analysis and Prevention*, Vol. 21, No. 3, pp. 255–262.

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