

CHAPTER 47

Railroad-Highway Grade Crossings

NOTE: This chapter is currently being re-written and its content will be included in Chapter 308 in the future.

Design Memorandum	Revision Date	Sections Affected
14-07	Apr. 2014	Ch. 47

TABLE OF CONTENTS

47-1.0 DESIGN CRITERIA 3
 47-1.01 Horizontal Alignment 3
 47-1.02 Vertical Alignment 4
 47-1.03 Cross Section 4
 47-1.04 Sight Distance 4
 47-1.05 Train-Activated Safety Devices 4
47-2.0 COORDINATION WITH RAILROAD COMPANY 5

ARCHIVED

RAILROAD-HIGHWAY GRADE CROSSINGS

(Rev. Apr. 2014)

47-1.0 DESIGN CRITERIA

The geometric design of railroad-highway grade crossings should be made jointly when determining the warning devices to be used. When only passive warning devices such as signs and pavement markings are used, the highway drivers are warned of the crossing location but must determine for themselves whether or not there are train movements for which they should stop. On the other hand, when active warning devices such as flashing light signals or automatic gates are used, the driver is given a positive indication of the presence or the approach of a train at the crossing.

Traffic control devices for railroad-highway grade crossings consist primarily of signs, pavement markings, flashing light signals, and automatic gates. Criteria for design, placement, installation, and operation of these devices are covered in the *IMUTCD* and the FHWA *Railroad-Highway Grade Crossing Handbook*.

A railroad-highway grade crossing on a 3R or 4R project should be in accordance with the design criteria as described in the following sections.

47-1.01 Horizontal Alignment

The highway should intersect the tracks at a right angle with no nearby intersections or driveways. To the extent practical, crossings should not be located on either highway or railroad curves.

The AASHTO *Policy on Geometric Design of Highways and Streets (Greenbook)* specifies that where highways that are parallel with main tracks intersect highways that cross the main tracks, there should be sufficient distance between the tracks and the highway intersections to enable highway traffic in all directions to move expeditiously. Where physically restricted areas make it impractical to obtain adequate storage distance between the main track and a highway intersection, the following should be considered:

1. interconnection of the highway traffic signals with the grade crossing signals to enable vehicles to clear the grade crossing when a train approaches; and

2. placement of a “Do Not Stop on Track” sign on the roadway approach to the grade crossing.

47-1.02 Vertical Alignment

The approach elevation should be the same elevation as the top of rails for a distance of 2 ft outside the rails.

The surface of the highway should not be more than 3 in. higher or lower than the top of the nearest rail at a point 30 ft from the rail unless track superelevation dictates otherwise.

47-1.03 Cross Section

There should not be a raised curb or obstruction within 10 ft of the rail. This guidance is to ensure the railroad company has access to the area adjacent the rail.

47-1.04 Sight Distance

Sight distance is a primary consideration at crossings without train-activated warning devices. Adequate stopping sight distance is needed so that a driver can see an approaching train and have sufficient distance to stop safely. Recommended sight distance values and additional discussion of sight distance at railroad-highway grade crossings can be found in the 2011 *Greenbook*, Section 9.12.

47-1.05 Train-Activated Safety Devices

Where a railroad-highway grade crossing is located within or near the limits of a project, or is impacted by maintenance of traffic, the district or central office railroad coordinator should be contacted to assist in evaluating the need to include train-activated warning devices as part of the project scope.

Projects for which train-activated warning devices are deemed necessary for highway-railroad at-grade crossings that are located on the State Highway System, or federally-funded projects on a local roadway system, shall install the following:

1. train-activated flashing lights and gates;
2. at least one (1) overhead cantilever with train-activated flashing lights;

3. warning bell—one (1) bell for a single track, two (2) bells for multiple tracks; and
4. constant warning time circuitry.

The policy is applicable to new installations as well as replacement installations. When existing warning devices are replaced, they shall be upgraded to the configuration described above.

47-2.0 COORDINATION WITH RAILROAD COMPANY

The designer should contact the Department railroad coordinator when there is a railroad within or near the proposed highway project. The railroad coordinator will determine the need for the railroad company's attendance at the preliminary field check. See Chapter 105 for railroad coordination.

ARCHIVED