

## II. Rail Corridor Crossing Safety Improvement Reviews

The most efficient way to accomplish a comprehensive engineering review of highway-rail crossings is to examine all crossings, public and private, in a corridor or jurisdiction with a multi-disciplinary team, i.e., a diagnostic team. This has been called the "systems approach." This process is currently underway where the Intermodal Surface Transportation Efficiency Act (ISTEA) Section 1010 corridors are concerned, but in these efforts the goal is far more than crossing safety improvements, but rather the realization of high speed rail operations (necessitating significant safety improvements at crossings, often elimination). These Section 1010 corridors address only a very small part of the problem, i.e., not quite 2,800 crossings on only 4,200 km (2,600 mi) of track right-of-way. The total rail system in this country is comprised of over 273,000 km (160,000 mi) of right-of-way which is crossed at-grade nearly 283,000 times by public and private roads and designated pedestrian pathways.

Obviously, addressing just the 1010 corridors (less than two percent of the total right-of-way or crossings) is not adequate. Attempting to target the whole system is too ambitious. However, a core exists, defined by reviewing current Amtrak, intermodal (trailer or container on flat car) freight and coal and grain flow maps. These are the more heavily used freight and passenger routes. These are the routes where a thorough analysis of crossings along designated segments (corridors) has the potential of rendering maximum safety return (i.e., frequent fast trains, high passenger exposure). These are the routes where a corridor analysis will allow a credible review of crossing consolidation or elimination possibilities, of track circuit improvement needs (to include constant warning time equipment (in order to accommodate variable speed trains) and signal event recorders (to facilitate rapid response to and diagnosis of signal malfunctions)), as well as signs, signals, surfaces, sight distance improvements and illumination possibilities, etc.

In the absence of a corridor or systems approach, highway-rail crossings are selected by highway authorities for safety improvements one at a time based on the crossing's accident experience and highway and rail traffic counts. This fosters a bias toward urban areas and main roads where traffic densities are high. This process currently excludes all private crossings, most low density crossings and often those already equipped with automatic devices. In many cases, the excluded crossings are those that would benefit from low cost improvement or could be consolidated.

Crossing consolidation is the surest way to reduce the potential for highway-rail crossing collisions. Although crossing consolidation is an effective and low cost method to improve crossing safety, this option has not been widely utilized. Closing a crossing generally requires affirmation from the local political

subdivision (if public) or concurrence of the easement holder (if private). The difficulty of securing approval to consolidate crossings has discouraged pursuit of this option for improving crossing safety.

Railroad and state officials, who are responsible for crossing projects and who recently participated an FRA case study project, repeatedly emphasized the need for Federal guidelines for closing crossings. In order to be an effective adjunct to the closing process, the Federal guidelines would have to be visible and definitive. That is, guidelines should unequivocally represent Federal policy and provide an objective standard for judging the need for a specific crossing.

Interest in high-speed trains, increased emphasis on crossing safety, the limits of available resources and the signalization of many high volume crossings have led many state transportation agencies and railroads to assign crossing consolidation and closure a higher priority than it has received in the past. However, the number of crossings closed, public or private, on active rail lines remains relatively small and well below the number of unnecessary crossings that are candidates for closure. Federal and state leadership is required to give consolidation the priority it warrants. Otherwise, consolidation will remain a minor factor in crossing safety improvements.

In this context (i.e., the need for a Federal initiative), the concluding observation of the Missouri Executive Summary<sup>1</sup> is particularly pertinent: "If in fact this is a national initiative, then there must be participation on the part of the 'national government.'"

A nationwide effort to review crossings in corridor groups is needed. The Department will promote comprehensive and systematic corridor reviews of highway-rail crossings, especially those over our nation's Principal Railroad Lines<sup>2</sup> (PRLs), and will encourage the elimination of little used and redundant crossings within corridors where alternatives exist, especially those on the National Highway System<sup>3</sup> (NHS). It is estimated there will be approximately

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<sup>1</sup> Executive Summary of the Missouri Grade Crossing Closure Study, Missouri Division of Transportation Staff, January 1994, page 5.

<sup>2</sup> The FRA has defined a core railroad system of approximately 80,000 miles known as the Principal Railroad Lines. These lines have one or more of the following attributes: Amtrak service; defense essential; or, annual freight volume exceeding 20 million gross tons.

<sup>3</sup> The National Highway System will consist of an interconnected system of principal arterial routes to serve major population centers, intermodal transportation facilities and other major travel destinations; meet national defense requirements; and serve interstate and interregional travel.

4,500 at-grade crossings on the NHS, about half of which will be at intersections with the PRLs. State and local highway authorities will be encouraged to upgrade signs and signals at all crossings, taking full advantage of available state-of-the-art technology. The following initiatives will be established:

**A. Principal Railroad Lines**

Principal Railroad Line corridors will be nominated for review by considering current and projected highway and rail traffic densities and accident experience. Facilitated by FRA's new Regional Program Managers, these corridor reviews should begin no later than the last quarter of 1994.

**B. The National Highway System (NHS)**

The FHWA will encourage that Statewide Transportation Improvement Programs and Safety Management Systems fully address the upgrading or elimination of at-grade crossings on the NHS, and give priority to the long-term goal of eliminating NHS intersections with the PRLs.

**C. Upgrade Signing and Marking**

The FHWA will work with FRA and the states to increase the conspicuity of signs and markings at highway-rail crossings by encouraging the widespread use of high-grade, long-lasting reflective materials. This promotion will be initiated immediately.

**D. Responsibilities for Selection and Installation**

The Department will review the present system of allocating responsibility for selection and installation of signal devices at public highway-rail grade crossings. The Department will review the need for nationally uniform standards for establishing the need for, and appropriate type of, warning devices at all public highway-rail grade crossings.

**E. STOP Signs**

In response to Section 1077 of ISTEA, the MUTCD was revised to grant states and local governments discretionary authority to install STOP or YIELD signs at highway-rail crossings that do not have active warning devices and where two or more trains operate daily. On July 8, 1993, the FHWA and FRA issued a joint memorandum to their respective field offices offering guidance for installing STOP signs and encouraging cooperation among states, communities and the railroads for the development of programs to install these signs. FHWA and FRA will work together to insure that state and local governments consider the installation of STOP signs at highway-rail crossings where warranted.

Listings produced from the Inventory which select and categorize crossings most likely to fit established criteria and to benefit from STOP sign installation will be provided to states and railroads. FHWA will issue a clarification to current Federal regulations indicating that Federal funds are eligible to install traffic control devices, including STOP signs, at multi-track crossings.

#### **F. Incentives for Crossing Consolidation**

1. Legislation will be proposed to allow, under certain conditions and at a state's discretion, cash payments from the STP set-aside funds reserved for carrying out 23 U.S.C. 130 (the crossing safety improvement program) to local jurisdictions for the permanent surrendering of a crossing easement, i.e., the state could use Federal funds to pay for a crossing closure. The amounts paid would be limited to \$7,500 and the amount paid would have to be matched by the railroad(s) involved. The Federal funds could only be used for other transportation safety improvements. Such a program could be implemented only after a state has established a state-wide procedure for reviewing the need for any new public at-grade crossings. This would be in accord with a recently adopted resolution of the National Conference of State Rail Officials (NCSRO) and the American Association of State Highway and Transportation Officials (AASHTO).

2. Legislation will be proposed to modify 23 U.S.C. 120(c) to include crossing closure projects among those STP projects which are eligible for 100 percent Federal funding, i.e., along with signs, signals and pavement markings. (The current situation, where a state or local match is required for a closure project, but not for warning devices, amounts to a disincentive to close.)

#### **G. Crossing Consolidation and Closure Case Studies**

Based on the case studies conducted by FRA, FRA is now preparing three reports on crossing consolidation and closure. The first report, to be available this Spring, will be a "how-to" guide on closing crossings for state and railroad officials. The guide will be a composite of the successful strategies for closing crossings and rules of thumb derived from the case studies. The second report, also available this Spring, will consist of a limited number of case studies that would demonstrate the consolidation process through the example of actual projects. A third report will recommend options to increase the rate of crossing

consolidation, based on analysis of the case studies and suggestions of railroad and state officials who have been actively involved in crossing consolidation projects. The recommendations will be completed by early Summer.

#### **H. Integrated Intermodal Transportation Planning**

The Department of Transportation is sponsoring a number of outreach efforts to assist those implementing ISTEA. Of particular interest to those concerned with highway-rail crossing safety is the series of meetings FRA and FHWA are sponsoring between State Departments of Transportation, MPOs and the railroad industry. This series of seven meetings, begun in Arlington, Texas (March 30 -- April 1), encourages cooperation between the transportation planning community and the railroads by addressing issues of mutual interest, including grade crossings.

#### **I. Check List**

FRA and FHWA will develop a "check list" of items to be considered in a corridor analysis. This will include warning device and site improvement options (e.g., adequacy of warning devices and circuits, horizontal and vertical approach angles, surfaces, volume, type and flow of rail and highway traffic, etc.) as well as the consolidation of crossings. The check list should be developed and distributed during the last quarter of 1994.

#### **J. Highway-Rail Crossing Handbook**

FHWA, with the cooperation of FTA, NHTSA and FRA, will initiate an effort in 1995 to update the Railroad-Highway Crossing Handbook, last published by FHWA in 1986.

#### **K. Vegetation Clearance**

FRA's NPRM on track standards will contain a provision addressing the need to maintain rail rights-of-way adjacent to highway-rail crossings free of sight-obstructing vegetation. The FHWA will explore ways and means through the SMS to encourage that vegetation on highway rights-of-way be kept cleared.

#### **L. Corridor Review Participation**

Legislation will be proposed to established a jointly administered incentive program for state and local governments to participate in reviews and safety improvements on a corridor basis. One possible scenario would set aside \$15,000,000 of STP funds each year (from an STP program of \$23.9 billion), **in addition to the existing Section 130 program funds**, as an incentive fund pool. This pool fund would be distributed to states with aggressive corridor

programs to off-set corridor improvement costs either on a first come/first served basis or in amounts proportional to total corridor improvement costs incurred by the participating governmental entities.

**M. Distribution of Funds**

FHWA and FRA will initiate a study of the formulas used to distribute to states the crossing safety improvement funds authorized in Section 1007 of ISTEA. An assessment will be made to define a more appropriate method of distributing improvement funds, possibly on the basis of the number of crossings and accidents in each state.