FHWA

December 7, 1988

Revised FHPM 6-6-2-1
Railroad Clearances

Mr. Maurice Smith, Director
Arkansas State Highway and
Transportation Department
Little Rock, AR

Dear Mr. Smith:

Enclosed for your information and implementation are seven copies of revisions to the subject FHPM. This FHPM modifies and clarifies FHWA's policy on providing horizontal and vertical clearances for railroad overpass and underpass structures. Perhaps the biggest change is that FHWA will no longer be using the minimum 30 million annual gross tonnage to serve as primary justification for participation in greater vertical clearances for electrification. Instead, it is expected that this justification will be based on the railroad demonstrating that it has formally adopted a plan to electrify the route. All future federal-aid railroad structures should be designed in accordance with these new regulations.

Sincerely yours

R. G. Fairbrother
Division Administrator

Enclosures (7)

Handwritten
Cc: Asst Ch. Engr. Almond
Asst. Ch. Engr. Walters
Planning - F & E (Sheila)
P. (Tammy)
R/W
Internal Audit
M & R - Research (Laura)
Fed. Aid Manual (P&C)

TRANSMITTAL 425
October 4, 1988

HNG-12

1. MATERIAL TRANSMITTED. Pages 1, 2, 7 and 8 and Attachment 1; Volume 6, Engineering and Traffic Operations; Chapter 6, Railroads and Utilities; Section 2, Railroads; Subsection 1; Railroad-Highway Projects.

2. CANCELLATION. Federal Highway Administration (FHWA) Notice N 5120.4, Vertical Clearance of Grade Separation Structures Over Railroads to be Electrified, dated January 7, 1977, is cancelled.

3. COMMENTS: The FHWA is modifying and clarifying its policy on the extent Federal-aid highway funds may be used in providing specified horizontal and vertical clearances for railroad overpass and underpass structures at highways. In clearances as proposed by a State highway agency to the extent required by individual site conditions. It is intended that Federal-aid highway funds will be provided for grade separation structures, which are designed in accord with accepted bridge engineering principles and standards as cost effective manner. The more significant clarifications/modifications involve:

    a. Horizontal Clearances. Participation in an offset dimension to the abutment slope of up to 20 feet from the centerline of the tracks requires no special justification. Participation in horizontal offsets in excess of 20 feet must be justified based on individual site conditions. A minimum 9-foot horizontal clearance to an obstruction is required. However, Federal-aid highway funds may participate in bridge designs to obtain greater horizontal clearance to obstructers such as may be necessary to preclude the placement of piers in drainage ditches.

    b. Vertical Clearances. Participation in clearances up to 23 feet requires no special justification. Participation in greater vertical clearances can be justified based on special site conditions, State regulatory requirements, or needs to meet documented railroad electrification plans.

    c. Vertical Clearances - Electrification. In a change in policy, the FHWA will no longer be using the minimum 30 million annual gross tonnage to serve as primary justification for participation in greater vertical clearances for electrification. Instead, it is expected that this justification will be based on a railroad demonstrating that it has formally adopted a plan, which clearly and positively expresses the railroad's intent to electrify the involved rail route.

4. REGULATORY MATERIAL. The italicized material in the attached directive was published in the Federal Register as amendments to 23 CFR, Part 646, Subpart B, on August 24, 1988.

R. D. Morgan
Executive Director

FILING INSTRUCTIONS

Page Changes

Remove	Insert
1, 2, 7 and 8 and Attachment 1 of vol. 6, Ch. 6, Sec. 2, Subsec. 1, dated 4/24/84 And 5/10/76	1, 2, 7 and 8 and Attachment 1 of Vol. 6 Ch. 6, Sec. 2, Subsec. 1

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

FEDERAL-AID HIGHWAY PROGRAM MANUAL

VOLUME	6	ENGINEERING AND TRAFFIC OPERATIONS
CHAPTER	6	RAILROADS AND UTILITIES
SECTION	2	RAILROADS
SUBSECTION	1	RAILROAD-HIGHWAY PROJECTS

Transmittal 374
April 24, 1984
HNG-12

Par. 1. Purpose and Applicability
2. Authority
3. Definitions
4. Types of Projects
5. Funding
6. Classification of Projects and Railroad Share of the Cost
7. Federal Share
8. Design
9. General Procedures
10. Simplified Procedure for Accelerating Grade Crossing Improvements
11. Alternate Federal-State Procedure

1. PURPOSE AND APPLICABILITY

a. **To prescribe policies and procedures for advancing Federal-aid projects involving railraod facilities*

b. This directive, and all references hereinafter made to "projects," apprlies to Federal-aid projects involving railroad facilities, including projects for the elimination of hazards of railroad-highway crossings, and other projects which use railroad properties or which involve adjustments required by highway construction to either railroad facilities or facilities that are jointly owned or used by railroad and utility companies.

c. *Additional instructions for projects involving the elimination of hazards of railroad-highway grade crossings pursuant to 23 U.S.C. 405 and Section 203 of the Highway Safety Act of 1973 are set forth in Volume 8, Chapter 2, Section 3, of the Federal-Aid Highway Program Manual (FHPM).*

d. *Procedures on reimbursement for projects undertaken pursuant to this directive are set forth in Volume 1, Chapter 4, Section 3, of the FHPM.*

e. *Procedures on insurance required of contractors working on or about railroad right-of-way are set forth in Volume 6, Chapter 6, Section 2, Subsection 2, of the FHPM.*

f. *Audit requirements for work undertaken pursuant to this directive which is not accomplished under competitive bidding procedures are set forth in Volume 1, Chapter 7, Section 2, of the FHPM.*

*Italicized material is published in 23 CFR 646B.

2. AUTHORITY. *23 U.S.C. 109(e), 120(d), 130, 315, and 405; 49 CFR 1.48(b).*

3. DEFINITIONS. *For the purpose of this directive, the folloiwng definitions apply:*

   a. *Railroad - all rail carriers, publicly owned, private, and common carriers, including line haul freight and passenger railroads, switching and terminal railroads and passenger railroad carrying railroads such as rapid transit, commuter and street railraods.*

   b. *Utility - The lines and faciliites for producing, transmitting or distributing communications, power, electricity, light, heat, gas, oil, water, steam, sewer and similar commidities.*

   c. *Company - any railroad or utility company including any wholly owned or controlled subsidiary thereof.*

HORIZONTAL AND VERTICAL CLEARANCE PROVISIONS FOR OVERPASS AND UNDERPASS STRUCTURES

The following implements provisions of paragraph 7a(3).

a. Lateral Geometrics

A cross section with a horizontal distance of 20 feet, measured at right angles from the centerline of track at the top of rails, to the face of the embankment slope, may be approved. The 20-foot distance may be incresed at individual strucuture locations as appropriate to provide for drainage if justified by a hydraulic analysis or to allow adequate room to accommodate special conditions, such as where heavy and drifting snow is a problem. The railroad must demonstrate that this is its normal practice to address these special conditons in the manner proposed. Additionally, this distance may also be increased up to 8 feet as may be necessary for off-track maintenance equipment, provided adequate horizontal clearnace is not available in adjacent spans and where justified by evidence of future need for such equipment. All piers should be placed at least 9 feet horizontally from the centerline of the track and preferably beyond the drainage ditch. For multiple track facilities, all dimensions apply to the centerline of the outside track.

Any increase above the 20-foot horizontal clearance distance must be required by specific site conditions and be justified by the railroad to the satisfaction of the State highway agency (SHA) and the FHWA.

b. Vertical Clearance

A vertical clearance of 23 feet above the top of rails, which include an allowance for future ballasting of the railroad tracks, may be approved. Vertical clearance greater than 23 feet may be approved when the State regulatory agency having jurisdiction over such matters requires a vertical clearance in excess of 23 feet or on a site by site basis where justified by the railroad to the satisfaction of the SHA and the FHWA. A railroad's justification for increased vertical clearance should be based on an analysis of engineering, operational and/or economic conditions at a specific structure location.

Federal-aid highway funds are also eligible to participate in the cost of providing vertical clearnace greater than 23 feet where a railroad establishes to the satisfaction of a SHW and the FHWA that is has a definite formal plan for electrification of its rail system where the proposed grade separation project is located. The plan must cover a logical independent segment of the rail system and be approved by the railroad's corporate headquarters. For 25 kv line, a vertical clearance of 24 feet 3 inches may be approved. For 50 kv line, a vertical clearance of 26 feet may be approved.

A railroad's justification to support its plan for electrification shall include maps and plans or drawings showing those lines to be electrified; actions taken by its corporate headquarters committing it to electrification including a proposed schedule; and actions initiated or completed to date implementing its electrification plan, such as a showing of the amounts of funds and identification of structures, if any, where the railroad has expended its own funds to provide added clearance for the proposed electrification. If available, the railroad's

justification should include information on its contemplated treatment of existing grade separations along the section of its rail system proposed for electrification.

The cost of reconstructing or modifying any existing railroad-highway grade separation structures solely to accommodate electrification will not be eligible for Federal-aid highway fund participation.

c. *Railroad Structure Width*

Nine feet of structure width outside of the centerline of the outside tracks may be approved for a structure carrying railroad tracks. Greater structure width may be approved when in accordance with standards established and used by the affected railroad in its normal practic.

In order to maintain continuity of off-track equipment roadways at structures carrying tracks over limited access highways, consideration should be given at the preliminary design stage to the feasibility of using public road crossings for this purpose. Where not feasible, an additional structure width of 8 feet may be approved if designed for off-track equipment only.

7. FEDERAL SHARE

a. (1) Federal funds are not eligible to participate in costs incurred solely for the benefit of the railroad.

(2) At grade separations Federal funds are eligible to participate in costs to provide space for more tracks than are in place when the railraod establishes to the satisfaction of the State highway agency and FHWA that it has a definite demand and plans for installation of the additional tracks within a reasonable time.

(3) The Federal share of the cost of a grade separation project shall be based on the cost to provide horizontal and/or vertical clearances used by the railroad in its normal practice subject to limitations as shown in Attachment 1 or as required by a State regulatory agency.

b. "G" Funds

(1) The Federal share of the cost of a "G" funded project may be up to 100 percent of the cost of preliminary engineering and construction and 75 percent of the cost of right-of-way and property damage, except that the Federal share shall be reduced by the amount of any required railroad share of the cost.

(2) Projects for the elimination of hazards of railroad-highway crossings, either by crossing elimination, improvement, or the reconstruction of existing grade separations, as described in paragraph 4a are eligible for "G" funding subject to the following limitations:

(a) *For a new or reconstructed grade separation, the entire structure or structures and necessary highway and railroad approaches to accommodate both vehicular and pedestrian traffic.*

(b) *Where another facility, such as a highway or waterway requiring a bridge structure, is located within the limits of a grade separation project, the estimated cost and limits of work for a theoretical structure and necessary approaches as in paragraph 7b(2)(a) without considering the presence of the waterway or other highway.*

(c) *For railroad or highway relocation the actual cost of the relocation project or the estimated cost of a theoretical structure and necessary approaches to eliminate the grade crossing(s) as in paragraph 7b(2)(a), whichever is less.*

(d) *Grade crossing improvements in the vicinity of the crossing and related work, including construction or reconstruction of the approaches as necessary to provide an acceptable transition to existing or improved highway gradients and alignments, and advance warning devices.*

8. DESIGN

a. General

(1) *Facilities that are the responsibility of the railroad for maintenance and operation shall conform to the specifications and design standards used by the railroad in its normal practice, subject to approval by the State highway agency and FHWA.* These facilities shall comply with applicable Federal, State, and local laws, regulations, codes, and standards and should, as a minimum, meet the specifications and design standards of the American Railway Engineering Association and the AAR.

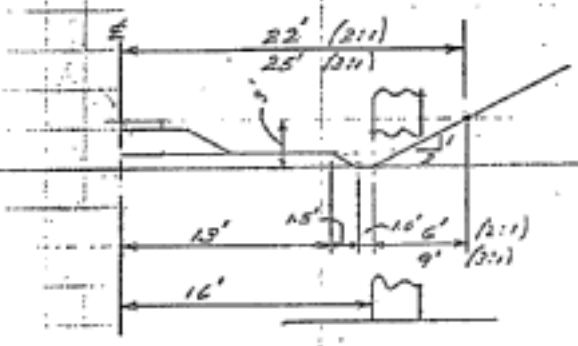
88106

ARKANSAS HIGHWAY DEPARTMENT
BRIDGE DESIGN DIVISION
CALCULATIONS FOR RR Clearances

MADE BY WAS DATE 10-10-[illegible] SHEET NO.
CHECKED BY DATE JOB NO.
BRIDGE NO.

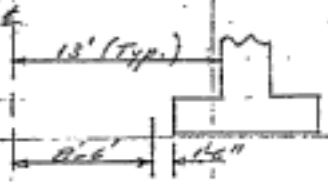
Refer to Southern Pacific Lines Dwg. No. C.S. 582

CASE 1 -
Minimum Section next to slopes, No maintenance road.



CASE 2
Minimum Section next to slopes, with maintenance road.
Add 5' to above dimensions:
27' (2:1)
30' (3:1)
18'
21' ℄ to Face of Bent

CASE 3
Minimum Section away from slopes, no maintenance road



CASE 4
Minimum section away from slopes, with maintenance road
18' min from ℄ track to face of bent

8810C