

	<p><i>Chapter</i></p> <p>RAILROADS</p>
	<p><i>Subject</i></p> <p>Survey &amp; Design Procedures</p>

**OVERVIEW:**

Provided here is information for the highway designer when highway improvements encroach upon railroad facilities. References for highway design geometrics for intersections can be found in **HD-900**. References to specific design criteria for railroads are contained in the *American Railway Engineering and Maintenance of Way Association Manual (AREMA Manual)*.

The Central Office railroad coordinator should be contacted 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 are typically not 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 paragraphs discuss common practices used by the Transportation Cabinet and specific criteria that are accepted by railroads operating in Kentucky.

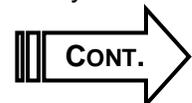
**SURVEY PROCEDURES:**

General requirements for surveying procedures can be found in **HD-300**, "Surveying."

**DESIGN PROCEDURES:**

When a project affects a railroad, a railroad plan and profile sheet(s) 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



**DESIGN  
PROCEDURES  
(cont.):**

- 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 should also be shown on the existing railroad valuation map.

**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.

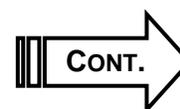
Railroad at-grade crossings should be thoroughly investigated in the preliminary engineering phases to determine whether an at-grade crossing is acceptable. The railroad coordinator in the Division of Highway Design will contact the railroad company for input for all crossings.

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 the curve data and design speed 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.

Typical clearance requirements for the construction of permanent and/or temporary facilities encroaching on or across railroad right of way at railroad-highway crossings are as follows:

- 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.



**DESIGN  
PROCEDURES  
(cont.):**

- A standard vertical clearance of 23 feet shall be provided, measured from the top of the high rail to the lowest point of the structure in the horizontal clearance area of the railroad. The *AREMA Manual, Chapter 28-1*, provides additional information (a copy of the manual is on file in the railroad coordinator's office).

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

**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 the railroad crossings are constructed by the railroad. The crossing distance should be reflected neither in the quantities nor on the layout sheet.

**RIGHT-OF-WAY**

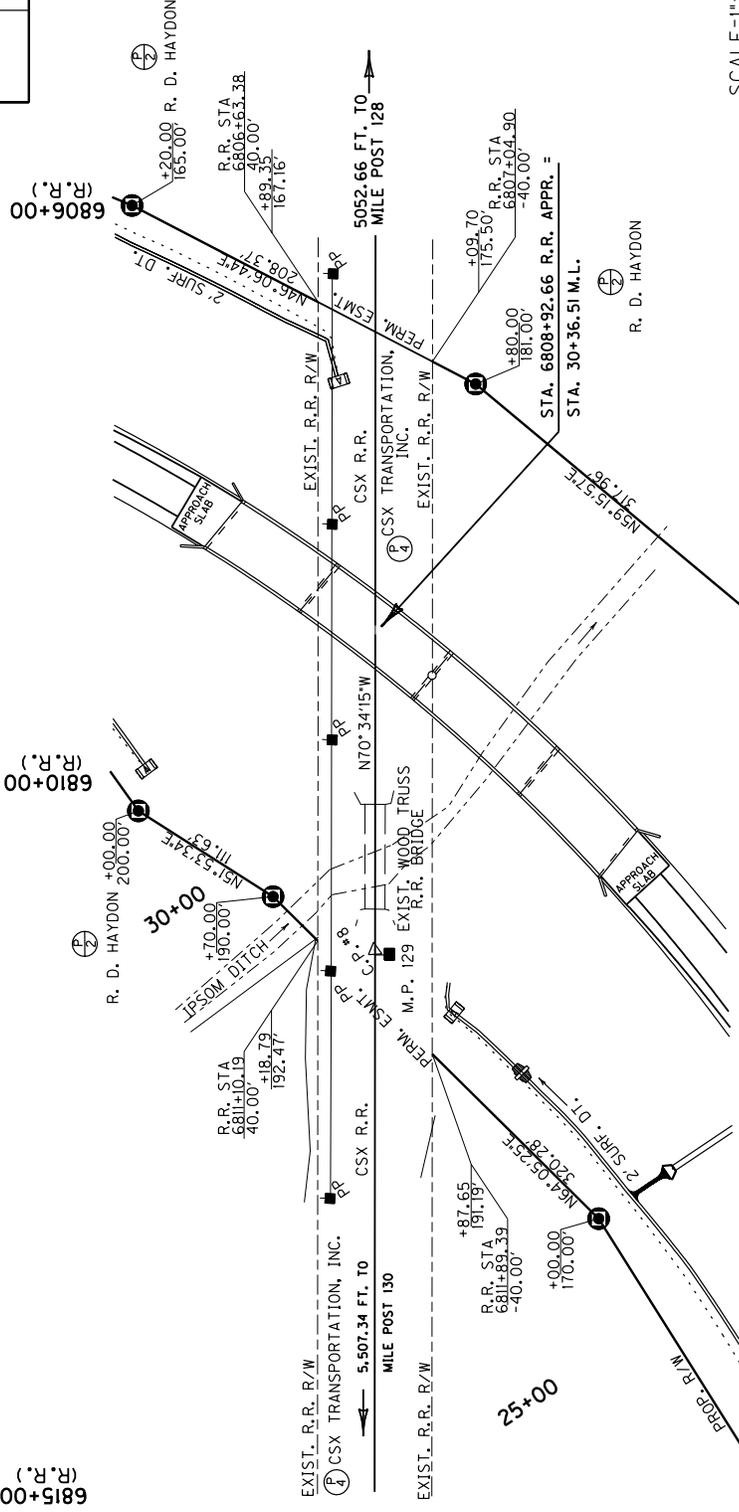
**CONSIDERATIONS:** All parcels of land within railroad right of way that are needed for highway construction are to be taken as either permanent or temporary easements. The descriptions shall be tied to both highway and railroad stationing. Information about valuation maps, which show railroad stationing, should be requested from the railroad coordinator in the Division of Highway Design. 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 order to obtain right of entry to the railroad right of way.

In general, except at 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.

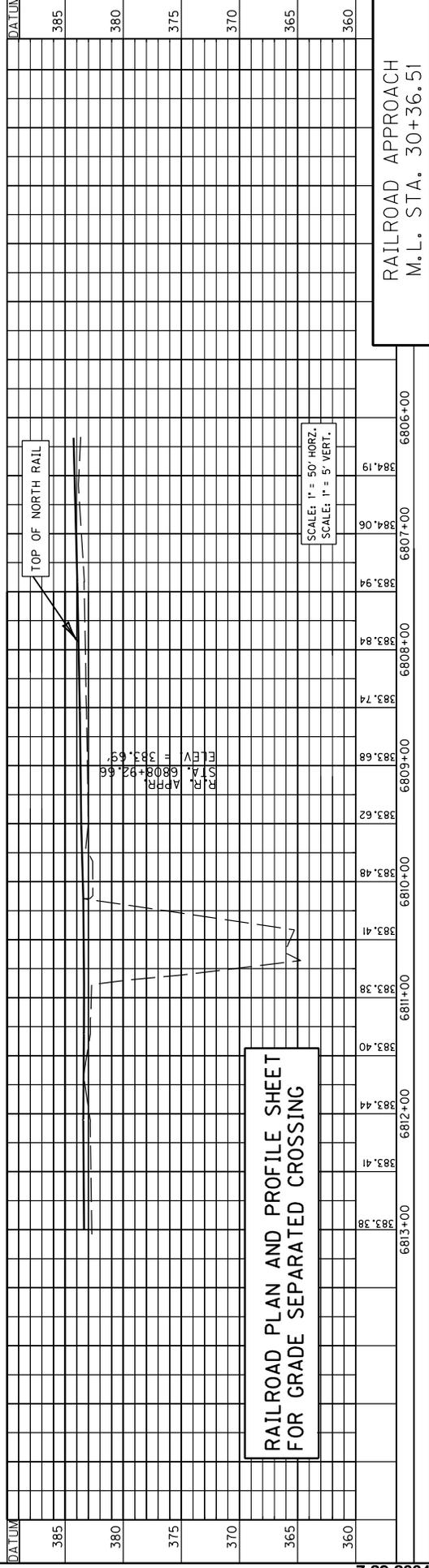
The above limitations will not affect the use of the right of way on a temporary basis to permit construction of the permanent crossing facilities. The railroad generally grants temporary easements within 10 feet of the centerline of the nearest track.



COUNTY OF	ITEM NO.	SHEET NO.



SCALE=1"=50'



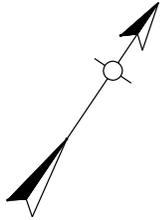
RAILROAD PLAN AND PROFILE SHEET  
FOR GRADE SEPARATED CROSSING

RAILROAD APPROACH  
M.L. STA. 30+36.51

EXHIBIT NOT TO SCALE

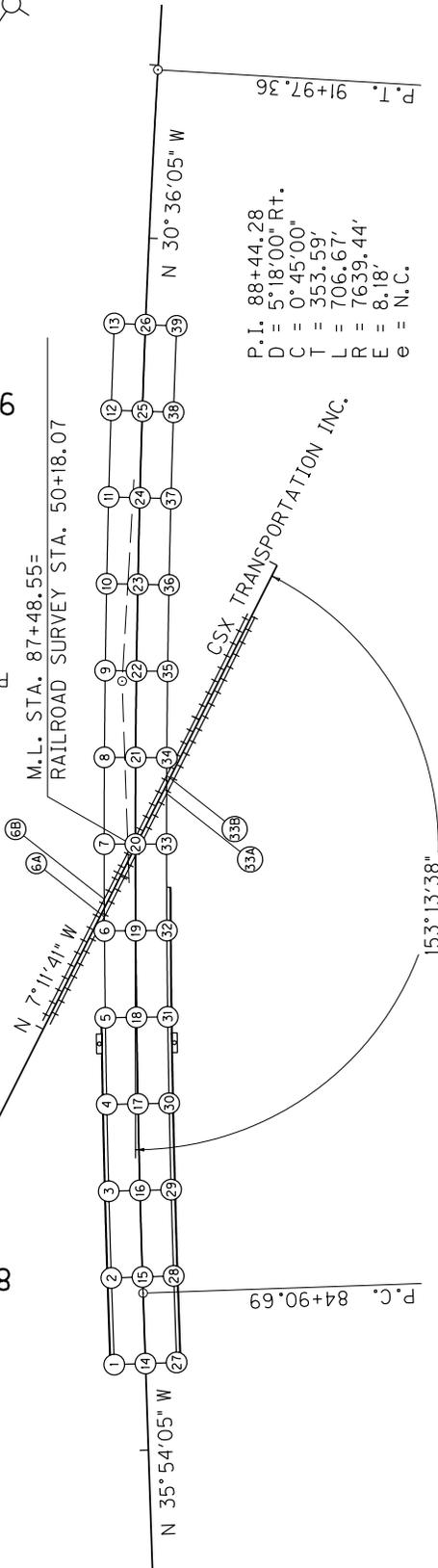


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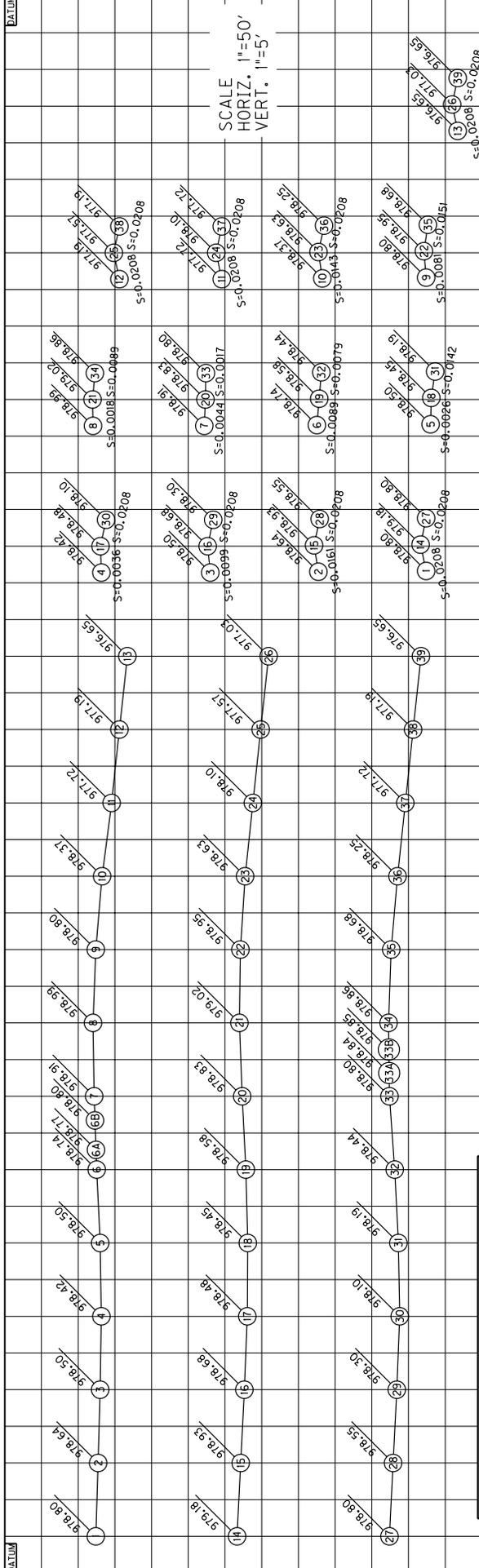
00+06

85+00



P.I. = 88+44.28  
 D = 5° 18' 00" R+  
 C = 0° 45' 00"  
 T = 353.59'  
 L = 706.67'  
 R = 7639.44'  
 E = 8.18'  
 e = N.C.

SCALE=1"=50'



SCALE  
 HORIZ. 1"=50'  
 VERT. 1"=5'

AT GRADE RAILROAD CROSSING  
 PAVEMENT DEVELOPMENT SHEET

DETAIL SHEET  
 R.R. CROSSING STA. 87+48.55

EXHIBIT NOT TO SCALE