

1400 RAILROADS

1401 Design Procedures

1401.1 Overview.....	09/16
1401.2 Design Procedures.....	09/16
1401.2.1 Clearance Requirements	09/16
1401.2.2 Width of Crossing	09/16
1401.2.3 Profile and Alignment of Crossings and Approaches	09/16
1401.3 Right-of-Way Considerations	09/16

Highway Design Manual	<i>Chapter</i>	EXHIBITS
	<i>Subject</i>	Table of Exhibits

1400-01	Railroad Plan and Profile Sheet for Grade Separated Crossing
1400-02	Detail Sheet Railroad Approach
1400-03	Detail Sheet Railroad Crossing

<h1>HIGHWAY DESIGN</h1>	<i>Chapter</i> RAILROADS
	<i>Subject</i> Design Procedures

HD-1401.1 OVERVIEW

The following information is provided to highway designers for use when highway improvements encroach upon railroad facilities. References to specific design criteria for railroads are contained in the *American Railway Engineering and Maintenance of Way Association (AREMA) Manual*. Additional criteria may be available from individual railroads.

The project manager should contact the Central Office railroad coordinator as soon as possible, but no later than the selection of the preferred alternative, in order to facilitate the necessary approvals with the railroad company and identify additional considerations that should be made concerning the potential impacts of the highway on their facilities. For example, planned railroad expansions may not be discovered until the overpass or underpass structure is well into final design. Contacting the owner can yield this type of information so that these additional needs are addressed.

The following are common practices used by the Kentucky Transportation Cabinet (KYTC), as well as specific criteria accepted by railroads operating in Kentucky.

Note: General requirements for surveying procedures can be found in **HD-300**.

HD-1401.2 DESIGN PROCEDURES

When a project affects a railroad, a railroad plan and profile sheet should be included in the plan set. The following information is required:

- Alignment and profile of railroad
- Angle measurement between the roadway and railroad centerlines of the at-grade crossing (Angle measurement is not necessary for grade-separated crossings.)

- Existing and proposed horizontal and vertical clearances
- Name of railroad
- Type of track (mainline, siding, spur)
- Railroad valuation station
- Distance to railroad milepost on each side of highway centerline
- Existing drainage features under the railroad and in the vicinity of the crossing
- Limits of existing railroad and roadway rights of way and proposed roadway right of way and easements

Note: The proposed roadway right of way and easements, along with the existing railroad valuation data, should also be shown.

Exhibits 1400-01 and 1400-02 show examples of a railroad plan and profile sheets for grade-separated and at-grade crossings.

Railroad overpasses and underpasses of the roadway at railroad crossings shall be treated as any other structure.

Railroad at-grade crossings should be thoroughly investigated in the preliminary engineering phases to determine whether an at-grade crossing is acceptable. The railroad coordinator in the Division of Right of Way and Utilities will contact the railroad company for input on all crossings.

To the extent practical, the highway alignment should intersect the railroad track at right angles, and crossings should not be located on either highway or railroad curves.

For railroad at-grade crossings, a pavement development sheet shall be included (**Exhibit 1400-03**). If the roadway is on a curve or the limits of superelevation extend through the crossing, the pavement development sheet should include all the appropriate data for the roadway. With the concurrence of the railroad, track elevations in some instances may be adjusted to meet the proposed roadway elevations. When evaluating these cases, the project manager should consult the Central Office railroad coordinator.

HD-1401.2.1 Clearance Requirements

The following are typical clearance requirements for the construction of permanent or temporary facilities encroaching on or across railroad right of way at railroad-highway crossings:

- The railroad company establishes horizontal clearance from the centerline of

track to the face of a pier, abutment, or other obstacle. The Division of Structural Design shall be contacted for the exact information prior to the beginning of the bridge design process.

- Crashwalls are required when the face of the pier is closer than 25 feet from the centerline of the track, measured perpendicular to the track. When crashwalls are required, the project manager should consult the Division of Structural Design.
- A standard vertical clearance of 23 feet shall be provided. Measure vertical clearance beginning at the top of the high rail and proceeding to the lowest point of the structure in the horizontal clearance area of the railroad. The *AREMA Manual, Chapter 28-1*, provides additional information.

HD-1401.2.2 Width of Crossing

New crossings shall be constructed 2 feet beyond the edge of the graded (full) shoulders.

HD-1401.2.3 Profile and Alignment of Crossings and Approaches

The surface of the highway shall be in the same plane as the tops of the rails for a distance of 2 feet outside the rails for either multiple- or single-track crossings. Where crossings involve two or more tracks, the tops of the rails for all tracks should be brought to the same plane where practicable. The surface of the highway should be no more than 3 inches higher nor 6 inches lower than the top of the nearest rail at a point 30 feet from the rail, measured at right angles thereto, unless track superelevation dictates otherwise. Typically, railroad crossings are constructed by the railroad. The crossing distance should not be included in the length of project on the layout sheet.

HD-1401.3 RIGHT-OF-WAY CONSIDERATIONS

All parcels of land within railroad right of way that are needed for highway construction are to be taken as either permanent or temporary easements. The descriptions shall be tied to both highway and railroad stationing. Information about valuation maps, which show railroad stationing, should be requested from the railroad coordinator in the Division of Right of Way and Utilities. When the project's right-of-way plans are submitted, the railroad sheets (including all survey information, proposed railroad deeds, and cost appraisals) shall be submitted to the railroad coordinator.

In general, with the exception of crossings, railroads will not allow any permanent

construction work or occupancy within 25 feet of the centerline of the nearest track. Certain work at lesser distances may be permitted with concurrence of the railroad. As necessary, the Central Office railroad coordinator can provide more information.

The above limitations will not affect the use of the right of way on a temporary basis to permit construction of the permanent crossing facilities. The railroad generally grants temporary easements within 10 feet of the centerline of the nearest track.





