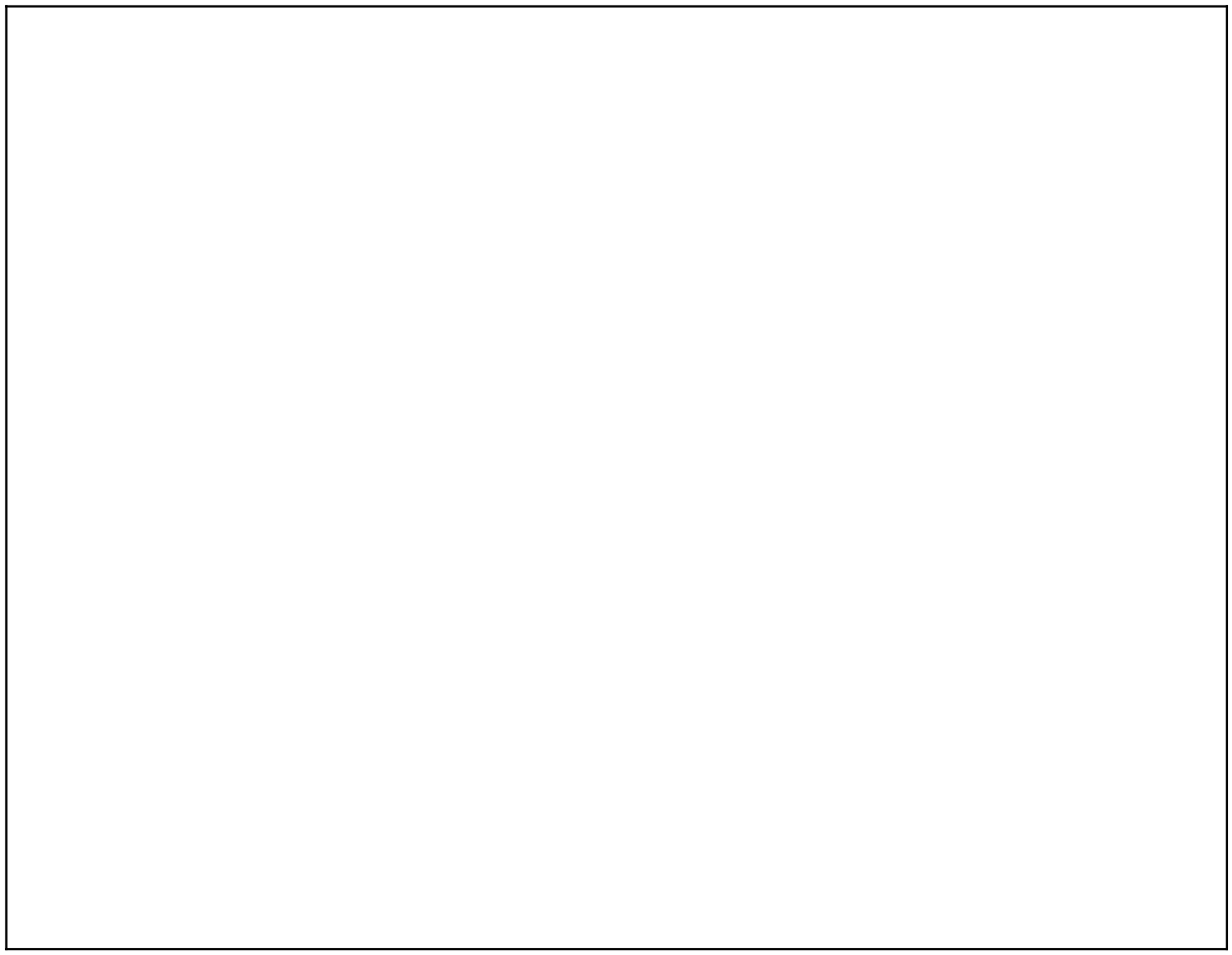
Federal Railroad Administration

Office of Safety

HIGHWAY-RAIL CROSSING INVENTORY

INSTRUCTIONS AND PROCEDURES MANUAL

December 1996



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HIGHWAY-RAIL CROSSING INVENTORY

INSTRUCTIONS AND PROCEDURES MANUAL

for the

Federal Railroad Administration
Highway-Rail Crossing Inventory
Data Maintenance Program

December 1996

prepared for:

U.S. Department of Transportation
Federal Railroad Administration
Office of Safety
Highway-Rail Crossing and Trespasser Programs Division
400 Seventh St. S.W.
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1.0 INTRODUCTION

1.1 Purpose

The purpose of this manual is to set forth the instructions and procedures to provide a useful, up-to-date and accurate data base for the National Highway-Rail Crossing Inventory Data File maintained by the Federal Railroad Administration (FRA) for use by States and railroads.

The procedures for updating the National Highway-Rail Crossing Inventory Data File in this manual are applicable upon completion of the basic inventory, they are to be used for providing data to the FRA and they may be used by States and railroads for maintaining separate files.

This manual is a combination of all previous procedures and update manuals published since 1974 and other instructions periodically prepared.

1.2 Goal

The major goal of the National Highway-Rail Crossing Inventory Program is to provide information to Federal, State, and local governments as well as the railroad industry for the improvement of safety at highway-rail crossings. Good management practices necessitate maintaining the data base on a current basis. The data will continue to be useful only if maintained and updated as inventory changes occur.

The Federal-Aid Highway Act of 1973 (Section 203) required that each State highway agency maintain an inventory of all crossings. According to the implementing instructions contained in the Federal-Aid Policy Guide (FAPG), maintaining the National Inventory will satisfy the legislative requirement for a State inventory (23 CFR Part 924 (a) (1)). A primary purpose of the National Inventory is to provide for the existence of a uniform inventory data base which can be merged with accident files and used to analyze information for planning and implementation of crossing improvement programs by public and private agencies responsible for highway-rail crossing safety.

1.3 Project History

In August, 1972, the U.S. Department of Transportation submitted a report to Congress entitled: *Railroad-Highway Safety Part II: Recommendations For Resolving The Problem*. The primary goal of this report was to provide recommendations for alternative courses of action which would lead to a significant reduction in accidents, fatalities, personal injuries and property damage at highway-rail crossings.

The report recommended the development of an adequate information system. Although various local, State, and Federal agencies had collected and maintained information about highway-rail crossings, most crossing information systems were fragmented and incomplete.

Certain site-specific information was necessary to provide for a systematic approach to the planning and evaluation of programs for the improvement of highway-rail crossing safety at both the State and Federal level.

The report further recommended that :

a. The Federal Railroad Administration issue requirements for the railroads to assign and display identification numbers at all highway-rail crossings based upon a uniform national standard to be prescribed by the Department of Transportation. Further, it required FRA to contract with all railroads to provide site-specific inventory data for all crossings on their respective lines, and to annually provide information updating this inventory following inventory standards established jointly by the Federal Highway Administration and the Federal Railroad Administration and working with appropriate railroad and State representatives.

b. The Federal Railroad Administration expand the current highway-rail crossing accident reporting by the railroads to include all train-involved public and private crossing incidents.

c.

NOTE: The terms "accident" and "incident" are used interchangeably in this manual. The current preferred term for "accidents" is often "collisions" or "crashes."

The National Highway Traffic Safety Administration (NHTSA) give early attention and emphasis to implementation of a plan to have all highway-rail crossing accidents reported through a central State agency. Also, NHTSA should require the inclusion of the crossing identification number on the accident report form used by police officers when reporting highway-rail crossing accidents to permit correlation of railroad and police reports with the crossing inventory.

Following the submission of the report, the Federal Railroad Administration assumed principal responsibility for the development of the National Highway-Rail Crossing Information System.

The Federal Railroad Administration entered into a contract with the Association of American Railroads to develop a "Comprehensive National Highway-Rail Crossing Information and Numbering System." The project was established as a cooperative effort between all the nation's railroads and the U.S. Department of Transportation with the cost of the project to be funded equally by the railroads and the U.S. Department of Transportation.

The railroad companies, with direction and guidance from the Association of American Railroads and the American Short Line Railroad Association, were assigned the responsibility for making a site-specific inventory of each highway-rail crossing and for installing a unique identifying number at each location. The railroads were also identified as being responsible for periodic update of certain inventory information and maintenance of the crossing number.

The State highway departments assisted in the project by providing site-specific highway location and use data. State public utility commissions and other State and local governmental agencies also participated in the project. The responsibility for the updating of certain highway information data items was determined to be through the efforts of these agencies.

1.4 Data Files

There are two types of data files maintained by the FRA. These two data files are the Inventory Data File and the Accident Data File.

The Inventory Data File is a record of grade crossing location, physical, and operational characteristics to provide information for the administration and

statistical analysis of crossings. This information is reported to the FRA on the U.S. DOT-AAR Crossing Inventory Form (see Figure 1-1). Each State and railroad is responsible for maintaining its respective inventory file. In order for the files to serve as an effective data base, the States and railroads maintaining their own file should immediately update them. States can maintain the National Data File in lieu of their own file.

The Accident Data File is a record of all train-involved crossing accidents or incidents. The Federal Railroad Administration now requires the reporting of all train-involved crossing accidents and incidents which includes the DOT-AAR Crossing Identification Number. The form used to report all train-involved crossing accidents or incidents is the Highway Grade Crossing Incident Report (see Figure 1-2). Effective 1/1/97, there will be a new version of this form.

Routinely, the highway-rail crossing accident data is integrated with inventory data and the information from the combination is used for the development of Federal programs, funding alternatives for crossing improvement, studies related to railroad safety programs, effectiveness of warning devices, high-speed railroad corridors, accident costs, public awareness and driver training, and other safety program development and research opportunities.

The Federal Railroad Administration's Office of Safety, Highway-Rail Crossing and Trespasser Programs Division, serves as the National Highway-Rail Crossing Information Center. The address is:

Federal Railroad Administration
Office of Safety
Highway-Rail Crossing and Trespasser Programs Division
400 7th Street, S.W., (RRS-23)
Washington, D.C. 20590

1.5 Definitions of Highway-Rail Intersections

For the National Crossing Inventory purposes, the following definitions apply for all public, private and pedestrian crossings, with or without crossing signs or active warning devices.

A highway-rail crossing is the intersection (at grade or grade separated) of a roadway (including associated sidewalks and pathways) and one or more railroad tracks. A crossing at a dual or multi-lane roadway is reported as a single crossing. Also, a crossing is reported as a "single crossing" even where there are multiple tracks within the limits of a single set of crossing signs or warning devices and even if the individual tracks belong to more than one railroad company or track owner. (For further discussion of this latter point, see Section 2.3 of this manual.) As a minimum, all at-grade crossings of public and private roads and streets with railroad tracks across are assigned an inventory number if any railroad operations are conducted.

As a general rule, and if no other agreement exists, a crossing that is located (usually equally) on a State, county and/or city boundary line should be considered to be geographically located in the jurisdiction that is South or East of the crossing.

NOTE:

49 CFR Part 234.5(a) provides the following definition:

> "*Highway-rail grade crossing* means a location where a public highway, road, street, or private roadway, including associated sidewalks and pathways, crosses one or more railroad tracks at grade."

For the purposes of the Inventory only, the following definitions apply:

A. Public Crossing.

A *public crossing* is the location where railroad tracks intersect a roadway which is part of the general system of public streets and highways, and is under the jurisdiction of and maintained by a public authority and open to the general traveling public.

Public crossings can be at-grade or grade separated. If they are at-grade, usually both highway approaches are maintained by a public authority, or the public authority accepts the responsibility for the roadway maintenance. (Highway is a word used here to include highways, streets and roads into a single word.)

NOTE:

23 CFR Part 460.2 provides the following definitions:

Public road means any road under the jurisdiction of and maintained by a public authority and open to public travel."

Public authority means a Federal, State, county, town or township, Indian tribe, municipal or other local government or instrumentality thereof, with authority to finance, build, operate or maintain toll or toll-free highway facilities."

Open to public travel means that the road section is available, except during scheduled periods, extreme weather or emergency conditions, passable by four-wheel standard passenger cars, and open to the general public for use without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight, or class of registration. Toll plazas of public toll roads are not considered restrictive gates."

Maintenance means the preservation of the entire highway, including surfaces, shoulders, roadsides, structures, and such traffic control devices as are necessary for its safe and efficient utilization."

1. Discussion:

A crossing shall be classified as public if, and only if, the roadway is deemed a considered a "public" crossing. These are roadways that are part of the general system of public streets and highways. Some jurisdictions accept a crossing as "public" when only one approach is publicly maintained. If a public authority accepts a crossing as "public," it is a public crossing. All others are considered "private."

Therefore, public crossings are those on roadways which meet the following three conditions:

a. The roadway is part of the general system of public streets and highways, and

b. Under the jurisdiction of and maintained by a public authority, and

c. Open to the general traveling public.

2. Access to Public Facilities.

If the primary function of the road is to provide public access to a publicly owned facility for the principal purpose of on-site use by the public, then the facility may be deemed a logical terminus of a public roadway.

Thus, crossings which exist for the primary purpose of providing public access to publicly owned and operated facilities such as fairgrounds, parks, schools, libraries, hospitals, clinics, airports, bus terminals, beaches, piers, boat launching ramps, recreational facilities, etc., which permit access to or invite use by the general traveling public would satisfy the definition "open to public travel," even if the entrance thereto is equipped with gates to effect seasonal or periodic closures (such as overnight), or limit access, or require an entry fee for use.

3. Determined by Empowerment.

In situations where a State has empowered a public agency (such as the State DOT, State Highway Department, Public Utility Commission, State Commerce Commission, etc.) to make determinations as to whether crossings are public or private, such determinations will govern for Inventory purposes.

B. Private Crossing.

1. Definition.

A private crossing is a highway-rail crossing which is not a public crossing. (A public crossing is defined as the location where railroad tracks intersect a roadway which is under the

jurisdiction of and maintained by a public authority and open to public travel. See Par. 1.5.A.)

2. Discussion.

A private crossing is one that is on a private roadway which may connect to part of the general system of public streets and highways but is not maintained by a public authority. Usually, it is a crossing where the property on both sides or at least one side of the railroad tracks is private property. It may also be on a roadway that is publicly owned but which is either restricted or not intended for use by the general public. Private crossings are generally intended for the exclusive use of the adjoining property owner and the property owner's family, employees, agents, patrons and invitees. Crossings are classified as private where the normal need or use is for residential, farm, recreation/cultural, industrial or commercial activities.

Most private crossings exist by virtue of railroad charter provisions, deed covenants, State statute or other prescriptive rights. If none of these apply, the railroad may require an agreement with the private property owner whereby the railroad may install and maintain the crossing proper and any necessary signs or signals at the property owner's expense, and the property owner will assume liability for the crossing and provide coverage via a liability insurance policy.

In some instances, changes in land use have resulted in an expansion of crossing use to the extent that a previously private crossing has some attributes of a public crossing, whether or not any public agency has accepted responsibility for maintenance or control of the use of the roadway over the crossing. The railroad company and highway agency should make every effort to mutually resolve and agree on the appropriate classification (either public or private) of such a questionable crossing.

3. Private Crossings with Public Access.

A private crossing may exist with permitted or limited public access for the primary purpose of providing public access to facilities (either public or privately owned) such as shopping centers, fairgrounds, parks, golf courses, zoos, museums, schools, libraries, hospitals, clinics, airports, bus terminals, beaches, piers, boat ramps, recreational facilities, etc. Such crossings permit access or invite use by the general public, but usually restrict or discourage general public use by requiring permits, or charging admission or other fees to gain entry or use of the facility.

For such crossings, the primary roadway use is to gain entry to the facility. The entrance may even be equipped with gates to effect seasonal or periodic closures. These crossings generally do not qualify as being "open to the general traveling public" and should not be deemed as a public crossing.

Crossings which exist primarily to provide access to publicly owned facilities for "authorized personnel only", such as military bases, ports, equipment yards, maintenance/storage facilities, water or sewerage treatment plants, landfills, levees, service and/or maintenance only entrances, or other facilities, are not normally intended for on-site use by the general public and should be deemed as a private crossing.

4. Private Crossing with No Public Access.

A private crossing with no public access would include, for instance, the crossing within a secured industrial complex or between farm fields where public access to the complex or fields is precluded.

5. Responsibilities.

The railroad should ensure that each crossing is listed in the National Inventory.

C. Pedestrian Crossing.

A pedestrian crossing is a separate designated intersection where pedestrians, but not vehicles, cross a track. Sidewalk crossings contiguous with, or separate but adjacent to, public road crossings, and in the public road right-of-way, are presumed to be part of the public roadway crossing and are not assigned a separate crossing number.

An area where pedestrians trespass is not considered a crossing. The designation of a crossing may be made by a sign, device, or filled materials between the rails.

Pedestrian crossings may also be classified as public pedestrian crossings or private pedestrian crossings, similar to vehicle crossings. The determination is based on whether or not a public agency has jurisdiction over and maintains the sidewalk (or walkway) on either side of the track and whether the crossing is intended for use by the general public. The distinction may be shown on the Inventory Form by inserting "PUB" for public or "PVT" for private in the field for Item 10. - Street or Road Name.

D. Special Situations.

An area where vehicles or pedestrians trespass is not considered a crossing. Vehicles or persons that cross railroad tracks without railroad permission at other than defined crossings are considered trespassers.

Crossings used only by railroads (such as in a railroad yard or terminal) do not need to be reported, but it is best to assign at least one crossing number to the entire location so that a crossing accident, if it occurs, can be properly identified to that location. Also, where multiple private industrial crossings exist within the same restricted-access industrial plant or facility, the railroad should report all such crossings but may report them under a single crossing number. Any accidents, if they occur, would be reported under that single crossing number.

Crossings created to serve specific temporary (six months or less) activities, such as construction sites, do not need to be assigned a

crossing number and reported.

E. Open Crossing.

An active or open crossing is one where railroad operations and highway traffic occur or could occur on a regular or irregular basis.

F. Closed Crossing.

A closed crossing is one where the crossing has been physically removed or where railroad operations or highway traffic are not possible.

Examples are where the crossing has been barricaded and highway crossing surface material removed, or where the railroad tracks have been cut or barricaded, physically removed, or a connecting turnout has been removed, or where rail operations are not possible because the railroad tracks are paved over, etc. Crossings along such inactive railroad lines should be reported as closed. (Crossing records reported as closed remain in the National Inventory File for at least five years.)

G. Crossings on Abandoned Track.

Crossings along railroad lines that have been placed in a railroad "abandoned" category, are seasonal in usage, or might be considered temporarily out-of-service (no railroad operations occur) should remain in an open status as long as track remains in place and there is a reasonable possibility that the line will be used again. This condition may exist even if the particular line is physically separated from the balance of the railroad operating system. For example, if a railroad abandons a line which may very possibly be turned into a commuter line as soon as the appropriate political and financial conditions are resolved, the crossings along the line do not need to be reported as closed in the Inventory. While these crossings remain active and open in the Inventory, the railroad traffic numbers should be reduced to zero in the Inventory until the line becomes active again. The ownership will also probably change to the new property owner. If progress toward reactivating the line does not proceed

within a reasonable period of time (about 2 years), then the crossings should be reported as closed and re-opened at a later date using the same crossing numbers. "Rail-banked" crossings, those which may be on-hold by a State or other governmental body for possible future use, would be in this category.

H. Standards and Regulations.

The current Federal regulation that applies to highway-rail crossings is the Code of Federal Regulations, Title 49 CFR Part 234, *Grade Crossing Signal System Safety*, effective January 1, 1995. This regulation imposes minimum maintenance, inspection and testing standards for highway-rail grade crossing warning systems. This Regulation (Part) also prescribes standards for the reporting of failures of such systems and prescribes minimum actions that railroads must take when such warning systems malfunction. This Part does not restrict a railroad from adopting and enforcing additional or more stringent requirements not inconsistent with this Part. Effective August 19, 1996, FRA amended 49 CFR Part 234 to clarified the Rule as originally published on September 30, 1994.

Additionally, there are Regulations (FHWA) to prescribe policies and procedures for advancing Federal-aid projects involving railroad facilities including projects for elimination of hazards, adjustments required by highway construction, and other financial reimbursement and audit procedures. These are contained in Title 23 CFR Part 646.2, *Subpart B - Railroad-Highway Projects*. Specifically, Part 646.214 *Design* refers to the conditions where installations are to include automatic gates with flashing light signals.

Sign and warning device standards are delineated in the *Manual on Uniform Traffic Control Devices* (MUTCD) published by the Federal Highway Administration. Part VIII of the MUTCD deals with highway-rail crossings.

Also, the *Railroad-Highway Grade Crossing Handbook* provides general information on the physical and operational conditions of crossings for safe and efficient use by both highway and rail traffic.

Figure 1-1. U.S. DOT-AAR Crossing Inventory Form

Figure 1-2. Highway Grade Crossing Incident Report

2.0 HIGHWAY-RAIL CROSSING INVENTORY NUMBER

2.1 Background

In 1974, an effort was undertaken to inventory and assign a unique number to all public and private highway-railroad intersections and pedestrian crossings in the United States. As a part of the original inventory, data were collected for all public, private, and pedestrian crossings, both at grade and grade separated, including location, operational, physical and classification information.

A National Advisory Committee having representation from all involved parties was appointed to provide technical guidelines for the implementation of the inventory. The Advisory Committee determined the type and extent of the data to be collected. In general, the data elements to be included in the inventory were selected on the basis of their significance to the computation of a priority index for grade crossing improvements.

The railroad industry and each of the States participated in the initial inventory. Following an agreed procedure, the States and railroads continue to submit new and updated crossing information to the Federal Railroad Administration. The FRA, through its contractor, updates and maintains the National Data File. This information is available for public use and may be obtained through the FRA Office of Safety.

In addition to these data, some States and some railroads maintain additional crossing information in their data files. However, these data are not generally available to the public and may be obtained only through the State or railroad maintaining the supplemental information.

In many ways the National Highway-Rail Crossing Inventory number, placed at all public, private, and pedestrian crossings, is similar to a credit card or bank account number. Important information is assigned to the number by State agencies and railroads. Police, accident investigators, project engineers, utilities, States and railroads are but a few of those who refer to these numbers and the connecting data regularly.

The need for accurate information assigned to the appropriate crossing is

important in any decision to upgrade existing warning devices. The number of accidents, motor vehicles and trains using the crossing, and the type of warning device are but a few of the data elements that are critical in the computation of a "hazard index" for individual grade crossings. Not only is it important that these data be kept current, but it is also critical that the information be assigned to the proper crossing via the identification number.

In addition to the assignment of data regarding the physical and operational characteristics of a crossing, the inventory number is used on all FRA grade crossing accident reports and warning device malfunction reports. Many States and local jurisdictions use the crossing number on reports of accidents at or near crossings even when not involving a rail vehicle. All railroads and States use the inventory number on crossing improvement project documents, and railroad crews report near misses and other information regarding a crossing by the inventory number. Some utility companies even use the number to locate rail crossings. All of these factors require the need for displaying the number at the crossing to insure that the information is being assigned to the correct location.

2.2 Uniqueness and Calculation

The crossing inventory numbering system was designed to reduce the possibility of error by insuring that crossing data is recorded for the correct location. The crossing identification number, which consists of a maximum of six numeric digits with a single alpha check character, is placed at crossings on number boards along with the "U.S. DOT-AAR" designation. The number assigned to each highway-rail intersection is unique. It is important for proper identification to have the crossing number permanently displayed and mounted on a number board (Figure 2.1) and it is strongly recommended that it be displayed on both sides of the track at each and every crossing. By referencing this number, all inventory and accident data on file, including data collected by State and local agencies and railroad companies, will have a common link. The identification number serves as a communication reference between railroad companies and public agencies, as well as between individual railroad companies regarding specific crossings.

A simple numeric system requiring the use of a maximum of six digits was adopted by the National Advisory Committee. Some exceptions were made in the numbering system. For example, numbers having the same digit repeated consecutively three or more times were eliminated (e.g., 7777). Also, numbers having three digits or less were not used, and some may have leading zeros. The

crossing identification number, with its six numeric digits, has a single alpha check character at the end of the number sequence.

This alpha check character is another feature of the National Inventory number that makes it similar to a credit card. When the inventory numbers are generated, they are accompanied by the check character. Therefore, every time a number is used, it can be validated by the check character. The check is performed as follows:

a. Add the six individual numbers which result from the products of each of the first six digits times the digit's position in the number stream, with position one being the left-most digit (see Step 1 below).

b. Subtract multiples of 22 from this total until the remainder is less than 22 (see Step 2 below).

c. The remainder is then compared against Table 2-1 to find or verify the alpha code.

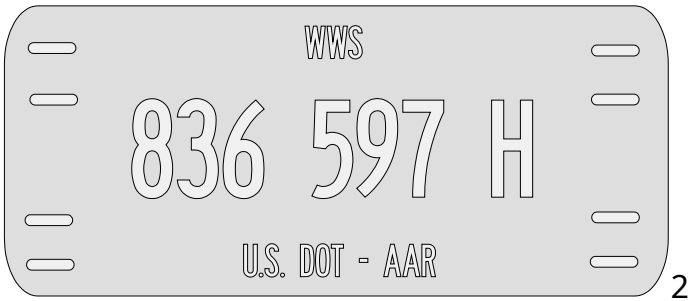


Figure 2-1. National Highway-Rail Crossing Inventory Number and Number Board

EXAMPLE #1

The procedure can be illustrated by validating the inventory number from Figure 2-1 (836 597 H). The validation is done as follows:

Step 1. Compute Numeric Code.

= [(8x1) + (3x2) + (6x3) + (5x4) + (9x5) + (7x6)]
= (8 + 6 + 18 + 20 + 45 + 42)
= 139

Step 2. Determine Remainder for Alpha Code.

= 139 - (subtract multiples of 22 until you get a number that is less than 22)
= 139 - (22 x 6)
= 139 - 132
= 7

Step 3. Verify the Alpha Code

The alpha character represented by the number 7 is the letter H (from Table 2-1).

Therefore, the inventory number (836 597 H) has been validated.

EXAMPLE # 2

A second example is shown below:

Crossing Number:		0	7	6	5	2	1	C
Multiplication:	x	1	2	3	4	5	6	
Sum:		0	+14	+18	+20	+10	+6	= 68

Remainder: 68/22 = 3 and remainder of 2

(NOTE: Use long division or subtract multiples of 22.)

Alpha Code: 2 = C from Table 2-1

Remainder	Alpha Code	Remainder	Alpha Code	Remainder	Alpha Code	Remainder	Alpha Code
0	A	6	G	12	N	18	V
1	B	7	H	13	P	19	W
2	C	8	J	14	R	20	X
3	D	9	K	15	S	21	Y
4	E	10	L	16	T		
5	F	11	M	17	U		

Table 2-1. Remainder vs. Alpha Code

2.3 Assignment of Numbers

Every crossing in the United States, including public, private and pedestrian, both at grade and grade separated shall have a crossing inventory number assigned and recorded in the National File. The only exceptions are crossings (1) created to serve specific temporary (six months or less) activities such as construction, and (2) those used only by railroad employees within a railroad yard on railroad property and not available to the general public. In a plant complex or for yard-type locations where there are numerous crossings that are not always distinguishable (e.g., a port or dock area), one number can be assigned to include all crossing areas within the property limits. Such number should be clearly posted at the railroad point of entry.

NOTE:

There should only be one crossing number assigned to a single crossing (defined as the tracks between a pair of warning devices), no matter how many railroads own track that traverses the crossing. There may be cases where two mainline tracks, owned and maintained by two different railroads, traverse a crossing, with each of these railroads having assigned a separate crossing number for the crossing. If this situation exists, one of the numbers should be deleted (closed) and one of the railroads involved should claim the crossing and list the other railroad as "operating across the same crossing."

To identify the owning railroad for a crossing, use the following procedure:

- identify the operating railroad or the railroad that owns the property, or
- identify the railroad that performs maintenance on the crossing, or
- have the railroads jointly decide who will carry the crossing on its inventory.

Any remaining original number "tags" from the 1973-1975 National Inventory Project which have not been assigned to a crossing may be assigned to and installed at new crossings. When this supply is exhausted, the FRA National Highway-Rail Information Center will furnish, upon request, a series of unique numbers to be assigned to newly opened crossings or to crossings that are identified without a number. A railroad or State should request enough numbers to meet their estimated yearly need, including any increase in new crossings. (Tags or number boards are not provided by FRA.)

Railroads and States may address their requests for crossing inventory numbers to:

Federal Railroad Administration
Office of Safety

Highway-Rail Crossing and Trespasser Programs Division
400 7th Street, S.W., (RRS-23)
Washington, D.C. 20590

New numbers are to be used for any new crossings or for any crossings that have been identified as not having an assigned number (a careful and detailed check should be made before assignment of a new number to insure that a prior number was not already assigned). While FRA provides valid usable crossing numbers, it is the railroad or State that actually assigns the number. The actual assignment of a number to a crossing occurs when the number is placed on a completed four-part Inventory Form and the Form returned to FRA for processing into the National File (which takes about three months). It is important that this occur as quickly as possible for any existing crossing that does not have a number. Preparation and submittal of a four-part U.S. DOT-AAR Crossing Inventory Form for such crossings should be expedited.

For a public at-grade crossing, the railroad needs to complete Parts I, II & III. For private crossings, grade-separated crossings (including public) and all pedestrian crossings, only Part I information is required. The railroad retains the fourth sheet (orange) and sends the top three sheets to the appropriate "State Crossing Inventory Contact" (see Appendix A) for completion of Part IV (if the crossing is public at-grade). We suggest that the railroad copy the FRA on the transmittal correspondence. The State will complete Part IV, retain the yellow copy, return the pink copy to the railroad, and forward the green copy to FRA for processing into the National Inventory File. New public at-grade crossing records cannot be entered into the National Inventory File unless all items in Parts I-IV are completely filled in.

A crossing that is moved may or may not retain the same crossing inventory number. The crossing number is unique to a specific crossing and location. If the physical crossing is moved a short distance (usually within several hundred feet) and the operational characteristics do not materially change, the same number may be used at the new location. If this is not the case, the old number should be closed and a new number assigned to the new location.

If a crossing is closed, the closure must be reported to the FRA. Although the crossing will no longer be in use, the number assigned will be permanently associated with the closed crossing in the National Inventory File. It is imperative that the number not be re-assigned to another new crossing. However, if the

crossing is re-opened at a later date, the same number would be re-activated and used.

All crossings (public, private, and pedestrian, including grade-separated) must be inventoried and the inventory records should be updated at least once every five years to verify that the crossing still exists.

When there is no record of a crossing number in the U.S. DOT-AAR National Highway-Rail Crossing Inventory, the usual cause is that the crossing was never inventoried or that the original inventory record was never submitted to FRA for input into the National File. It is also possible that the crossing was recorded as closed at some time in the past. Whatever the reason, it is very important that the situation be corrected as rapidly as possible by preparation and submission of a four-part U.S. DOT-AAR Crossing Inventory Form.

When a crossing is located on a county or State line, it is suggested that the crossing be inventoried by and in the county or State that is south or east geographically.

If you have any questions about this process, contact FRA at (202) 632-3312.

2.4 Number Boards

The National Crossing Inventory Number, which consists of six numeric digits and an alpha check character, shall be permanently displayed at all crossings, recommended on both sides of the railroad right-of-way, on number boards in accordance with specifications outlined herein. The FRA does not provide tags or number boards. These may be purchased from suppliers or manufactured by the railroad. In some cases, States have supplied number boards as part of an overall program.

2.4.1 Specifications

The specifications for permanent number boards for the DOT-AAR Highway-Railroad Crossing Inventory System were adopted in 1978 by the National Advisory Committee.

The number board shall be of light-gauge (.032") aluminum, 4" x 9" in size, with eight slots for mounting, and left unpainted so as not to be attractive to vandals.

The crossing number shall be embossed in the center with 1-1/2" numeric-alpha characters. The railroad code shall be embossed above the crossing number with 1/2" characters and the Inventory System designation "U.S. DOT-AAR" shall be embossed with 1/2" characters below the crossing number. (See Figure 2-1 for an example.) This type of sign can be considered as an unpainted "license plate" and blanks used for motorcycle tags could be used.

The method of manufacture or procurement of the permanent number board is left to the discretion of the railroads. However, the resulting sign or number board must comply with the general specifications (see Table 2-2). The railroad may fabricate or purchase signs of metal, plastic, or other suitable materials, or may emboss, stencil, paint, or otherwise inscribe the number in the proper location.

- 4 inches high by 9 inches wide
- Made of .032 inch thick aluminum, unpainted
- Pierced with eight slots, four on each side
- 1/2 inch embossed across the top: the railroad code (example: **BN**)
- 1-1/2 inch embossed across the center: the crossing number (example: **836 597 H**)
- 1/2 inch embossed across the bottom: **U.S. DOT-AAR**
- 2 plates for each crossing are recommended, plus any desired spares

Table 2-2. Number Board Specifications

Crossing number boards can be purchased from manufacturers and fabricators of signs and railroad materials. However, as of January 1994, only one manufacturer was known to supply such number boards as part of their offered products. This manufacturer is identified below for the convenience of short line railroads and others who may not have fabricating facilities, or for those who do not wish to fabricate their own plates. This is not an endorsement of this manufacturer in any way by the FRA.

Keyes-Davis Company
Box 1557, 74 Fourteenth Street
Battle Creek, Michigan 49016

Telephone: (616) 962-7505
Facsimile: (616) 962-4411

Approximate price quotes, as of 10/18/95, for individually numbered plates conforming to the specifications described above are contained in the following table (Table 2-3).

In Quantities of	Price per Board
1-9	$22.00
10-24	16.50
25-49	12.25
50-99	7.25
100-249	5.75
250-499	4.25
500-999	3.35
1000-2499	2.50
2500-up	1.60

Table 2-3. Number Board Price Quote

2.4.2 Installation and Display

At least one sign shall be located on a signal mast or crossbuck post for crossing and must be clearly visible from the roadway. Ideally, it should also be visible from the rail right-of-way, if possible. While only one sign is required, two signs are recommended, one for each side of the crossing. If a mast or post is not present, the number should be mounted to any type of fixture or structure present, even a wall or the ties. In lieu of a sign, the number could be clearly painted (stenciled) on the masts or posts. As a temporary or alternate measure, spray painting or stenciling can be used on signal cabinets or any other suitable location. The key point to remember, DISPLAY THE NUMBER AT BOTH SIDES OF THE CROSSING FOR EACH AND EVERY CROSSING.

There are three important considerations when installing number boards,

a. The attachment of the number board should not interfere with the operation of the crossing warning device;

b. The number board should be placed (where possible) above the reach of possible vandals; and,

c. When attached to posts or poles, the number board should be mounted, whenever possible, so that it is facing the roadway.

There is only one number for a crossing, but it is recommended that two number boards be installed, one on each side of the crossing. Some examples of installation are shown in Figure 2-2.

When number boards are to be mounted on metal poles, a banding tool and metal strap are required. To provide a secure attachment, care must be taken in threading the strapping material through fastening slots in the number board.

Where number boards are to be mounted on wooden poles, galvanized nails or heavy duty staples are required. The minimum number of nails or staples should be four.

The number boards can be mounted on the different fixtures in the following manner:

a. Crossbucks. The number board should be installed just above eye level using either nails or long staples, or strapping for metal poles.

b. Mast Mounted or Cantilevered Flashing Lights and/or Gates. The number board should be installed just above eye level using strapping material.

c. Stop Sign or Other Sign. Where crossbucks or other signals are not present, mount the number board on a metal or wood pole supporting the sign. The number board should be installed above eye level or just below the stop sign.

d. Post Mount where there are no Signs. Mount the number board on a post at least 5 feet above the ground. Installation on a post is recommended at locations where signs or signals are not installed, such as at private crossings and grade separations. When the sign cannot be installed on a post, the railroad should spray paint or

stencil the number on a suitable location and store the number board for later installation, or the number board may be mounted on the nearest railroad-owned signal or communication pole.

2.4.3 Maintenance

To insure identification and verification of a crossing, the display of number boards must be maintained by the railroads at all crossings, especially at public-at-grade crossings. Display and maintenance of signs at private, pedestrian, and grade-separated crossings is also important for identification purposes and should be maintained in the same manner. Number boards should be replaced if the originals deteriorate or are vandalized.

Care must be taken that number boards are not transported to an incorrect location via posts and poles which may be classified as surplus and then re-used at a different location. When posts or poles are taken down, the number boards should be removed and re-installed or destroyed if the crossing is closed. When surplussed (re-used) poles or posts are installed,

Figure 2-2. Number Board Mountings

the installation crew should insure that these do not contain number boards from other locations.

3.0 U.S. DOT-AAR CROSSING INVENTORY FORM RECORDING INSTRUCTIONS

3.1 Recording Instructions

The following section explains the process of filling out the U.S. DOT-AAR Crossing Inventory Form. Each section is preceded by a pictorial representation of the section of the form being detailed. Each letter (e.g., A.) or item number (e.g., Item 1.) in the explanation refers to the same lettered or numbered item on the form. Alphanumeric items are to be entered left-justified, while numeric items will be entered right-justified.

The four-part U.S. DOT-AAR Crossing Inventory form may be used to submit crossing inventory changes. Railroads should check submittals to insure that changes have been circled, that an effective date is shown, and that all information is correct. If the changes are simple or minor (numbers, closings, ownership changes, etc.), corrections can be made in red pen directly on the "one-page-per crossing printout" sheets and returned to FRA through the State for processing.

3.2 U.S. DOT-AAR Crossing Inventory Form Heading

A. Initiating Agency.

Enter a check mark in the appropriate box (for either railroad or State) to indicate who is initiating the update form.

B. Crossing Number.

Enter the crossing inventory number here and under "I. D. Number" at the bottom of the form.

C. Reason for Update.

Enter a check mark in the appropriate box to indicate that the reason for the form is a change in existing data, a new crossing, or a closing is being reported.

D. Effective Date.

Enter the date the change was completed or put into effect. Ideally, all public, private and pedestrian crossings, including grade-separated, should be updated to at least verify that the crossings still exist. A current effective date should be indicated. If it is verified that there are no changes in the data and the crossing still exists, and the most recent record is over 5 years old, an effective date of January 1 of the current year (e.g., 01/01/96) should be indicated in red pen on the inventory report and the old date crossed out.

3.3 Part I Location and Classification of All Crossings

Item 1. Railroad Operating Company.

Enter the U.S. DOT-AAR railroad code (reference Appendix E) of the "operating" railroad company, i.e., the railroad that operates train movements over the crossing. The operating railroad will normally also be the reporting company but may or may not own and maintain the roadbed, tracks, and signal system controlling the crossing. If the operating company

is not the owner of the track, and the track owner would generally be considered as a "non-railroad," it is suggested to enter the owner's name in Item 13, Branch or Line Name.

NOTE: Crossings are to be assigned to the operating railroad, that is, the identity of the railroad company that operates over the trackage where the crossing is located and not necessarily to the owner of the track or property itself, unless it is an operating railroad. Thus, designations such as "XYZ Corporation" should be changed to the name of the railroad that is actually operating on the specific line since they are the operating railroad.

Item 2. Railroad Division or Region.

Enter the name of the division, region, or major district, if the railroad system is divided into such groups.

Item 3. Railroad Subdivision or District.

Enter the name of the sub-division or other classification, if the railroad system is divided into such groups.

Item 4. State.

Enter the name of the State where the crossing is located. If the crossing is located on a State boundary so that parts of the crossing lie in two or more States, agreement must be made between the two States as to which shall "claim" it for inventory record purposes.

Item 5. County.

Enter the name of the county where the crossing is located. If the crossing is on a county line so that parts of the crossing lie in two or more counties, a decision must be made to place it in one county only.

Item 6. County Map. Ref. No.

Enter the county map identification or other reference number provided by the highway agency to specifically identify the crossing on the street and road system. If it is not available, leave this entry blank.

Item 7. City.

Enter the name of the incorporated city where the crossing is located. If the crossing is on a city line so that parts of the crossing lie in two or more cities, identify only one city. If not within a city, omit this item and complete item 8.

Item 8. Nearest City.

If the crossing is not within an incorporated city, town, or village, enter the

name of the unincorporated city, town, or village or the nearest city, town, or village, whether or not on the railroad lines.

Item 9. Highway Type and No.

Enter the type of highway such as Interstate (I), U.S. numbered (US), State (ST), county (C), local (L), etc., and number of the highway. Please abbreviate, as I-95, US-1, ST-234, C-2096, etc. The number of the highway should be posted on the highway or found on State or county maps. If there is more than one number, enter the most important route or all the numbers.

Item 10. Street or Road Name.

Enter the name of the highway or street, if the highway or street has a name. If it is a private roadway and it has a name, enter the name of the road or the owner's name, otherwise just enter "private."

Item 11. RR I.D. No.

If a crossing has an identification number other than the DOT-AAR number, such as a State agency number (e.g., a Public Utility Commission (PUC) assigned number) or a railroad number and it is posted at or assigned to the crossing, enter that number.

Item 12. Nearest RR Timetable Station.

Enter the name of the nearest timetable station of the operating company.

Item 13. Branch or Line Name.

Enter the name of the line or branch as used by the railroad to describe this segment of track. If the track is an industry lead, industry spur, yard lead, wye, etc., enter the name of the track or industry.

Item 14. Railroad Mile Post.

Enter the railroad milepost number in miles and hundredths of miles. (53 feet is approximately 1/100 mile.) Enter the number with the decimal point.

NOTE: Because of data-retrieval anomalies, alphabetical letters in the milepost field should be avoided.

Item 15. Pedestrian Crossing (Position).

Enter a check for the appropriate position of the railroad relative to the pedestrian crossing.

Item 16A. Private Vehicle Crossing (Type).

Enter a check in the box which best describes the usage of a private crossing based on the following categories:

1. Farm. A farm crossing is any crossing used for the movement of farm motor vehicles, farm machinery or livestock in connection with agricultural pursuits, forestry, or other land-productive purposes.

2. Residential. A residential crossing is any crossing used to provide vehicular access for occupants and their invitees to a private residence or residences.

3. Recreational. A recreational crossing is any crossing used to provide access to otherwise isolated recreational areas.

4. Industrial. An industrial crossing is any crossing used to provide access between industrial plant facilities or to an industrial or other commercial area.

Item 16B. Private Vehicle Crossing (Position).

Enter a check in the appropriate box describing where the railroad crosses the highway.

Item 16C. Private Vehicle Crossing (Warning Device).

Enter a check in the appropriate box for the type of crossing warning device. If signs and/or signals exist, enter a brief description in the spaces provided.

Item 17. Public Vehicle Crossing (Position).

Enter a check in the appropriate box for the position of the railroad relative to the public crossing and complete the remainder of the form for all public

at-grade vehicular crossings.

NOTE: For private, pedestrian, and grade-separated crossings, no further information needs to be provided. Such forms are complete and should be forwarded to the State and FRA for processing.

3.4 Part II Detailed Information for Public Vehicular at Grade Crossing

Item 1A1 - 1A4.

Enter the number of the train movements through the crossing and the

number of switching movements at the crossing for both daylight and night time hours. Typical number of daily train movements means the normal or average daily train movements. Through trains are trains whose primary responsibility is to move cars over the road, and there may be a limited number of pickups and setouts along the route. Classify all others, (i.e., locals, industrial runs, switch engine) as switching movements. Include the total number of the train movements both for the reporting "operating" company and for any other railroad operating over the crossing.

Item 1B. Check if Less Than One Movement Per Day.

Enter a check if train frequency is less than one train per day.

Item 2A. Speed of Train at Crossing, Maximum Time Table Speed.

Enter the maximum timetable speed.

Item 2B. Speed of Train at Crossing, Typical Speed Range Over Crossing.

Enter the typical minimum speed and maximum speed over the crossing.

Item 3. Type and Number of Tracks.

Enter the number of main line tracks and specify the number and type of any "other" tracks. A track is considered main if through trains operate on the track.

Item 4. Does Another RR Operate a Separate Track at Crossing?.

Enter the U.S. DOT-AAR railroad codes of all railroads that operate a separate track within the warning devices at the crossing. Up to four railroad codes, in blocks of four characters each, may be entered in this field. Enter each railroad code, flush left, and the appropriate blank spaces if the code is not four characters.

Item 5. Does Another RR Operate Over Your Track at Crossing.

Enter the U.S. DOT-AAR railroad codes of all railroads that operate trains over your track at the crossing. Up to four railroad codes, in blocks of four characters each, may be entered in this field. Enter each railroad code, flush left, and the appropriate blank spaces if the code is not four characters.

NOTE: For Items 6A through 6D, that follow, if more than one type of warning device is present, fill in all applicable types of warning device(s). Enter a "9" where the number is 9 or greater. Provide short descriptions of "other" devices in the appropriate spaces.

Item 6A. Type of Warning Device at Crossing, Signs.

Enter the number of masts with crossbucks, not a count of all crossbuck signs. Two or more crossbucks mounted on a single mast are counted as one crossbuck. If the crossing has a train activated device, do not count the crossbucks mounted on that device.

A standard highway stop sign is red with white letters and has eight sides. Classify all other stop signs as "other stop signs."

Also indicate number and type of any other passive signs at crossing.

Item 6B. Type of Warning Device at Crossing, Train Activated Devices.

9./10. Gates: Enter the count of gates with red and white reflectorized arms separately from the count of other colored gates.

11./12. Cantilevered Flashing Lights: Separate cantilevered flashers from those over traffic lanes and those not reaching the roadway or over only parking lanes, turnout lanes, or shoulders. Count individual cantilever units; do not count the flasher head pairs mounted on the units.

13. Mast Mounted Flashing Lights: Count all flashers on a single mast as one flasher. Do not count flasher heads or a pair of flashing lights separately.

14./15. Other Flashing Lights: Flashing lights not in accordance with the latest Manual on Uniform Traffic Control Devices (MUTCD) should be reported as "other flashing lights."

16. Highway Traffic Signals: Highway signals refer only to train activated red-amber-green signals that control street traffic over the crossing. Do not count highway signals controlling a nearby intersection even if they are interconnected with the crossing devices.

17. Wigwags: Count all wigwags.

18. Bells: Count all bells if present, either alone or in conjunction with other protection.

Item 6C. Type of Warning Device at Crossing, Specify Special Warning Device

not Train Activated.

Enter the type of special warning device which is not train activated. Examples of special warning devices not train activated are:

a. Manually operated signals and/or gates
b. Train crew flagging the crossing
c. Watchmen
d. Floodlights.

For watchmen and for manually operated gates, the number of hours daily in effect should also be indicated. For floodlighting, the number of masts with lights should be reported. Only floodlighting which is distinctive from other ordinary street lighting in the immediate area by its intensity, light distribution, focus or color is to be reported.

Item 6D. Type of Warning Device at Crossing, No Signs or Signals.

Enter a check if no signs or signals are present.

Item 7. Is Commercial Power Available?

Enter a check in the appropriate box if there is commercial electric power available within 500 feet of the crossing.

Item 8. Does Crossing Signal Provide Speed Selection for Trains?

Enter a check in the appropriate box if the signal is equipped with a device to provide a constant warning time for train operation at the speed range listed in Item 2B. Enter a check in the N/A box (Not Applicable) if there are no automatic signals at the crossing.

NOTE: The four-part inventory form (often referred to as the "green form") asks, "Does crossing signal provide speed selection for trains?".

This question will only apply to crossings with automatic active warning devices. All other types of crossings (especially those with passive warning devices) should have the response "N/A" indicated. Crossings using only block or island type circuitry to activate the active warning devices should have the response "NO" indicated. For active warning device crossings, the response "YES" should be indicated if the track circuitry uses circuitry and electronic hardware which is termed as a "constant warning time (CWT) sensor," "predictor (Grade Crossing Predictor (GCP))," etc.

Item 9. Method of Signalling for Train Operation: Is Track Equipped with Signals?

Enter a check in the appropriate box for whether the track has some type of automatic signals or interlocking to control train operations.

3.5 Part III Physical Data

Item 1. Type of Development.

Enter a check in the appropriate box which best describes the predominant type of development in the vicinity (up to 1000 feet) of the crossing based on the following categories.

1. Open Space. Undeveloped or sparsely developed, very lightly populated, agricultural.

2. Residential. Built-up residential area.

3. Commercial. Retail stores and businesses, offices, personal services.

4. Industrial. Manufacturing, construction, heavy products, factories, and warehouses.

5. Institutional. Schools, churches, hospitals, parks, and other community facilities.

Item 2. Smallest Crossing Angle.

Enter a check in the appropriate box which most closely describes the smallest angle between the highway and the track. (The angle may be estimated by eye or with a simple device, such as a protractor.)

Item 3. Number of Traffic Lanes Crossing Railroad.

Enter the number of through traffic lanes crossing the track. Do not include shoulders or lanes that are typically used for parking.

Item 4. Are Truck Pullout Lanes Present?

Enter a check in the appropriate box for whether special added lanes are provided to accommodate vehicles required to stop at crossings.

Item 5. Is Highway Paved.

Enter a check in the "Yes" box if the highway is paved with material on which pavement markings can be effectively maintained. Enter a check in the "No" box if the highway surface is gravel, dirt, or has a surface treatment on which markings cannot be maintained.

Item 6. Pavement Markings.

Enter a check in the appropriate box for each type of pavement marking present that conforms to the highway traffic manual (MUTCD). If both stop lines and RR crossing symbols are present, check both boxes. If neither stop lines nor RR crossing symbols are present, check "None."

Item 7. Are RR Advance Warning Signs Present?

Enter a check in the appropriate box for whether there are advance warning signs present on any of the highway approaches.

Item 8. Crossing Surface.

Enter a check in the appropriate box which most closely fits one of the following descriptions:

1. Sectional Treated Timber. Prefabricated units approximately 8 feet in length of treated timber individually installed and removable for maintenance and replacement purposes.

2. Full Wood Plank. Full wood plank surface, other than section treated timber, covering the entire crossing area above the crossties, made out of ties, boards, bridge ties, etc.

3. Asphalt. Asphalt surface over the entire crossing area or in the area

between planks or other material forming flangeway openings, with or without single planks, or rubber on outside of running rails.

4. Concrete Slab. Precast concrete sections, installed and removable, individually, for maintenance and replacement purposes.

5. Concrete Pavement. Concrete surface which is continuous over the track area and is not removable except by destruction of the surface.

6. Rubber. Preformed rubber sections, installed and removable, individually, for maintenance and replacement purposes.

7. Metal Sections. Preformed sections of steel or other metal, installed and removable, individually, for maintenance and replacement purposes.

8. Other Metal. Complete coverage of the crossing area with railroad rails or other metal materials not removable in limited sectional units.

9. Unconsolidated. Ballast or other unconsolidated material placed above the tops of crossties, with or without planks on one or both sides of the running rails.

0. Other Specify. Surfaces other than the previous surfaces (1 - 9): structural foam, plastic, "high-tech" etc.

If there are multiple tracks and the tracks have different types of surfaces, choose lower grade surface material to indicate on the form. (It doesn't increase the overall rideability of the crossing to have one surface better than the adjacent.) A suggested order might be: concrete, rubber, wood, asphalt, unconsolidated, other.

Item 9. Does Track Run Down A Street?

Enter a check in the appropriate box for whether the crossing involves the track running parallel to and within a street or highway.

Item 10. Nearby Intersecting Highway?

Enter a check in the appropriate box for whether the street or highway at

this crossing is intersected by another street or highway within 75 feet of this crossing.

3.6 Part IV Highway Department Information

Item 1. Highway System.

Enter the correct highway system code from the following Table 3-1.

The Highway System Codes for the National Highway-Rail Crossing Inventory File were revised as a result of the 1991 Intermodal Surface Transportation Efficiency Act, (ISTEA) Section 1006. ISTEA requireD the redefinition of the National Highway System (NHS) which Congress officially approved. The NHS includes approximately 160,000 miles while the total Federal-Aid Highway (FAH) is approximately 953,000 miles (which includes the 160,000 mile NHS). There are now three classifications for highway systems which are:

		RXI Code
a.	National Highway System	1 & 2
b.	Other Federal-Aid Highway	3
c.	Non-Federal-Aid	8

The National Crossing Inventory File uses this classification, but subdivides the National Highway System into "Interstate" and "Other." On January 1, 1996, the old codes in the National Inventory File were automatically converted to the new Highway System Codes using the following process.

OLD CODES		NEW CODES
1 Interstate	-->	Interstate
2 Fed-Aid	-->	Other NHS

3 Fed-Aid Urban	-\	
	>	Other Fed-Aid Non NHS
4 Fed-Aid Secondary	-/	
8 Non Fed-Aid	-->	Non Fed-Aid

While this procedure converted most of the records to the new categories, many will need to be checked and verified by the States, especially where the status of a highway has changed. There is no change in the Functional Classification Codes.

The Highway System Codes are listed in the following table.

Code	Definition	Included
1	Interstate National Highway System	Interstate, rural, and urban
2	Other National Highway System	Other urban and rural principal arterial, non interstate (Congressional Approval, Sept. 30, 1995)
3	Other Federal-Aid Highway-Not NHS	Rural major collector and higher category, or urban collector and higher category, not part of NHS
8	Non-Federal-Aid	Local rural roads, rural minor collectors, and local urban city streets or any other non-Federal-Aid roadway

Table 3-1. Highway System Codes

Item 2. Is Crossing on State Highway System.

Enter a check in the appropriate box for whether the crossing is on a State highway system.

Item 3. Functional Classification of Road over Crossing.

Enter the appropriate code for the functional classification of the crossing highway that the State has determined in accordance with the Federal-Aid Highway Program Definitions. The current functional classification codes

are listed in Table 3-2.

Category	Codes	Functional Classification
Rural	01	Interstate
	02	Other principal arterial
	06	Minor arterial
	07	Major collector
	08	Minor collector
	09	Local
Urban	11	Interstate
	12	Other freeway and expressway
	14	Other principal arterial
	16	Minor arterial
	17	Collector
	19	Local

Table 3-2. Functional Classification Codes

NOTE: The tens digit for the rural codes must be "0" and for urban must be "1".

Item 4. Estimate AADT.

Enter the estimated present average daily traffic (total both directions) based on available traffic information. A reasonable estimate of the AADT will be acceptable if actual traffic counts are not readily available.

Item 5. Estimate Percent Trucks.

Enter the estimated percentage of trucks in the traffic stream.

4.0 INVENTORY UPDATE PROCEDURES

4.1 General

The procedures for updating the National Inventory File are applicable to public, private and pedestrian crossings, whether at grade or grade separated. These procedures are designed to insure availability and use of an up-to-date highway-rail crossing data base with uniform and consistent data collection criteria and a uniformity in the procedures used by States and railroads.

The procedures are based on the concept that the State transportation agency should be the party who forwards all data item changes for any and all crossings to the FRA. This is consistent with the sequence of steps followed during the initial inventory. The steps are railroad to State to FRA. Or in situations where the State agency (rather than a railroad) initiates crossing changes, the sequence is State to railroad to State to FRA.

The process requires a continuing, cooperative effort between the States and railroads because only one may have changes to report, yet both need to review and update their respective crossing records. Channels of communication need to be established whereby such information is provided to the appropriate individuals in the railroad companies and the State transportation agencies.

There are five types of update formats which may be submitted. These are:

a. U.S. DOT-AAR Crossing Inventory Form
b. Mass Update Form
c. Inventory Computer Printout
d. Magnetic Tape
e. GX Computer Program

Examples of the different types of forms upon which changes and corrections may be submitted are shown in Figure 4-1. At the top is the "Inventory Computer Printout," on the right in the middle of the page is the "U.S. DOT-AAR Crossing Inventory Form," and the fill-in-the-blanks Mass Update Form is at the bottom. Section 5.0 of this manual addresses the use of the Mass Update Forms. Use of the Inventory Computer Printout for mark-up is discussed and illustrated at the end of

this section. Section 6.0 of this manual explains how updates may be submitted on magnetic tape.

Changes may also be submitted on floppy disk using the GX computer program. If the changes are submitted on the GX disks by a railroad, the railroad should send a copy of the transmittal letter to the State (contact person) and the FRA to notify them that a change has been submitted via GX disk. This notifies the State that in 2 or 3 months they can receive a

Figure 4-1. The Procedures/Forms Used for Reporting Changes

GX update of this material after it has been added to the National File. The same applies to a State that submits changes. The State should notify the railroads involved and the FRA by sending a copy of the transmittal letter. Section 7.0 of this manual describes the use of the GX Programs.

This section, Section 4 of this manual, emphasizes the procedures involved for submitting updates via the U.S. DOT-AAR Crossing Inventory Form.

4.2 Inventory Form

The U.S. DOT-AAR Crossing Inventory Form FRA F6180.71 (OMB-004-R4039) (see Figure 1-1) is used for providing data to initiate new crossings or changes to the Highway-Rail Crossing Inventory. The inventory forms are four-part forms with a self-carbon feature. This form is used for reporting all types of changes, including the establishment of a new crossing, closing of an existing crossing, or changes in the characteristics of a crossing. Detailed instructions for completing the form are given in Section 3.0. The form does not provide space for comments. Should comments or explanation regarding a crossing be considered necessary or useful, a separate sheet should be used and attached to the form.

While changes and corrections may be submitted using other formats, new crossings must always be submitted on the Inventory Form. When Parts I, II and III have been completed by the railroad, the top three copies must be forwarded to

the State for completion of Part IV. It is suggested that FRA be sent a copy of the transmittal correspondence.

Railroads and State highway agencies may obtain needed forms from the FRA. The address is:

Federal Railroad Administration
Office of Safety
Highway-Rail Crossing and Trespasser Programs Division
400 7th Street, S.W. (RRS-23)
Washington, D.C. 20590

4.3 Data Items

Each data element contained on the inventory form is considered to be one of three categories: administrative, physical, or operational. The following tables contain the data elements comprising the three categories. The tables also indicate the agency that is expected to be most aware of any changes to those data elements and which would normally initiate the update process.

Table 4-1 lists the administrative data elements, which pertain to the management and jurisdiction of the crossing. Changes in administrative data elements (such as division, subdivision names, etc.) usually occur because of an administrative action by a railroad. A State agency may also make decisions that would result in changes in certain administrative elements. Thus, the appropriate agency should initiate the update process when changes occur.

Item No.	Element Name	Agency
I-4	State	State Highway or Railroad
I-5	County	State Highway or Railroad
I-6	County Map Reference	State Highway or Railroad
I-7	City	State Highway or Railroad
I-8	Nearest City	State Highway or Railroad
I-9	Highway Number	State Highway or Railroad
I-10	Street or Road Name	State Highway or Railroad
IV-1	Highway System	State Highway
IV-2	Crossing on State System	State Highway
IV-3	Functional Class	State Highway
I-1	Railroad Company	Railroad
I-2	Railroad Division	Railroad
I-3	Railroad Subdivision	Railroad
I-11	Railroad I.D. Number	Railroad
I-12	Timetable Station	Railroad
I-13	Branch or Line Name	Railroad
I-14	Railroad Milepost	Railroad
II-5	Another Railroad?	Railroad
I-15	Pedestrian Crossing	State Highway or Railroad
I-16	Private Vehicle Crossing	State Highway or Railroad
I-17	Public Vehicle Crossing	State Highway or Railroad

Table 4-1. Administrative Data Elements

The physical items describe the crossing configuration. Changes to physical characteristics generally occur as a result of construction activity by a railroad or State. The authority for the work usually is in the form of a contract, work order, etc. An update must be submitted by the proper agency when any of these data elements change. Table 4-2 lists the physical data elements.

Item No.	Element Name	Agency
II-3	Type, Number Tracks	Railroad
II-4	Separate Track/Other Railroad	Railroad
II-6	Type of Warning Device	Railroad or State Highway
II-7	Commercial Power?	Railroad or State Highway
II-8	Speed Selection Provided	Railroad
II-9	Signals for Train Control	Railroad
III-8	Crossing Surface	Railroad or State Highway
III-1	Development	State Highway
III-2	Crossing Angle	State Highway or Railroad
III-3	Number Traffic Lanes	State Highway or Railroad
III-4	Truck Pullout Lanes	State Highway
III-5	Is Highway Paved?	State Highway or Railroad
III-6	Pavement Markings	State Highway or Railroad
III-7	Advance Warning Signs	State Highway

Table 4-2. Physical Data Elements

The operational items pertain to the use of the crossing by railroads. It is recognized that the values of the operational data elements (e.g., number of trains, speeds, etc.) may change over a period of time. Whenever the changes are made or become known, the data elements should be updated. Table 4-3 lists the operational data elements.

Item No.	Element Name	Agency
II-1	Daily Train Movements	Railroad
II-2	Maximum Train Speed/Crossing	Railroad
IV-4	Estimated AADT	State Highway
IV-5	Estimated Percent Trucks	State Highway

Table 4-3. Operational Data Elements

4.4 Railroad and State Agency Update Submission Procedures

There are three situations which require the reporting of changes by a railroad or State highway agency. These situations are as follows:

a. When one or more of the physical, operational, or administrative characteristics of an existing crossing change,

b. When a new crossing is opened, and

c. When an existing crossing is closed.

IMPORTANT NOTE: In all cases when an update form is prepared, the items in Table 4-4 must be provided in addition to the items being updated.

Section	Item No.	Item
Heading	A	Initiating agency
Heading	B	Crossing number
Heading	C	Type of update
Heading	D	Effective date
Part I	1	Railroad operating company
Part I	4	State
Part I	5	County

Table 4-4. Required Update Items

Only the data items being updated, i.e., those items for which a value is being changed from the existing records, are to be entered in the appropriate place on the form. These items should then be circled.

The steps necessary to process an update are shown in Figures 4-2 and 4-3. The primary responsibility for submitting the data changes to the FRA lies with the State agencies; however, the railroad has responsibility for submitting updates to the State. The sequence for submitting updates is shown in Figures 4-2 and 4-3, depending upon whether the update is initiated by the railroad or the State agency.

RAILROAD INITIATED

Figure 4-2. Railroad Initiated Update

STATE INITIATED

Figure 4-3. State Agency Initiated Update

Depending upon the data element(s) involved (see Tables 4-1, 4-2, and 4-3), either a State or a railroad should initiate the update form. Unless otherwise mutually agreed by the State and the railroad, the party initiating an update should be in accordance with these tables.

As has previously been explained, an update form should be initiated when one or more of the physical, operational, or administrative characteristics change (see Tables 4-1, 4-2, and 4-3). Physical characteristic changes generally occur as a result of a construction activity. Changes in administrative data elements usually occur because of an administrative action on the part of the State highway agency or a local jurisdiction. Operational data elements may change significantly annually or over a period of time (e.g., traffic counts, percent trucks, pavement markings, etc.). The procedures of the State should be such that these items are updated at least every 3 years. However, whenever the changes become known, the data elements should be immediately updated.

When a new crossing is opened, Form FRA F 6180.71 must always be used to report the inventory information. The process is the same as for the process just described for reporting changes. The railroad/State needs to complete an update form for the new crossing and assign a valid crossing number. Crossing numbers can be obtained from the FRA (see Section 2.0). The railroad/State must also install the crossing identification number at the crossing and it is strongly recommended that it be installed on both sides of the crossing. If the crossing is public, the form must be completely filled out. If the crossing is private or grade separated, only Part I of the form must be completed. The railroad/State should initiate the update by completing a form and routing it according to Figure 4-2 or 4-3, whichever applies.

The sequence of steps to be followed when a crossing is reported closed is the same as for the submissions for changes and additions.

When a railroad initiates an update submission, the flow process is as pictured in Figure 4-2. The railroad will complete a four-part form, retaining the bottom (orange) copy, and forwarding the top three copies to the appropriate State agency (Step 1). The State agency will review the form, adding any changes necessary, and return a copy (pink) to the railroad for use in updating its records (Step 4). The top copy (green) will be forwarded by the State agency to FRA for processing into the National File.

The State agency should carefully review the forms to insure that the location information is correct and that the State concurs in the railroad's classification of the crossing as public or private. The State agency and the railroad must reach agreement regarding the crossing classification, prior to forwarding the inventory form to the FRA.

The State highway agency should review other parts of the completed form for a new public crossing to insure that the data shown agrees with its records.

After the railroad has received the final copy (pink) of the completed four-part form set from the State highway agency, for all types of submissions (i.e., add, change, or delete), the railroad should update its records. This may consist of placing the pink update form in its proper place in a file cabinet, and/or entering the information into a computerized data base.

When the State is responsible for initiating the update submission, the flow will be as shown in Figure 4-3. The State will send three copies of the form to the railroad. Whenever a form set (three copies) for a crossing is received by the railroad from a State agency, existing data elements for the crossing should be reviewed, particularly the railroad operational items, although other items also should be checked. If it is known that the values for these items have changed, efforts should be made to determine the current values and they should be entered on the form. Two copies (green and yellow) of the form will then be returned to the State agency, with one copy (pink) being retained for the railroad's permanent records.

This process provides the opportunity to update all data elements of a crossing that may have changed. The items involved in these situations probably will be the operational items, but could include other administrative or physical items. If there is any doubt about whether a change has been reported previously, it should be included at this time.

Routing of the four-part forms will be the same as just described for adds, changes, and deletions.

NOTE: The State agency has the primary responsibility for submittal of forms to FRA, including the top (green) copy of the four-part form.

The top (green) copy of the four-part form should be sent to:

Federal Railroad Administration
Office of Safety
Highway-Rail Crossing and Trespasser Programs Division
400 7th Street, S.W. (RRS-23)
Washington, D.C. 20590

4.5 Summary of Completed Inventory Form Handling Procedures

Forms submitted by railroads and States need to have the changes circled in accordance with the instructions (reference Section 4.4 of this manual). **Please**

double check submittals to insure that any and all changed items are circled.

When the forms are completed and reviewed, including resolution of any discrepancies between railroad and State agency information, they are to be handled in the following manner:

a. Initially, for railroad completed inventory forms, the railroad shall mail the top three copies to the State contact (see Appendix A). If possible, include county maps with the crossing identified by location and number. The railroad should keep the fourth (orange) copy for its interim records.

b. Initially, when the State agency has completed the inventory form, they will mail the top three copies to the railroad.

c. The final distribution of the color copies of the inventory form is as follows:

   1. Green Copy. This copy is to be forwarded by the State agency to the FRA.

   2. Yellow Copy. This copy is to be retained by the State DOT.

   3. Pink Copy. This copy is to be retained by the railroad.

   4. Orange Copy. This copy is to be retained temporarily by the railroad or State agency, whichever is initiating the update form, and destroyed when the permanent pink or yellow copy is received.

It is suggested that a cover letter accompany each group of update forms shipped. This letter should include the total number of forms included in the mailing and broken down according to private, pedestrian, grade separation, and public at-grade crossings, and the crossing numbers submitted.

Completed inventory forms for transmittal to the FRA **(green copies only)** should be sent to the following address:

Federal Railroad Administration
Office of Safety
Highway-Rail Crossing and Trespasser Programs Division

400 7th Street, S.W. (RRS-23)
Washington, D.C. 20590

4.6 One-party Submissions

If a State or railroad initiates update forms and the other party does not review the forms and provide its update information within a reasonable time, the initiating party may make a one-party submission to the FRA. Instead of sending the green, yellow, and pink copies of the update form to the other party, the green copy can be sent directly to the FRA and the yellow or pink copy, as appropriate, would be sent to the other party. The letter of transmittal to the FRA should explain that it is a one-party submission and that the other party has been sent the appropriate copy of the update form. However, this procedure should only be used if, after repeated attempts, the other party does not review and return forms within a reasonable time (usually 3 months maximum).

4.7 Inventory Computer Printout Mark-up

When there are a few simple corrections that need to be made, such corrections can be indicated directly on the Computer Inventory Printout, circled in red pen (or high-lighted), effective date indicated, and returned to the FRA for processing. A copy needs to be sent to the appropriate State or railroad.

This procedure should only be used for direct numerical or word replacements and when only a few updates are involved. An example of this process and the procedure is shown in Figure 4-3.

Figure 4-4 is a sample of what one State uses as a checklist of guidelines for their inspectors to use when marking up the computer printouts or completing the Inventory Forms.

4.8 Overview of Update Processing at FRA

All Inventory File update submissions are received by FRA, where a cursory review of the submissions is performed. After the review is accomplished, FRA forwards the submissions by courier to the contractor for processing. A flow chart showing an overview of the current GCIS processing is contained in Figure 4.5. The major steps comprising the update processes are as follows:

- Updates to the Inventory are received either on hard copy format (inventory forms or fill-in-the-blanks) or magnetic media (9-track tape or GX format on diskettes).

- Hard copy updates are sorted and batched manually. Updates on magnetic media are sorted and assigned batches programmatically.

- A rapid scan of the hard copy documents is performed to identify records which are ineligible for updating because of missing or invalid mandatory source data.

- Updates on inventory forms and printouts are key entered into the system.

- All source data is fully edited and validated and exceptions are "Suspensed" for resolution.

Figure 4-3. Inventory Computer Printout Mark-Up Procedure

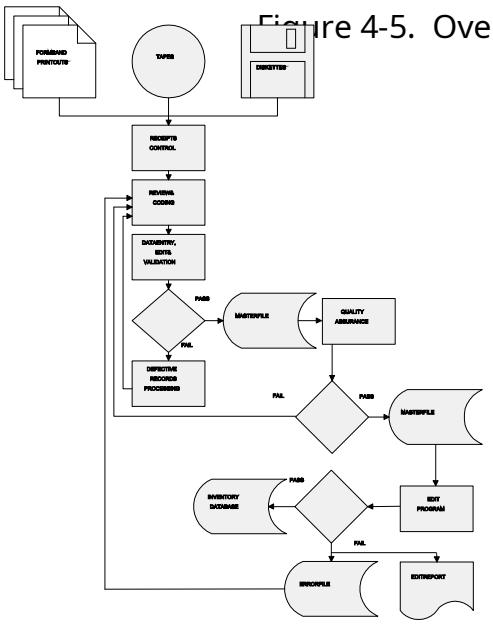
Figure 4-4. Sample Guidelines and Checklist for Field Inspectors

- All manually input data is subjected to 100% sight verification to insure accuracy.

- Master data is uploaded to NIH for further processing.

- The data is submitted to the edit job stream. Valid updates are posted to the Inventory and error records are "Suspensed" for resolution.

Figure 4-5. Overview of Current GCIS Processing



5.0 MASS UPDATING

This section explains the process for submitting crossing changes via fill-in-the-blank computer printouts.

When a large number of crossings have undergone changes affecting the same few data elements for each crossing, computer generated mass update forms will be easier for supplying the information. Examples of these are:

a. Changes in railroad operating company or railroad identification names
b. Updates resulting from a statewide signing and marking program
c. Changes in highway traffic counts
d. Changes in train movements
e. Changes in train speeds
f. Crossing closures.

Examples of the types of printouts and data displays of highway-rail crossing data which are available to States, railroads, and others are located in Appendix B. Included in the examples are several fill-in-the-blanks lists for a variety of data elements.

While there are many ways in which the data can be presented, this document provides certain standard formats which can be readily identified and requested by users. Such requests can be expeditiously fulfilled because computer software programs exist to simplify the process. Appendix B shows samples of the format displays with an identifying program name which can be used for making requests. By requesting the program name, the users can be assured that they will receive the data in a form most useful to their needs. The requestor should call the FRA to discuss various options before requesting data.

5.1 Fill-in-the-Blanks Computer Printout

A State or railroad desiring to use this method should contact or write the FRA to provide a fill-in-the-blanks printout containing the data elements which the State or railroad desires to update. The printout shows the data currently contained in the National File for specific elements and has space to fill in data that have

changed. Another type of printout, the index, can be provided which will include identification elements such as the street name, county, etc. Instructions for using the fill-in-the-blanks printout will also be provided. The fill-in-the-blanks printout may be selected on and sorted in any manner desired. An abbreviation key for most fill-in-the-blanks computer printouts is listed in Table 5-1.

Table 5-1. Fill-in-the-Blanks Abbreviation Key

Abbreviation	Explanation
CROSSING or ID NO.	U.S. DOT-AAR crossing number
EFFECTIVE DATE	Enter date when the crossing status changed
STATE or ST	State abbreviation
ST CD	FIPS State code
CNTY	FIPS county code
RR	Railroad operating company
HWY#	Highway type and number
STATUS	Crossing status (open or closed)
XBR	Number of crossbucks, reflectorized
XBNR	Number of crossbucks, nonreflectorized
FL OVR	Number of cantilevered flashing lights over traffic lanes
FL NOV	Number of cantilevered flashing lights not over traffic lanes
FL MST	Number of mast mounted flashing lights
GT RW	Number of gates, red and white reflectorized
GT OTH	Number of gates, other colored
STP STD	Number of standard highway stop signs
DAY-THRU	Typical number of daily daylight (6 a.m. to 6 p.m.) thru train movements
DAY-SWT	Typical number of daily daylight (6 a.m. to 6 p.m.) switching train movements
NGT-THRU	Typical number of daily night (6 p.m. to 6 a.m.) thru train movements
NGT-SWT	Typical number of daily night (6 p.m. to 6 a.m.) switching train movements
LT-1-MOV	Less than one train movement per day (Yes or No)
NX-TT-SPD	Maximum timetable speed
MIN-SPD	Minimum typical train speed
MAX-SPD	Maximum typical train speed
SPD-SEL	Crossing signal speed selection provided (Yes, No, or N/A)
TYPE or TYP-POS	Crossing type and position 1st number: 1-pedestrian, 2-private, or 3-public 2nd number: 1-at-grade, 2-RR under, 3-RR over The following is the key for the crossing types: 11 - Pedestrian at grade 12 - Pedestrian RR under 13 - Pedestrian RR over 21 - Private at grade

Abbreviation	Explanation
	22 - Private RR under 23 - Private RR over 31 - Public at grade 32 - Public RR under 33 - Public RR over
WDCODE	Highway warning device class at crossing (Highest type is to be indicated) 8 - Gates 7 - Flashing lights 6 - Highway signals, wigwags, or bells 5 - Special protection 4 - Crossbucks 3 - Stop signs 2 - Other signs or signals 1 - None of the above
******* under MILEPOST	Milepost has an alphabetical character and will not print out

Table 5-1. Fill-in-the-Blanks Abbreviation Key (Continued)

Examples of the "Fill-in-the-Blanks" printout, the index, and their instructions for updating crossbucks, pavement markings, advance warning signs, and the highway information are located in Sections 5.1.1, 5.1.2 and 5.1.3. Any data element may be requested to be included or selected for the fill-in-the-blanks printout.

After completion, a photocopy of the printout should be provided to the other party, be it a State or a railroad, so that they will be informed of the updates made to their crossings. It should also be indicated in the letter of transmittal to the FRA that the other party has been furnished with a copy. After the updates are processed into the National File, a new updated list may be requested from the FRA to verify the corrections after three months from the date of the transmittal letter.

5.1.1 Train Counts and Train Speeds Updating

This example shows the process for updating the Train Counts and Train Speeds using the fill-in-the-blanks format. The instructions for filling out the fill-in-the-blank form are listed in Table 5-2. A copy of the Train Counts and Train Speeds update format is located in Figures 5-1 and 5-2.

Column Heading	Information
CROSSING	Enter the DOT-AAR crossing identification number.
EFFECTIVE DATE	Enter the effective date of the changed information.
CNTY	Enter the county code.
ST	Enter the State code.
DAY THRU	Enter the number of day thru trains if this has changed. The data currently in the inventory is shown in the column "DT".
DAY SWT	Enter the number of day switching trains if this has changed. The data currently in the inventory is shown in the column "DS".
NGT THRU	Enter the number of night thru trains if this has changed. The data currently in the inventory is shown in the column "NT".
NGT SWT	Enter the number of night switching trains if this has changed. The data currently in the inventory is shown in the column "NS".
LT1	This column is to be used in two circumstances. If there has been an increase from less than one train movement per day to one or more movements per day enter a "0". If there has been a decrease from one or more train movements per day to less than one movement per day enter a "1". The data currently in the inventory is shown in "LT1".
MAX TT	Enter the maximum timetable speed if there has been a change. The data currently in the inventory is shown in the column "MAX TT".
TYP MIN	Enter the typical minimum train speed if there has been a change. The data currently in the inventory is shown in the column "TYP MIN".
TYP MAX	Enter the typical maximum train speed if there has been a change. The data currently in the inventory is shown in the column "TYP MAX".

Table 5-2. Train Counts and Train Speeds Updating Form Instructions

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 1
FILL-IN-THE-BLANKS LIST 12/22/93
FOR RAILROAD, CROSSING STATUS, WARNING DEVICES, TRAIN COUNTS, AND SPEEDS

CROSSING COUNTY ROAD	STATE EFFECTIVE DATE	CNTY BRANCH HWY #	RR	MILEPOST XBR	XB NR	FL OVR	FL NOV	FL MST	GT RW	GT OTH	STP STD	LT1 MAX DAY THRU	DAY SWT	NGT THRU	NGT SWT	PER DAY	TT SPD	MIN SPD	MAX SPD
ON Duluth, Missabe & Iron Range Railway Com																			
252245L LAKE	_____ LOOP	MN	075 DMIR	000495	2	0	0	0	0	0	0	2	0	2	0	NO	22	10	22
252247A LAKE	_____ LOOP CO 33	MN	075 DMIR	000547	2	0	0	0	0	0	0	2	3	0	3	0	NO	22	10	22
252248G LAKE	_____ MAIN UT 33	MN	075 DMIR	002903	2	0	0	0	0	0	0	2	3	0	3	0	NO	35	5	35
252249N LAKE	_____ MAIN CO 122	MN	075 DMIR	002960	0	0	0	0	2	2	0	0	3	0	3	0	NO	35	5	35
252250H LAKE	_____ MAIN CO 12	MN	075 DMIR	003078	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35
252251P LAKE	_____ MAIN CO 13	MN	075 DMIR	003221	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35
252252W LAKE	_____ MAIN CO 38	MN	075 DMIR	003304	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35

Figure 5-1. Train Counts and Train Speeds,
Plus Warning Device and Crossing Status Format (Sample)

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 1
FILL-IN-THE-BLANKS LIST 01/07/94

FOR TRAIN MOVEMENTS AND SPEEDS THRU PUBLIC-AT-GRADE CROSSINGS

CROSSING	EFFECTIVE DATE	STATE	CNTY	RR	DIVISION / SUBDIVISION / BRANCH	MILEPOST	WDCODE	DAY-THRU	DAY-SWT	NGT-THRU	NGT-SWT	LT-1-MOV AND	NOTES / COMMENTS
						MX-TT-SP	MIN-SPD	MAX-SPD	SPD-SEL				
252239H	_____	27	075	DMIR		7	3 ____	0 ____	3 ____	0 ____		NO ____	
	MN				IRON RANGE	2.40							
					LOOP	20 ____	10 ____	20 ____	NO ____				
252241J	_____	27	075	DMIR		7	3 ____	0 ____	3 ____	0 ____		NO ____	
	MN				IRON RANGE	3.14							
					LOOP	20 ____	10 ____	20 ____	NO ____				
252242R	_____	27	075	DMIR		4	3 ____	0 ____	3 ____	0 ____		NO ____	
	MN				IRON RANGE	4.19							
					LOOP	22 ____	10 ____	22 ____	N/A ____				
252245L	_____	27	075	DMIR		4	2 ____	0 ____	2 ____	0 ____		NO ____	
	MN				IRON RANGE	4.95							
					LOOP	22 ____	10 ____	22 ____	N/A ____				
252247A	_____	27	075	DMIR		4	3 ____	0 ____	3 ____	0 ____		NO ____	
	MN				IRON RANGE	5.47							
					LOOP	22 ____	10 ____	22 ____	N/A ____				
252234Y	_____	27	075	DMIR		4	0 ____	0 ____	0 ____	0 ____		YES ____	
	MN				IRON RANGE	********							
					MAIN	5 ____	1 ____	5 ____	N/A ____				
252236M	_____	27	075	DMIR		4	0 ____	0 ____	0 ____	0 ____		YES ____	
	MN				IRON RANGE	********							
					MAIN	5 ____	1 ____	5 ____	N/A ____				

Figure 5-2. Train Counts and Train Speeds Format (Sample)

5.1.2 Signs, Markings, and Part IV State Highway Information

This example shows the process for updating Highway Signs, Markings, and other Highway Department Information using the fill-in-the-blanks form. The instructions for filling out the fill-in-the-blanks form are listed in Table 5-3. A sample of the "Fill-in-the-Blanks List for Updating Highway Information" is located in Figure 5-3.

Column Heading	Information
CROSSING	The DOT-AAR crossing identification number.
EFFECTIVE DATE	Enter the effective date of the changed information.
ST	The State code.
CNTY	The county code.
RAILROAD OLD	The railroad code as it existed in the Inventory File when the report was run.
RAILROAD NEW/ OR CLOSED	Enter the railroad code if it has changed, or enter "Closed" if the crossing no longer exists.
TYPE	The type of crossing based on Table 5-1.
COUNTY CITY STREET	The values for County, City, and Street as reflected in the Inventory File.
WD	Enter the appropriate highway warning device class, in accordance with Table 5-1, if there has been a change. The code currently in the Inventory File is shown in this column.
TRAF LANE	Enter the number of through traffic lanes crossing the track, if there has been a change. The number currently contained in the Inventory File is shown in this column.
HWY PAVED	Enter whether or not the highway is paved, according to Section 3 of this manual, if there has been a change. The value of this item currently in the Inventory is shown in this column.
PAVE MARK	Enter the appropriate code for pavement markings, from the codes on the bottom of the report, if there has been a change. The number currently in the Inventory is shown in the this column.
ADV WARN	Enter the appropriate code, or "YES"/"NO" for advance warning signs if there has been a change. The number or decode name currently in the Inventory is shown in this column. The codes are as follows: 1 - Advance warning signs present on either highway approach, and 2 - No advance warning signs present.
XING SURF	Enter the appropriate code for the highway crossing surface, if there has been a change. The code currently contained for this data element in the Inventory is shown in this column.
HWY SYS	Enter the appropriate highway system code, in accordance with Section 3 of this manual, if there has been a change. The number currently in the Inventory is shown in this column.
ON ST HWY	Enter the appropriate State highway indicator code if there has been a change. The number currently in the Inventory is shown in this column.

Column Heading	Information
HWY CLASS	Enter the suitable highway functional classification code, according to Section 3 of this manual, if there has been a change. The number currently in the Inventory is shown in this column.
AADT	Enter the traffic count if there has been a change. The value currently in the Inventory is shown in the column "AADT".
PCT TRUK	Enter the estimated percentage of trucks in the traffic stream, if there has been a change. The value currently in the Inventory is shown in this column.

Table 5-3. Instructions for Updating Highway Information

STATE OF ALASKA PAGE 1
FILL-IN-THE-BLANKS LIST FOR UPDATING HIGHWAY INFORMATION 01/07/94

ON THE Alaska Railroad Corporation

CROSSING	EFFECTIVE DATE CLOSED	RAILROAD ST CNTY OLD NEW/OR STREET	COUNTY	TYPE	CITY	WD	TRAF LANE	HWY PAVED	PAVE MARK	ADV WARN	XING SURF	HWY SYS	ON ST HWY	CLASS	AADT	PCT TRUK
868224X	_____	AK 122 ARR	31	KENAI PENINSULA		4	2	YES	3	YES	4	04	YES	07	1415	20
	_____	IN SEWARD														
		DOCK RD				___	___	___	___	___	___	___	___	___	___	___
868225E	_____	AK 122 ARR	31	KENAI PENINSULA		4	2	YES	3	YES	4	04	YES	07	1415	20
	_____	IN SEWARD														
		DOCK RD				___	___	___	___	___	___	___	___	___	___	___
868226L	_____	AK 122 ARR	31	KENAI PENINSULA		4	2	NO	3	YES	2	08	NO	09	200	20
	_____	IN SEWARD														
		SKILL CENTER				___	___	___	___	___	___	___	___	___	___	___
		NONE														
868228A	_____	AK 122 ARR	31	KENAI PENINSULA		4	2	NO	3	YES	2	08	YES	08	200	2
	_____	NEAR SEWARD														
		AIRPORT ROAD				___	___	___	___	___	___	___	___	___	___	___
868229G	_____	AK 122 ARR	31	KENAI PENINSULA		7	2	YES	2	YES	6	04	YES	07	1800	2
	_____	NEAR SEWARD														
		NASH RD				___	___	___	___	___	___	___	___	___	___	___
868231H	_____	AK 122 ARR	31	KENAI PENINSULA		4	2	NO	3	NO	2	08	NO	09	100	2
	_____	NEAR SEWARD														
		LAKE DRIVE				___	___	___	___	___	___	___	___	___	___	___

* THIS DATA WAS PRODUCED BY THE FEDERAL RAILROAD ADMINISTRATION WITH INFORMATION SUPPLIED BY FEBRUARY 28, 1992
* KEY FOR PAVE-MARK: (1) STOPLINES, (2) RR XING SYM, (3) NONE, (4) BOTH
* KEY FOR WD (WARNING DEVICE) AND XING-SURF: REFER TO MANUAL OR FORM

Figure 5-3. Signs, Markings, and Part IV State Update Form

5.1.3 Other Examples

On the "Fill-in-the-Blanks List for Indicating Sold Crossings," (see example in Appendix B) the railroad needs to insert the acquisition date under the column "DATE SOLD" and the abbreviation for the railroad under the column "RAILROAD NEW" for each crossing that has changed ownership. Return the copy to FRA and send a copy to the State and the former or new railroad. Make additional changes or updates by using the standard four-part U.S. DOT-AAR Crossing Inventory forms. A copy of the detailed inventory information for each crossing may be requested if assistance is needed to identify specific crossings.

The "Fill-in-the-Blanks List for Indicating Closed Crossings" (see example in Appendix B) should be used to show the closure of a crossing by entering the effective date under the column "DATE CLOSED." The objective is to identify the status (closed or open) of any such crossings belonging to the reporting railroad. Crossings along a specific line should be together since the data is organized by railroad, division, subdivision, branch, and milepost. If there are any names that are incorrect or not listed consistently the same, correct them on the line below the name.

5.2 Mass Update Requirements

The following Steps are requirements if a State or railroad prepares their own Mass Update form.

a. Skip one line between each line of printed data.

b. The first five left-hand columns in order must be as follows:

1. DOT-AAR crossing number
2. Effective date
3. State code (FIPS)
4. County code (FIPS)
5. Railroad code.

c.

> NOTE: If all data submitted is for the same State, railroad, or date, then that particular column of data can be omitted by indicating it at the top of the page.

The remainder of the old and new data should be evenly distributed in columns across the page.

d. The "effective date" of the changed information is imperative. This date can refer to either the date that the change became effective or the date that the change was first reported. It is undesirable to use the same effective date for submittals for crossing changes and data which may have been accumulated over several months or even a year. It is the date when the data changed for the crossing, i.e., if flashing lights were installed at the crossing on December 1, 1995, the effective date of the change is 12/1/95 and written 120195. The date must be in month-day-year (MMDDYY) format, e.g., 030895 for March 3, 1995. Enter the effective date in the blank under the column "Effective Date."

e. Fields are limited to those fields with write-in changes provided for each crossing being updated using a particular mass update printout. Changes to fields other than those on a mass update printout must be submitted in another manner, i.e., on a four-part form, another mass update printout with provisions for those fields needing updating, magnetic tape, letter, etc.

f. When sorting and listing crossings on a mass update printout, crossings should be arranged at least by State and railroad.

g. If the crossing is not on the railroad which is indicated, enter the name or code of the correct railroad on the blank under the column heading "NEW RR," if provided. Otherwise, submit a four-part form.

h. Fill in the remainder of the blanks with the new data and cross out the old data (preferably with red pencil) only where changes are required. If the present data is correct, there is no need to indicate this information.

i. If the inventory data on the report varies from what exists in the field, please provide the correct information for updating the National Inventory File. Mass update computer printouts may be requested for the categories and formats contained in "A Sample of Computer Printout Formats Available." Changes may also be submitted on the

U.S. DOT-AAR Crossing Inventory forms (often referred to as the "green forms"). All such submittals should be checked to insure that changes have been circled and that all other information is correct.

j. New crossings must always be submitted on the four-part Inventory forms. When Parts I, II and III have been completed by the railroad, the top three copies must be forwarded to the State for completion of Part IV. The FRA should be sent a copy of the transmittal correspondence.

k. After the list is completed and reviewed, a copy of the sheets containing changes needs to be sent to the State or railroad, and a copy to the Federal Railroad Administration for processing the changes into the National Inventory File. Be sure to retain a copy for your records.

5.3 Special Procedures for Certain Items

A list containing the crossing number, effective date, railroad, State, county and the changed data will be sufficient to update certain data elements, as specified in the following:

a. Railroads with changes for a large number of crossings involving any or all of the following:

1. Railroad operating company
2. Railroad division
3. Railroad subdivision
4. Railroad ID number
5. Branch or line name
6. Railroad mile post.

b. States with changes for a large number of crossings, involving any or all of the following data items:

1. County map reference number
2. Street or road name
3. Highway type and number
4. AADT.

A State or railroad making such a submission needs to also provide the other party, State or railroad, with a list of the changes.

5.4 Feedback of Updated Records from the National File

Once the updates have been applied to the National File, the State or railroad may request the updated records from the FRA. The updated records can be provided approximately 3 months after transmittal in one of the following four ways:

a. Computer-Generated Form. Upon request, the FRA can make information available on a one-page (white) computer-generated update form which is identical to the standard update form.

b. One Page Per Crossing Printout. This printout (Figure 5-4) is used to provide the complete detailed inventory information about a crossing from the National File.

c. Computer Tape. A reel-to-reel magnetic tape can be provided of all desired crossings.

Figure 5-4. Inventory Crossing Printout (Sample) ("One-page-per-crossing")

d. GX. GX is a self-contained database package which allows the user to retrieve and display records, update them, print both comprehensive and summary reports and produce magnetic updates for submission to the FRA.

5.5 Continuous Feed Update Forms

The FRA can make available upon request a continuous feed single copy (white) or four-copy update form for those States and railroads desiring such. This form is similar to the standard four-part update form and consists of either a single sheet white copy or the usual four colored copies (green, yellow, pink, and orange) in order to allow for standard processing.

5.6 Common Errors in Updating

The following paragraphs describe the most common types of errors in updating the inventory which result in processing delays.

a. Problem: Incomplete "NEW CROSSING" forms. This is a very common problem with "new" Public-at-Grade crossings and changes from private or grade separated crossings to Public-at-Grade. Often a railroad will submit the inventory form with only Parts I through III completed. Sometimes a State will forward a "new crossing" without Part IV information. These situations often result in the crossing record being held in "suspense" until the information is received.

Resolution. "New" Public-at-Grade crossings or re-classifications to Public-at-Grade must always be handled as two-party transactions where both the States and railroads provide the information each is responsible for. An exception would be if the party completing the form has all of the information required. **Part IV information MUST be completed before the new crossing can be entered into the National File.**

b. Problem: Incomplete information for changes or closings. This problem occurs when the updating agency does not provide sufficient administrative data regarding the crossing to either close or update it.

Resolution. Regardless of whether the update is for changing

crossing characteristics or for closing a particular crossing, the update must have, at a minimum, the following in order for FRA to process the information:

1. Initiating agency
2. Crossing number
3. Reason for update
4. Effective date
5. State
6. County
7. Railroad.

To insure data integrity, these elements are compared against the current inventory record for the crossing.

When changing State, Railroad, or County information, be sure to circle the data in these fields. Indicate the "old" data for these fields outside the circle.

c. Problem: More than one type of crossing identified. Sometimes the submitting agency will check more than one type of crossing (Public, Private, Pedestrian).

Resolution. There can only be one type of crossing. Refer to Section 1.5 of this manual for the correct definitions.

d. Problem: Invalid Crossing I.D. number reported. The check character in the Crossing I.D. does not correspond to the numeric portion of the I.D.

Resolution. There is only one valid alphabetic check character for each sequence of numbers for the crossing I.D. Refer to Section 2.2 of this manual for the algorithm to compute the valid check character.

e. Problem: Data fails validation and edit checks. To insure data integrity, certain information in the update records are validated against established tables. These include:

1. **State, County, City** - The information provided for these

fields is validated against the Federal Information Processing Standard (FIPS) for Worldwide Geographic Location Codes. Refer to Section 10.2 of this manual for information on obtaining this reference data.

2. **Nearest Timetable Station** - The data for this field is validated against the DOT-AAR Standard Point Location Code inventory of railroad timetable stations.

3. **Railroad Operating Company, Other Railroads Operating Separate Track and Other Railroads Operating Over Same Track** - The codes provided for these fields are validated against the U.S. DOT-AAR table of railroad codes.

Aside from above validations, FRA performs data-to-data logic checks within each record. These include:

1. If the Sum of all **Daily Train Movements** is greater than 1, it is invalid for the **Less than One Movement Per Day** field to be checked.

2. If Signs and Train Activated Devices are identified in Part II-6A through 6B, it is invalid for the **No Signs or Signals** field to be checked.

3. The **Typical Minimum Speed** can not exceed the **Typical Maximum Speed** over the crossing. The **Typical Maximum Speed** over the crossing can not exceed the **Maximum Timetable Speed**.

4. Train Activated Devices must be identified in Part II-6B in order for crossing to provide **Speed Selection for Trains** in Part II-8.

5. The total number of **Tracks** must be greater than zero.

6. The total number of **Traffic Lanes** must be greater than zero.

7. For **Pavement Markings** (Railroad Crossing Symbols and/or Stoplines) to be valid, **Is Highway Paved?** must be "Yes".

5.7 Handling of Errors on Updates

In cases where the update fails the edit and the data reported is either inconsistent or incomplete, the form will be returned to the State for correction. If the correction involves railroad initiated data, it is requested that the State contact the railroad for the correction. This will insure that the updating process remains within the bounds which the FRA and its contractor can effectively administer.

If requested corrections have not been received within 30 days, telephone contact will be made. If corrections still have not been received in 30 more days, the update will be placed in a permanent hold status. Both the State and the railroad will be notified of this action. If the corrections are then received, the update will be reactivated and processed.

6.0 MAGNETIC TAPE

A State or railroad with computer facilities may elect to provide updates on reel-to-reel magnetic tape if they develop a computer program to format these updates in the FRA prescribed format. This format is presented and explained in Appendix C of this document. Before starting, the State or railroad should contact the FRA to make the necessary arrangements. A State or railroad which is preparing its own tape and submitting updates to the FRA in the prescribed format should also provide a printout of the updated records to the other party, either State or railroad.

The following is a list of guidelines for submission of updates to the National Highway-Rail Grade Crossing Inventory on reel-to-reel magnetic tape:

a. Submit the updates on a nine-track tape. Densities of 1600 BPI and 3200 BPI are recommended although a 6250 BPI tape may also be submitted. The data format may be ASCII or EBCDIC, and the tapes may be labelled or unlabelled.

b. Enclose a cover letter describing the tape's characteristics, including the number of 80-character records it contains and the number of crossings to be updated. If possible, include a printed dump of the first block of data on the tape.

c. Use as much of each 80-character record as possible. The format of DATA ELEMENT NUMBER, COMMA, DATA, SLASH allows several data fields to be strung together within the same record. If it is necessary to use multiple lines for a crossing, duplicate the identification data (columns 1 through 25) into the next line and continue with the data beginning in column 26.

d. There can be only one update per grade crossing per submission. As many fields as possible may be changed within a given update for a crossing but the system only allows for a crossing to be updated once in a given run. For example, two updates for the same crossing: one dated 1/1/95 and the other dated 1/1/96, should not be submitted simultaneously even if they are updating different fields. The

Effective Date is part of the identification data.

e. Contact AMB Associates, Inc. at (301) 587-9439, extension 222 regarding any questions related to this process, or FRA if the telephone number is no longer in operation.

The field specifications for each data element within the inventory record are contained in Appendix C. The tables in Appendix C describe the length of each field as well as the valid range of values for the data. Sample update records are also provided in Appendix C.

7.0 GX DATA MANAGEMENT SYSTEM

GX (which stands for Grade crossing or Xing) is FRA's highway-rail crossing data maintenance system. It is intended for use by States and railroads to maintain their crossing inventory as well as to send updates to the FRA. Use of this program makes updating very simple and reduces the need for large quantities of paper updates.

GX is a self-contained database package which allows the user to retrieve and display records, update them, print both comprehensive and summary reports, produce updates on magnetic diskette for submission to the FRA and perform administrative functions such as backups of the data. GX is written and compiled in Clipper and does not require a run-time database package (like dBASE III+) to execute. In simple terms, all that is needed is a PC running DOS 3.3 or higher in order to run GX.

GX was developed to enhance reporting and updating of crossing information for the National Inventory File. FRA is making GX available at no cost only to interested railroads and State agencies. GX can be used to update or close existing crossings or re-open closed crossings. However, new crossing records must **always** be submitted on the standard DOT-AAR four-part form. If a railroad is updating more than 30 crossing records, it will probably be more efficient to use this program. If less than 30 crossing records are to be updated, using the four-part (green) forms is probably easier, although the railroad may still obtain the program for reference.

Each GX package includes a custom database containing only the requesting agency's crossings, reference files (cities, counties, railroads, etc.), the necessary programs to run the system, and GX documentation. The database structure is listed in Appendix D. GX users can make updates to their databases as often as they desire. Periodically (at least once every quarter), the user should extract all changes for submission to the FRA to update the National Inventory. In addition to the extensive edit and validation checks which are incorporated into GX, the incoming updates will also be edited against the National Inventory to insure its accuracy. Updates which do not pass the edits will be returned to the submitting agency for review and reprocessing.

Also, GX will only accept changes in railroad ownership where the current railroad alpha code is in the package reference files. Some newly created railroads may not have their code in the reference file, and therefore GX will not accept a change in ownership. These changes must then be submitted manually or the user will need to wait until a new package can be obtained with the newly created railroad's code contained therein. GX users who wish to add new codes which are not presently in their Railroad file should contact AMB Associates to request a replacement file.

To install and run GX on a PC, the following is needed:

a. An IBM PC or compatible computer, preferably with an 80286 or higher processor

b. A color card/monitor (CGA, EGA, VGA, or SVGA)

c. A minimum of 4 Mb of free hard disk space (storage requirements vary with the size of the user's files)

d. 640 Kb RAM minimum

e. A high density diskette drive (either 3.5 inch, 1.44 Mb or 5.25 inch, 1.2 Mb)

f. MS-DOS version 3.3 or later.

Although GX has been installed and tested on an IBM XT with a monochrome monitor, it is strongly recommended that the user have at least an AT-class computer with a color card/monitor to gain full use of the program's capabilities.

If interested in obtaining a custom GX package, please contact the GX Program Manager, at (301) 587-9439, extension 222; Fax telephone (301) 587-9442; or write (requests must be on letterhead stationery) to:

AMB Associates, Inc.
FRA Project/GX Program
818 Roeder Road, Suite 500
Silver Spring, Maryland 20910

NOTE: While GX is provided to interested States and railroads free of charge, use of this product is purely voluntary. No warranties relating to the use of this product are expressed or implied. Neither the Government nor AMB Associates, Inc. is responsible for any damage to data or hardware which may arise from the use of this product.

The following sections explain some of the functions of the GX program.

7.1 Installation Program

GX provides an easy-to-use installation routine which will automatically update the computer's **config.sys** and **autoexec.bat** files to include the necessary environment variables to run the program. The GX programs and data files are shipped in compressed format and are expanded during the installation process. As many as 10,000 crossings can be provided to the user on a single high density diskette.

7.2 Browse Facility

GX incorporates a convenient Browse facility which allows the user to view groups of crossings in tabular form. This feature is useful in identifying crossings by other characteristics such as Street Name when the Crossing ID is not known. GX also includes a versatile interface to this facility which lets the user preselect the criteria for the crossings to be displayed. The user can view all crossings or just a subset (public-at-grade only, active crossings only, etc., or various combinations) and can dictate the order in which the records will be displayed (in crossing order, in railroad order, or in State/county order). The Browse facility also provides "Hot-Key" functions which allow the user to print reports and to perform searches by simply positioning the cursor to the appropriate field and pressing a combination of two keys.

7.3 Update Facility

GX provides a means for the user to view, update, or close a full crossing record at a time. A total of four screens display the complete, most recent inventory record

for the requested crossing. GX incorporates the same extensive edit and validation checks used in processing the hard copy documents. Table look-ups are performed to validate Railroad Codes (see Appendix E for a complete list of railroad codes), City and County Names, and Timetable Station Names. In addition, the program executes several logic checks in comparing two or more fields within each record.

The latest version of GX provides a mass update facility which allows the user to make global changes to a group of selected crossings.

7.4 Report Facility

GX allows the user to select from several report formats. A detailed full crossing profile, which can also be generated from both the Browse and Update facilities, is available. Summary report formats providing counts of crossings by type or by railroad can also be generated by the user.

7.5 Data Extraction Facility

GX provides an automated routine which allows the users to extract all updates performed on their database and store them on diskette for submission to the FRA.

A future capability of the GX package will be the generation of read-only copies of the database by any combination and sort sequence of State, county, city, railroad, or any subset of the database for distribution to the recipient.

7.6 Backup and Restore Facility

GX provides administrative programs which let the user backup all changes made to the database and, in the event of a catastrophic loss of data, restore the database to its state at the time of the last backup.

7.7 Documentation

A User's Manual is included with the GX package when it is distributed for use.

8.0 SYSTEM OUTPUTS

Appendix B contains examples of the types of printouts and data displays of highway-rail crossing data which are available to States, railroads, and others. Included in the samples are the following:

a. Outputs from the Accident Prediction Programs.

b. Outputs from the Resource Allocation Programs.

c. Several examples from programs which count the number of crossings for various purposes. These outputs may be produced for a State, railroad, or county and sorted as required.

d. Listings of Inventory data. These reports may be generated for a State or a railroad and sorted as desired. Specific selection criteria may vary and include such as "all crossings with no warning devices," "all crossings with gates," "all private crossings," "all crossings with no pavement markings," etc.

e. An Accident/Incident Report.

f. A number of examples of fill-in-the-blanks lists for mass updates.

g. Special information reports.

NOTE: In addition to the examples presented in this document, other specially tailored reports may be obtained by direct request from FRA.

9.0 DOT HIGHWAY-RAIL CROSSING ACCIDENT PREDICTION AND RESOURCE ALLOCATION PROCEDURE

The DOT Highway-Rail Crossing accident prediction formula is an accident and severity prediction calculation which computes the expected number of accidents at a crossing, based on information from the U.S. DOT-AAR National Highway-Rail Crossing Inventory and the Railroad Accident Reporting System (RAIRS) data files.

The DOT Highway-Rail Crossing resource allocation procedure is a computer model designed to nominate crossings for improvement consideration on a cost-effective basis and to suggest the type of warning device to be installed, given the cost of crossing improvements and an available budget level.

A number of crossing hazard formulas have been developed and used extensively in dealing with solutions to highway-rail crossing safety problems. The DOT accident prediction formula is based on the extensive data in the DOT Crossing Inventory and Accident data files, and is an improvement over other hazard formulas.

9.1 Background

The Highway Safety Acts of 1973 and 1976, the Surface Transportation Assistance Acts of 1978 and 1982, the Surface Transportation and Uniform Relocation Assistance Act of 1987, and the Intermodal Surface Transportation Efficiency Act of 1991 provide funding authorizations to individual States to improve safety at public highway-rail crossings. The installation of active motorist warning devices, such as flashing lights or flashing lights with gates, is an important part of crossing safety improvements. The U.S. Department of Transportation (DOT) assists States and railroads in determining effective allocations of Federal funds for highway-rail crossing safety improvements by use of the resource allocation procedure developed to assist in the allocation of funds among crossings to achieve maximum crossing safety benefits for a given level of funding.

The procedure consists of two parts. The first is an accident and severity prediction formula which computes the expected number of accidents at each crossing, based on information from the U.S. DOT-AAR National Highway-Rail Crossing Inventory and the Railroad Accident/Incident Reporting System (RAIRS).

The second part is a resource allocation model designed to nominate crossings for improvement consideration on a cost-effective basis and to suggest the type of warning device to be installed.

The DOT Highway-Rail Crossing accident prediction formula and resource allocation model were developed at the Transportation Systems Center (TSC) under the sponsorship of the Federal Railroad Administration (FRA) Office of Safety Analysis and the Federal Highway Administration (FHWA) Office of Research. When used together, these procedures provide a systematic means of assisting in making a preliminary, optimum allocation of funds among individual crossings, considering available improvement options. These procedures provide a ranked listing of crossings which can then be used as a guide for selecting crossings for on-site visits by diagnostic teams.

The formula and procedures were reviewed and slightly revised in 1986 and 1987. While some improvements were implemented, the basic formulas remain the same as those originally developed in 1976. A subsequent review is planned for the 1996-1997 period.

9.2 DOT Accident Prediction Formula

The availability of both inventory and accident data for crossings influenced the development of the DOT accident prediction formula. This formula calculates the expected annual number of accidents at a crossing on the basis of physical and operational characteristics of the crossing as described in the Inventory and the most recent five year accident experience at that crossing as contained in the FRA Railroad Accident/Incident data file.

Three formulas are used to calculate predicted accidents: a basic formula which contains factors from the Crossing Inventory, a second formula which incorporates accident history as an explicit factor, and a third formula which involves a normalizing constant. The three formulas, given in a general form, are shown in equations **[1]**, **[2]**, and **[3]**, respectively. The output of equation **[1]** is an input to equation **[2]**. The output of equation **[2]** is the input to equation **[3]**. The output of equation **[3]** is the predicted accidents per year for the crossing of interest.

$$a = K \times EI \times DT \times MS \times MT \times HP \times HL \qquad \textbf{[1]}$$

$$B = \frac{T_o}{T_o + T}(a) + \frac{T}{T_o + T}\left(\frac{N}{T}\right), T_o = \frac{1}{0.05 + a} \quad \textbf{[2]}$$

$A = 3 \ell 4$

The DOT formula is of the absolute type, since it estimates the

K1 x B (for passive devices)
K2 x B (for flashing lights) **[3]**
K3 x B (for gates)

number of accidents, as opposed to providing a "relative" index (often referred to as a hazard rating index). The formula combines two independent calculations of the number of accidents for a crossing to produce the final absolute accident prediction. The two independent calculations are obtained from the first two formulas described in the next paragraphs.

1. A "basic" formula provides an initial prediction of the accidents on the basis of the physical and operational characteristics of the crossing as described in the Inventory. This formula predicts crossing accidents through a calculation similar to that used in other common formulae, such as the Peabody-Dimmick and New Hampshire, and can be considered as a "hazard rating index."

The basic formula is as follows:

$$a = K \; x \; EI \; x \; DT \; x \; MS \; x \; MT \; x \; HP \; x \; HL \quad \textbf{[1]}$$

where

a = initial accident prediction index, (accidents per year at the crossing),

K = constant for initialization of factor values at 1.00,

EI = factor for exposure index based on product of highway and train traffic,

DT = factor for number of thru trains per day during daylight,

MS = factor for maximum timetable speed,

MT = factor for number of main tracks,

HP = factor for highway paved (yes or no), and

HL = factor for number of highway lanes.

The basic formula was developed by applying nonlinear multiple regression techniques to crossing characteristics stored in the 1976 Inventory and Accident data files. Half of the file was used to determine the formula coefficients by regression and iteration, and the other half for testing the formula. The data sets were disjoint, of equal size, and comprised of a random sample of records from the inventory, including all records for which accident data existed. Each data set was categorized into two groups of accident and non-accident crossings. The result can be expressed as a series of factors which, when multiplied together, yield the initial predicted accidents per year at a crossing.

The basic formula consists of a number of multiplicative factors, with each factor representing a characteristic of the crossing described in the DOT Crossing Inventory. The numerical value of each factor is related to the statistical influence which the specific crossing characteristic has on the predicted number of accidents. The values of (a) calculated from equation **[1]** could be considered an accident prediction, but (a) has not been normalized properly. Three sets of equations are used to determine the values of each factor, corresponding to the following categories of warning devices: passive warning devices, flashing lights, and flashing lights with automatic gates. Specific equations for the crossing characteristic factors by the three warning device categories are contained in the publications listed in Section 9.3. Each set of factor equations should only be used for crossings with the warning device category for which it was designed. To calculate the value of (a) at a crossing with crossbucks, only the passive set of equations should be used. The same applies for crossings with flashing lights and crossings with gates.

2. The predictive capacity of the basic formula is limited because certain important crossing characteristics, such as sight distance at the crossing, are not included in the DOT Crossing Inventory. Inclusion of actual accident history at a crossing is done in equation **[2]**, which dramatically improves the predictive capabilities of the formula. Equation **[2]** calculates a value (B) which is a weighted average of two separately derived predictions. The value of (B) is determined by combining the value (a) with the crossing's accident history, using equation **[2]** or a table by extrapolation as contained in other publications referenced in this Section.

The intermediate prediction (B) thus includes the observed accident history (over a five year period) at a crossing. It assumes that future accidents per year will be the same as the average historical accident rate. It is referred to as the accident history of the crossing, and is equal to the total observed accidents divided by the number of years over which the observations were made. (Note: The formula allows any number of years of accident history data to be used. However, a five year period is more commonly recognized and used.)

The DOT accident prediction formula is then expressed as

$$B = \frac{T_o}{T_o + T}(a) + \frac{T}{T_o + T}\left(\frac{N}{T}\right), \qquad \textbf{[2]}$$

where

B = intermediate accident prediction, accidents per year at the crossing,

T_o = $\frac{1}{0.05 + a}$, formula for weighting factor

a = initial accident prediction index (accidents per year) from formula **[1]**, and

$\frac{N}{T}$ = accident history prediction, accidents per year, where N is the number of observed accidents in T years at the crossing.

The DOT formula

calculates a weighted average of the predicted accidents at a crossing from the basic formula "a" and accident history "N/T". The two formula weights, $\frac{T_o}{T_o + T}$ 12 and $\frac{T}{T_o + T}$ 13, add to the value of 1.

The intermediate prediction (B) is the value (a) from equation **[1]**, which provides an initial prediction on the basis of a crossing's characteristics (as described in the DOT Crossing Inventory), and the actual accident history at a crossing where $\frac{N}{T}$ 14 is equal to the number of previous accidents (N) divided by the number of years of data (T). The value of (T) is usually taken to be five. The most recent five years of accident history data should be used to insure good performance from the formula. Accident history information older than five years may be misleading because of changes in crossing characteristics.

3. To get the final predicted accidents (A), (B) is multiplied by one of three constants as indicated by equation **[3]**.

$A =$ 15 { 16

K1 x B (for passive devices)
K2 x B (for flashing lights) **[3]**
K3 x B (for gates)

The particular constants, K1, K2, and K3, depend on whether the crossing has passive devices (e.g., crossbucks), flashing lights, or gates. These constants adjust the predictions to reflect more recent levels of accident experience. They are recalculated periodically and published annually in FRA's *Highway-Rail Crossing Accident/Incident and Inventory Bulletin*.

A flow diagram of the DOT accident and severity prediction formulas, showing the data bases employed, is shown in Figure 9-1. The abbreviations used for the Accident Prediction lists produced by FRA are contained in Appendix B.

Figure 9-1. DOT Highway-Rail Crossing Accident and Severity Prediction Formulas

9.3 Resource Allocation Model

The availability of the U.S. DOT-AAR National Highway-Rail Crossing Inventory and Accident data permitted the development of a resource allocation model. Development of accident prediction formulas was a necessary intermediate step. The U.S. DOT Highway-Rail Crossing accident prediction formulas were created utilizing nonlinear, multiple regression techniques applied to the crossing characteristics in the National Inventory and the Accident databases compiled by FRA. The model calculates the expected annual accident rate at a crossing.

It is important to note that the U.S. DOT's accident prediction formulas produce an absolute prediction which is different from a hazard index (e.g., the New Hampshire formula). The hazard index only produces a relative index for each crossing based on available physical characteristic data and does not include any accident history information. A hazard index has value only in relatively comparing one crossing with another with very similar characteristics. The U.S. DOT accident prediction formulas provide an absolute prediction process which can compare all

crossings and one that is needed for the resource allocation model.

The U.S. DOT resource allocation model determines which crossings should have motorist warning devices installed so as to achieve the maximum crossing safety benefit for a given level of funding. The net result is a list of the most cost-effective improvement decisions. Possible grade crossing improvements include: (1) passive devices to flashing lights, (2) passive devices to gates, and (3) flashing lights to gates.

Inputs to the resource allocation model include the predicted accident rate of the crossing, costs and effectiveness of the different improvement options, and the budget level available. Cost data required are the installation costs for each of the possible upgrade options. Effectiveness is defined as the percentage by which accidents are reduced after installation of a warning device at a crossing.

The resource allocation model provides a ranked list based on benefit/cost ratios. Benefit is expressed as predicted accidents prevented per year and cost is the life-cycle cost of the equipment. The algorithm considers the benefit/cost ratios beginning with the largest ratio and continuing in decreasing order. The process continues until the monies spent (costs of recommended warning devices) equal or exceed the available budget. Thus, an optimal list of recommended improvements is obtained.

The primary function of the resource allocation procedure is to assist States and railroads in preparing Statewide grade crossing improvement programs. Because of the magnitude of the Inventory and Accident data bases, use of the model has required a mainframe computer. Data and computer printout list are available by directing a request to FRA.

Information on the formulas and procedures may be found in the *"Rail-Highway Crossing Resource Allocation Procedure, User's Guide, Third Edition,"* U.S. Department of Transportation, Federal Railroad Administration, August 1987, Transportation Systems Center, Cambridge, MA, 02142, Report Numbers DOT/FRA/OS-87/10 and DOT-TSC-FRA-87-1 (both for the same report). This document is available to the public through the National Technical Information Service, Springfield, Virginia, 22161.

Further information on the formulas and procedures is contained in *"Summary of the DOT Rail-Highway Crossing Resource Allocation Procedure - Revised,"* U.S.

Department of Transportation, Federal Railroad Administration, June 1987, Transportation Systems Center, Cambridge, MA, 02142, Report Numbers DOT/FRA/OS-87/05 and DOT-TSC-FRA-86-2 (both for the same report). This summary contains the formulas which calculate a severity prediction, extended warning device effectiveness data, and inclusion of the stop sign option in the resource allocation model. This document also is available to the public through the National Technical Information Service, Springfield, Virginia, 22161.

The theory underlying the formulas is contained in P. Mengert, *"Rail-Highway Crossing Hazard Prediction Research Results,"* U.S. Department of Transportation, Transportation Systems Center, Washington, DC, March 1980, FRA-RRS-80-02, which is available as a reference only.

9.4 Data Provided to States and Railroads

The U.S. DOT accident prediction computer printouts list public highway-rail crossings ranked by predicted accidents per year. The printouts show the ordered ranking in a State, county, city, railroad or any combination thereof and include the accident history along with other crossing data. They also list the crossings in ascending order, by crossing number, and provide location information.

The U.S. DOT resource allocation procedure consists of three computer printouts listing public highway-rail crossings. One printout lists crossings according to the number of accidents predicted annually. The highest prediction is listed first. The second printout shows proposed crossing projects in a benefit-cost sequence determined by simultaneous consideration of accident predictions, alternative costs and benefits and budget levels. The proposed project with the highest benefit-cost ratio is listed first. A third printout indexes all the crossings considered in this process, by crossing number, accident prediction, and rank.

The Department of Transportation accident prediction formula combines two independent calculations: (1) a basic formula that predicts accidents based on the Inventory's physical and operating characteristics, and (2) the initial prediction combined with another prediction derived from the reported accident history at the crossing.

The values and data are derived from the Federal Railroad Administration's Inventory and Accident files and are subject to the processing contractor's keypunch errors and input data submission errors from both railroads and States. Efforts have been made to find and correct errors, but there remains a possibility that some errors still exist. For this reason, States and/or railroads should verify the data by conducting on-site inspections of those crossings whose prediction ranking indicates a relatively high value. Erroneous data may significantly alter accident prediction and resource allocation values. It must also be recognized that this is only one model and that other models may give different results. As with all models, there are certain characteristics that are not or cannot be included in arriving at a prediction value. These characteristics include the sight distance at the crossing, highway congestion, and the volume of hazardous materials traffic.

These data are produced by using accident prediction formulas developed to aid in planning highway-rail crossing safety programs. The resource allocation procedure uses these accident prediction formulas together with cost evaluation

data to produce a ranking of those crossings that can achieve maximum improvement benefits given a specific level of funding. This model is designed to nominate crossings for improvements on a cost-effective basis and suggests the type of warning device to be installed. The cost-effective data used for producing the enclosed material appear at the beginning of the printout.

Figure 9-2. Highway-Rail Crossing Resource Allocation Procedure

When requesting a resource allocation printout, four data elements are required:

(1) The average cost of warning device upgrade from passive devices (crossbucks) to flashing lights.

(2) The average cost of warning device upgrade from passive devices (crossbucks) to gates (with flashing lights).

(3) The average cost of warning device upgrade from flashing lights to gates (with flashing lights).

(4) The total budget level of available funds, or a higher value for planning purposes.

States and/or railroads desiring to install the formula and models on their own computer should contact FRA. The current computer programs used by FRA can be provided on a customer supplied reel-to-reel magnetic tape for use on a mainframe computer. Because of the size of the supporting data bases, use of the model has required a mainframe computer. However, for smaller data bases, an individual State or railroad may avail themselves of programs developed by non-government sponsored researches that will operate on a personal computer (PC) or microcomputer.

9.5 Performance Compared to Other Models

In a report prepared for the 1986 annual meeting of the Transportation Research Board (TRB), researchers at the University of Virginia revealed that the U.S. DOT accident prediction formula is a better procedure for establishing priorities for grade crossing safety improvement projects than other models tested. A total of five formulas were evaluated using the State of Virginia Department of Highways and Transportation grade crossing inventory. In addition to the U.S. DOT formula, the other formulas were: Peabody-Dimmick; NCHRP No. 50; Coleman-Stewart; and the New Hampshire. According to the researchers, the DOT formula outperformed the other models in both the evaluative and comparative analyses.

The authors of the Virginia study caution the reader that although the U.S. DOT accident prediction formula outperformed the other four nationally recognized models, the following facts remain:

"The DOT accident prediction formula takes into account the most important variables that are statistically significant in predicting accidents at rail-highway crossings. However, it must be noted that there is no general consensus as to which of the site characteristics are the most important ones. As a result, the priority list that is produced by using this formula must serve as only one of the criteria for improving conditions at any crossing. This information must be supplemented by regular site inspections and other qualitative issues that can not be feasibly incorporated into a mathematical formula."

To determine the availability of this report, contact:

Rail Transportation Division
Virginia Department of Highways
and Transportation
1221 East Broad Street
Richmond, Virginia 23219

To obtain a copy of the TRB paper presented at the 1986 annual meeting, contact:

Department of Civil Engineering
University of Virginia
Thornton Hall
Charlottesville, VA 22901

During development and review of the accident prediction formula, comparisons were made with other highway-rail crossing accident prediction models. Statistical tests which compared these models indicated that the accuracy of DOT's formula is superior for ranking crossings by predicted accident levels. Since the DOT formula is based on the DOT Crossing Inventory, a common data base of crossing characteristics is available to formula users. As the DOT Crossing Inventory is updated, the DOT accident prediction formula will reflect the latest information.

10.0 ADDITIONAL INFORMATION AND REFERENCES

10.1 Highway-Rail Grade Crossing Handbook

The *"Railroad-Highway Grade Crossing Handbook - Second Edition," 1986* provides general information on highway-rail crossings, including characteristics of the crossing environment and users, and the physical and operational improvement for safe and efficient use for both highway and rail traffic. The handbook will be of interest to Federal, State, and local highway agency personnel, railroad officials, consulting engineers and educators involved with highway-rail grade crossing installation, safety and operation.

A standard distribution of the handbook was made to the Federal Highway Administration (FHWA) Region and Division offices and the State highway agencies in 1986. Copies of the handbook were also provided to the Federal Railroad Administration and the Association of American Railroads. A limited number of copies are available to States and railroads from the Federal-Aid Program Branch of the Federal Highway Administration. The handbooks can be ordered from the following addresses:

Federal Highway Administration
Federal-Aid Program Branch
400 7th Street S.W., HNG-12
Washington D.C. 20590
Telephone: (202) 366-4656

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia, 22161
(703) 487-4700 or (703) 487-4650
For "Rush Handling," call (800) 553-6847

10.2 Worldwide Geographic Location Codes

The *"Worldwide Geographic Location Codes," U.S. General Services Administration, Office of Finance, 1987* lists the standard numeric (number) and alpha (letter) codes that some Federal agencies use in designating geographic locations in automatic

data processing programs. These FIPS codes are those used for processing crossing inventory data. Use of standard codes facilitates the interchange of machine-sensible data from agency to agency within the Federal community and to State and local groups who request or contribute to Federal programs.

Three sections of codes are given in the publication. Part 1 indexes numeric codes for counties and cities within the 50 States of the United States. Part 2 catalogs alpha and numeric codes for U.S. possessions and areas administered by the United States. Part 3 lists similar combinations for foreign countries.

The codes for the States, counties, and cities listed in Part 1 are based on two Federal Information Processing Standards Publications (FIPS 5-1 and FIPS 6-1) issued by the National Bureau of Standards in accordance with the provisions of Public Law 89-306 (commonly known as the Brooks Act) and the Office of Management and Budget, Circular A-86.

Government departments or agencies using the codes within this publication may request the assignment of additional codes for populated areas having recognized boundaries. Such requests should be submitted in writing to the Public Building Service (PGG), General Services Administration, Washington, D.C., 20405. Telephone requests may be made by dialing (202) 501-1426. The criteria for assigning additional codes, except for military installations, are established by the above named office. Additional codes for military installations are assigned or verified through the Department of Defense.

Copies of this publication are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. The codes are also available on diskette or magnetic tape for $50.00 from the General Services Administration (PGG), Washington, D.C., 20405, telephone: (202) 501-1426.

10.3 Federal-Aid Policy Guide

The Federal-Aid Policy Guide (FAPG) 23 CFR, Part 646 Railroads, Subpart B, Railroad-Highway Projects, contains the regulations which prescribe policies and procedures for advancing Federal-Aid projects involving railroad facilities.

This directive contains the following:

a. Information which applies to Federal-Aid projects involving railroad

facilities, including projects for the elimination of hazards of highway-rail 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.

b. Additional instructions for projects involving the elimination of hazards of highway-rail grade crossings pursuant to 23 U.S.C. 130 are set forth in 23 CFR Part 924 of the FAPG.

c. Procedures on reimbursement for projects undertaken pursuant to this directive are set forth in 23 CFR Part 140, Subpart I of the FAPG.

d. Procedures on insurance required of contractors working on or about railroad right-of-way are set forth in 23 CFR Part 646, Subpart A of the FAPG.

Copies of the regulations are available from the FHWA State Division office located in the capital city of each State or by contacting the Federal Highway Administration at the following address:

Federal Highway Administration
Federal-Aid Program Branch
400 7th Street S.W., HNG-12
Washington D.C. 20590
Telephone: (202) 366-4656

APPENDIX A

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STATE CONTACTS
as of December, 1996

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APPENDIX B

COMPUTER PRINTOUT FORMAT SAMPLES

SUMMARY

Accident Prediction Programs Output
Resource Allocation Programs Output
Output from Programs Counting the Number of Crossings
Listings of Inventory Type Data
Inventory Report (One-page-per-crossing)
Accident/Incident Report
Computer Generated Fill-in-the-Blanks Lists for Mass Updates
Special Information Reports

ACCIDENT PREDICTION PROGRAMS OUTPUT

This sample printout can be produced for:

(1) Predicted Accidents,
(2) Predicted Fatal Accidents, or
(3) Predicted Casualty Index.

The Location Information printout is automatically generated with any of the above three conditions

PUBLIC HIGHWAY-RAIL CROSSINGS
RANKED BY PREDICTED ACCIDENTS PER YEAR

RANK	PRED ACCDS	XING ID	ST	RR	--> NUM OF ACC <-- 88	89	90	91	92	CHG	DATE OF CHG	WD TRNS	TOTL TRNS	DAY TRNS	TOTL TRNS	TOTL TRKS	MAIN TRKS	TTBL SPD	HWY PVD	HWY LNS	URBN RURL	AADT
937	0.072752	064950W	WY	BN	1	0	0	0	0		XB	0	23	45	1	1	49	NO	2	R		43
938	0.072667	597265C	TX	BN	0	0	0	0	0		90-02 FL	0	6	10	1	1	30	YES	2	U		8330
939	0.072643	079831G	WI	BN	0	0	0	1	0		XB	4	0	0	2	0	10	YES	2	U		2120
940	0.072631	665980Y	AR	BN	0	0	1	0	0		GT	4	16	32	2	2	55	YES	2	U		570
941	0.072613	072820V	IL	BN	0	0	1	0	0		XB	0	7	12	1	1	79	NO	1	R		150
942	0.072589	064567G	NE	BN	0	1	0	0	0		XB	0	20	40	2	2	50	NO	2	R		50
943	0.072574	096510U	WA	BN	0	0	0	0	1		XB	10	3	4	1	1	40	YES	2	R		85
944	0.072538	064307N	NE	BN	0	0	1	0	0		FL	0	2	2	1	1	20	YES	2	R		5080
945	0.072536	083690G	NE	BN	0	1	0	0	0		GT	0	11	21	2	1	45	YES	2	R		2025
946	0.072464	597273U	TX	BN	1	0	0	0	0		FL	0	6	10	2	1	50	YES	2	R		760
947	0.072426	079768S	IL	BN	0	1	0	0	0		XB	0	10	20	2	2	79	NO	2	R		75
948	0.072218	091683S	WA	BN	1	0	0	0	0		XB	2	0	0	1	0	10	YES	4	U		4100
949	0.072213	245124W	CO	BN	0	0	1	0	0		XB	0	2	2	1	1	20	YES	2	R		1050
950	0.072205	663802F	OK	BN	0	0	0	0	0		FL	30	11	18	2	2	25	YES	2	U		4200
951	0.072145	070167C	MO	BN	0	1	0	0	0		FL	0	28	43	1	1	60	YES	2	R		114
952	0.072097	083311E	NE	BN	0	1	0	0	0		XB	0	11	21	1	1	45	NO	2	R		135
953	0.072076	092549J	WA	BN	0	0	1	0	0		XB	6	2	4	2	1	40	YES	2	U		137
954	0.072058	663417C	TN	BN	0	0	0	0	0		FL	50	11	22	1	1	20	YES	2	U		4420
955	0.071890	672031D	OK	BN	0	0	1	0	0		XB	0	6	12	1	1	55	YES	2	R		50
956	0.071807	093612C	ND	BN	1	0	0	0	0		XB	4	28	48	1	1	60	NO	2	R		25
957	0.071779	671991A	OK	BN	0	0	0	0	0		FL	4	4	10	1	1	20	YES	4	R		12000
958	0.071738	061524D	MN	BN	1	0	0	0	0		FL	0	5	10	1	1	50	YES	2	R		760
959	0.071704	071938G	ND	BN	0	1	0	0	0		XB	5	30	51	2	2	79	NO	1	R		15
960	0.071561	057224H	CO	BN	0	0	0	1	0		XB	0	10	28	1	1	79	NO	2	R		50
961	0.071504	665275V	AL	BN	0	1	0	0	0		XB	0	1	2	1	1	35	YES	2	U		972
962	0.071475	672020R	OK	BN	0	0	1	0	0		XB	4	4	10	1	1	55	YES	2	R		50
963	0.071463	668605J	KS	BN	0	0	1	0	0		XB	0	10	20	2	2	50	NO	2	R		127
964	0.071451	083389Y	NE	BN	0	0	0	0	1		XB	0	19	38	2	2	60	NO	2	R		40
965	0.071420	664861L	MS	BN	0	0	0	0	1		XB	0	3	6	1	1	49	YES	2	R		150
966	0.071381	668656U	KS	BN	1	0	0	0	0		XB	0	12	20	1	1	60	NO	1	R		94
967	0.071331	070839F	ND	BN	0	0	1	0	0		GT	6	6	10	1	1	20	YES	2	U		3400
968	0.071272	672930M	TX	BN	0	0	0	0	0		FL	15	0	0	1	1	40	YES	4	U		25000
969	0.071225	083173T	NE	BN	0	1	0	0	0		GT	4	7	11	3	1	30	YES	2	R		3280
970	0.071224	597191M	TX	BN	0	0	1	0	0		XB	20	6	10	3	1	30	NO	1	R		160
971	0.071223	096356Y	WA	BN	0	1	0	0	0		XB	4	1	2	2	1	25	YES	2	R		390
972	0.071108	101821J	WA	BN	0	0	0	0	1		FL	6	0	0	1	0	5	YES	2	U		4750
973	0.071082	274633W	TX	BN	0	0	0	0	1		XB	0	10	20	1	1	60	NO	2	R		100
974	0.071079	396916G	WA	BN	0	1	0	0	0		XB	0	1	2	3	1	10	YES	2	R		1580
975	0.071063	664101V	MO	BN	0	0	0	0	0		FL	4	17	29	1	1	35	YES	2	U		7990
976	0.071035	084734H	WA	BN	0	0	0	1	0		GT	4	5	10	1	1	50	YES	2	R		4204
977	0.070987	667300H	MS	BN	0	0	0	1	0		FL	0	10	20	1	1	55	YES	2	U		300
978	0.070978	072891S	IL	BN	1	0	0	0	0		FL	0	7	12	1	1	79	YES	2	U		550

PUBLIC HIGHWAY-RAIL CROSSINGS RESOURCE ALLOCATION RESULTS
BASED ON PREDICTED ACCIDENTS PER YEAR (SORTED BY CRSSING IDs)

OBS	CROSSING	BEN/COST	STATE	COUNTY	CITY	RAILROAD	ROAD	RRID	MILEPOST

	ID	RATIO							
1	058712P	7.6811	ID	BONNER	SANDPOINT	BN	SAMUELS RD.	0036	139107
2	063104F	8.6758	MO	BUCHANAN	ST JOSEPH	BN	ILLINOIS&CHEEROKE	0016	005895
3	085584F	15.9419	WA	KING	SEATTLE	BN	LANDER ST	0051	000128
4	244642N	14.2102	CO	LARIMER	FORT COLLINS	BN	CHERRY ST-E OF MA	476	007452
5	664912U	6.5847	MS	LOWNDES	COLUMBUS	BN	CO RD		R64350
6	668548X	10.5541	OK	ROGERS	CLAREMORE	BN	WILL ROGERS BLVD		039753
7	670406G	8.1509	OK	OTTAWA	MIAMI	BN	STEVE OWENS BLVD		017270
8	672151U	8.1372	TX	DALLAS	CARROLLTON	BN	IH 35 FRONTAGE RD		070057
9	672543V	6.6038	AR	CRAIGHEAD	JONESBORO	BN			042433

RESOURCE ALLOCATION PROGRAMS OUTPUT

DEMO1 12:07 MONDAY, JANUARY 10, 1994 1
HIGHWAY-RAIL CROSSING RESOURCE ALLOCATION RESULTS
BASED ON PREDICTED ACCIDENTS PER YEAR

OBS	XING ID #	PREDICTED ACCIDENTS PER YEAR	BEN/COST RATIO	RECOMMD WARNING DEVICE	PRESENT WARNING DEVICE	TOTAL TRACKS PER DAY	TOTAL TRAINS PER DAY	COST	CUMULATIVE ACCIDENTS	CUMULATIVE REDUCED	DC1	DC2	DC3	DC4	STOP SIGN REQMNT
1	085584F	1.356217	15.9419	GATE	FLASH	4	44	58700	0.935790	.	.	.	0.413		NO
2	244642N	0.889150	14.2102	FLASH	PASS	1	10	102500	1.558195	0.463	1.224	.	.		NO
3	668548X	0.897861	10.5541	GATE	FLASH	1	22	161200	2.177719	.	.	.	0.623		NO
4	063104F	0.738071	8.6758	GATE	FLASH	5	77	219900	2.686989	.	.	.	0.758		NO
5	670406G	0.693420	8.1509	GATE	FLASH	1	8	278600	3.165449	.	.	.	0.807		NO
6	672151U	0.692253	8.1372	GATE	FLASH	1	8	337300	3.643104	.	.	.	0.809		NO
7	058712P	0.480617	7.6811	FLASH	PASS	1	31	381100	3.979536	0.857	2.265	.	.		NO
8	672543V	0.561801	6.6038	GATE	FLASH	1	26	439800	4.367179	.	.	.	0.997		NO
9	664912U	0.412015	6.5847	FLASH	PASS	1	6	483600	4.655590	1.000	2.643	.	.		NO

OUTPUT FROM PROGRAMS COUNTING THE NUMBER OF CROSSINGS FOR VARIOUS PURPOSES

NOTE: These reports may be produced by State, railroad, or county and sorted accordingly

COUNT OF ALL RAIL-HIGHWAY CROSSINGS PAGE 1
BY TYPE, POSITION AND RAILROAD 01/07/94

FOR THE STATE OF MINNESOTA

RAILROAD	PUBLIC AT GRADE	PUBLIC GRADE SEPARATIONS RR UNDER	RR OVER	PRIVATE	PEDESTRIAN	TOTAL
Buffalo Ridge Railroad Company	1	0	0	0	0	1
Burlington Northern Railroad Company	1996	171	99	1021	25	3312
Cedar River Railroad Company	27	0	1	26	0	54
CANADIAN NATIONAL - NORTH AMERICA	50	0	0	17	0	67
Chicago & North Western Transportation C	733	84	43	503	11	1374
Dakota Railroad	66	2	3	54	3	128
Dakota, Minnesota & Eastern Railroad	368	11	23	256	1	659
Duluth, Missabe & Iron Range Railway Com	151	24	29	136	2	342
Duluth & Northeastern Railroad Company	8	0	0	1	0	9
Duluth, Winnipeg & Pacific Railway	80	8	3	21	0	112
LAC QUI PARLE REGIONAL RR AUTHORITY	2	0	1	5	0	8
Minnesota, Dakota & Western Railway Comp	14	0	0	0	0	14
Minnesota Commercial Railway	100	0	2	5	0	107
Minnesota Transportation Museum	8	1	1	5	0	15
MNVA Railroad, Incorporated	103	2	0	101	1	207
Otter Tail Valley Railroad Company, Inco	95	5	5	74	1	180
RESERVE MINING COMPANY	7	0	0	8	0	15
Red River Valley & Western Railroad	4	0	0	3	0	7
SAINT LOUIS AND LAKE COUNTIES REGIONAL R	36	1	3	9	6	55
Soo Line Railroad Company	1364	150	122	863	24	2523
Twin City & Western Railroad	146	4	10	108	0	268
Wisconsin Central Ltd. (also Railway)	15	3	3	27	0	48
BUFFALO RIDGE REGIONAL RAILROAD AUTHORIT	54	3	1	6	0	64
LTV STEEL CORP.	9	0	4	7	0	20
STATE TOTAL	5437	469	353	3256	74	9589

* THIS DATA WAS PRODUCED BY THE FEDERAL RAILROAD ADMINISTRATION
* DATA IS CURRENT WITH INVENTORY UPDATE INFORMATION SUPPLIED BY DECENBER 31, 1993

NUMBER OF PUBLIC-AT-GRADE CROSSING RECORDS PAGE 1
BY YEAR OF EFFECTIVE DATE ON RECORD 01/12/94

FOR THE STATE OF MINNESOTA

RAILROAD	ORIG	PRE-76	76-77	78-79	80-81	82-83	84-85	86-87	88-89	TOTAL
Buffalo Ridge Railroad Company	0	0	0	0	0	0	0	1	0	1
Burlington Northern Railroad Company	2	1	1	3	3	0	6	1765	94	1875
Cedar River Railroad Company	0	0	1	0	0	0	0	26	0	27
CANADIAN NATIONAL - NORTH AMERICA	0	0	0	0	2	0	0	26	3	31
Chicago & North Western Transportation C	66	9	22	11	2	1	3	539	3	656
Dakota Railroad	3	0	0	0	0	0	0	63	0	66
Dakota, Minnesota & Eastern Railroad	8	2	1	1	0	0	0	351	2	365
Duluth, Missabe & Iron Range Railway Com	12	2	1	3	1	0	1	119	2	141
Duluth & Northeastern Railroad Company	0	0	0	0	0	0	0	7	0	7
Duluth, Winnipeg & Pacific Railway	9	0	2	0	1	1	0	64	1	78
Minnesota, Dakota & Western Railway Comp	2	0	1	0	0	0	0	11	0	14
Minnesota Commercial Railway	0	1	1	0	4	0	0	70	0	76
Minnesota Transportation Museum	0	0	0	0	0	0	0	4	0	4
MNVA Railroad, Incorporated	2	0	1	0	0	0	0	99	0	102
Otter Tail Valley Railroad Company, Inco	2	1	2	0	0	1	1	85	0	92
RESERVE MINING COMPANY	0	0	1	1	0	0	0	5	0	7
SAINT LOUIS AND LAKE COUNTIES REGIONAL R	6	0	6	9	2	0	0	13	0	36
Soo Line Railroad Company	23	2	7	12	17	0	3	1246	9	1319
Twin City & Western Railroad	1	0	0	0	0	0	0	5	0	6
Wisconsin Central Ltd. (also Railway)	0	0	0	0	0	0	0	11	0	11
BUFFALO RIDGE REGIONAL RAILROAD AUTHORIT	0	0	0	1	0	0	0	53	0	54
LTV STEEL CORP.	0	0	0	0	1	0	0	8	0	9
TOTAL	136	18	47	41	33	3	14	4571	114	4977

STATE TOTAL

136	18	47	41	33	3	14	4571	114	4977

ITEMS RETRIEVED 4977

JULY 31, 1993

STATE PAGE 1
PUBLIC-AT-GRADE RAIL-HIGHWAY CROSSINGS 01/07/94
BY RAILROAD AND TYPE OF WARNING DEVICE

FOR THE STATE OF LOUISIANA

RAILROAD	FLASHING GATES	HWY SIG LIGHTS	CROSS WW-BELL	CROSS SPECIAL	STOP BUCKS	OTHER SIGN	RR SIGN	NONE	TOTAL
Ashley, Drew & Northern Railway Company	0	0	0	0	1	0	0	0	1
Acadiana Railway Company	0	18	0	0	88	0	0	4	110
Arkansas Louisiana & Mississippi Railroad	0	8	0	0	51	0	0	0	59
Atchison, Topeka & Santa Fe Railway Comp	2	1	0	0	23	0	0	0	26
Central Louisiana & Gulf Railroad Company	0	6	0	0	25	0	0	0	31
CSX Transportation	7	5	0	8	4	1	0	5	30
Delta Southern Railroad Company	0	5	0	0	42	0	0	0	47
Gloster Southern Railroad	0	2	0	0	10	0	0	1	13
GULF STATES POWER	0	0	0	0	0	0	0	1	1
Illinois Central Railroad Company	40	101	0	16	302	6	3	53	521
Kansas City Southern Railway Company	44	35	0	0	179	0	3	15	276
Louisiana & Arkansas Railway Company	40	113	0	0	309	0	0	23	485
LAKE CHARLSE HARBOR DISTRICT	0	3	1	0	26	0	0	1	31
Louisiana & Delta Railroad	22	11	1	0	151	2	0	28	215
Louisiana & North West Railroad Company	1	6	0	0	36	0	0	0	43
TOTAL FOR STATE	368	751	17	48	2401	24	16	339	3964

ITEMS RETRIEVED 3964

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* THIS DATA WAS PRODUCED BY THE FEDERAL RAILROAD ADMINISTRATION
* DATA IS CURRENT WITH INVENTORY UPDATE INFORMATION SUPPLIED BY JULY 31, 1993

DULUTH MISSABE AND IRON RANGE RAILROAD PAGE 1
PUBLIC-AT-GRADE RAIL-HIGHWAY CROSSINGS 01/07/94
BY STATE AND TYPE OF CROSSING SURFACE

FOR THE Duluth, Missabe & Iron Range Railway Com

STATE	SECTION TIMBER	WOOD PLANK	CONCRETE ASPHALT	CONCRETE SLAB	CONCRETE PAVEMENT	METAL RUBBER	OTHER SECTION	STATE METAL	STATE GRAVEL	STATE OTHER	TOTAL
MINNESOTA	8	105	29	0	0	4	0	0	2	3	151
WISCONSIN	0	4	2	0	0	0	0	0	0	0	6
TOTAL FOR ROCK ISLAND	8	109	31	0	0	4	0	0	2	3	157

ITEMS RETRIEVED 157

* THIS DATA WAS PRODUCED BY THE FEDERAL RAILROAD ADMINISTRATION
* DATA IS CURRENT WITH INVENTORY UPDATE INFORMATION SUPPLIED BY MARCH 31, 1993

LISTINGS OF INVENTORY TYPE DATA

NOTE: These reports may be produced for a State or a railroad, sorted accordingly, as required, with specific selection criteria such as "all crossings with no warning devices," "all crossings with gates," "all private crossings," "all crossings with no pavement markings," etc.

STATE OF PENNSYLVANIA PAGE 52
LIST FOR LOCATING CROSSINGS 01/11/94

ON THE ATLANTIC DIVISION, LEHIGH SUBDIVISION, IN THE STATE OF PENNSYLVANIA

CROSSING	TYPE	ST	CNTY	RR	COUNTY	LOC. CITY	STREET	DIVISION	SUBDIVISION	BRANCH	MILEPOST
264258W	31	PA	095	CR	NORTHAMPTON	NEAR NAZARETH	PENN ALLEN	ATLANTIC	LEHIGH	NAZARETH IND	109.53
264241T	31	PA	095	CR	NORTHAMPTON	IN PEN ARGYL	"E" ST	ATLANTIC	LEHIGH	PENN ARGYL L	97.12
264243G	31	PA	095	CR	NORTHAMPTON	NEAR PEN ARGYL	TWP RD	ATLANTIC	LEHIGH	PENN ARGYL L	97.37
264244N	31	PA	095	CR	NORTHAMPTON	NEAR PEN ARGYL	HWY	ATLANTIC	LEHIGH	PENN ARGYL L	97.48
264249X	31	PA	095	CR	NORTHAMPTON	IN WINDGAP	BROADWAY AVE	ATLANTIC	LEHIGH	PENN ARGYL L	98.86
361568G	31	PA	079	PNER	LUZERNE	IN PLAINS	MCCULLOUGH ST.	ATLANTIC	LEHIGH	PLAINS SEC	179.86
361567A	31	PA	079	PNER	LUZERNE	IN PLAINS	COURTRIGHT ST.	ATLANTIC	LEHIGH	PLAINS SEC	180.33
361565L	31	PA	079	PNER	LUZERNE	NEAR PLAINS		ATLANTIC	LEHIGH	PLAINS SEC	181.05
361563X	31	PA	079	PNER	LUZERNE	NEAR PLAINS	TENANT ST.	ATLANTIC	LEHIGH	PLAINS SEC	181.68
361562R	31	PA	079	PNER	LUZERNE	NEAR PLAINS	MARKET ST	ATLANTIC	LEHIGH	PLAINS SEC	182.14
361558B	31	PA	079	PNER	LUZERNE	IN PITTSTON	BRANDENBERG LAN	ATLANTIC	LEHIGH	PLAINS SEC	184.90
264131H	31	PA	069	CR	LACKAWANNA	IN DUNMORE	SCRANTON RD	ATLANTIC	LEHIGH	SCRANTON BR	0.85
264132P	31	PA	069	CR	LACKAWANNA	IN DUNMORE	PARK ST	ATLANTIC	LEHIGH	SCRANTON BR	1.05
264133W	31	PA	069	CR	LACKAWANNA	IN DUNMORE	GRAVITY ST	ATLANTIC	LEHIGH	SCRANTON BR	1.10

INDEX FOR LOUISIANA PUBLIC AT GRADE CROSSINGS PAGE 77
01/12/94

CROSSING	COUNTY	CITY	N	STREET NAME	HIGHWAY TYPE	RAILROAD BRANCH	MILEPOST
335370F	EAST BATON ROUG	BATON ROUGE	0	SORRELL AVE	17	NBRD-4	000036
335371M	EAST BATON ROUG	BATON ROUGE	0	BEAUMONT AVE	19	NBRD-4	000008
335372U	EAST BATON ROUG	BATON ROUGE	0	BEAUMONT AVE	19	NBRD-5	000015
335373B	EAST BATON ROUG	BATON ROUGE	0	SORRELL AVE	17	NBRD-4	000033
335402J	EAST BATON ROUG	BAKER	1	PORT HUDSON RD.	08	D-LINE	020729
335403R	EAST BATON ROUG	BAKER	1	FLANCHER RD.	09	D-LINE	020900
335417Y	ORLEANS	NEW ORLEANS	0	S. JOHNSON ST.	19	MAIN	087036
335426X	ORLEANS	NEW ORLEANS	0	S. ROCHEBLAYE S	19	MAIN	087009
335427E	EAST BATON ROUG	BATON ROUGE	0	SHADE AVE	19	MAIN	078500
335429T	EAST BATON ROUG	BATON ROUGE	0	GULF STATES RD	19	MAIN	078581
335433H	EAST BATON ROUG	BATON ROUGE	0	CHOCTAW DR.	16	MAIN	078739
335437K	EAST BATON ROUG	BATON ROUGE	0	GAYOSO ST	19	MAIN	078846
335438S	EAST BATON ROUG	BATON ROUGE	0	NORTH ST	16	MAIN	078848

NUMERICAL ORDERED LIST OF CROSSING 01/11/94

CROSSING	EFF-DATE	TYPE	ST	CNTY	RR	COUNTY	LOC	CITY	STREET	DIVISION	SUBDIV	BRANCH	MILEPOST
090430F	930103	31	ID	079	UP	SHOSHONE	IN	MULLAN	EIGHTH ST. A RIVER	COLUMBIS	POKANE	WALLACE BR.	6.84
090431M	930103	31	ID	079	UP	SHOSHONE	NEAR	MULLAN	A RIVER	COLUMBIS	POKANE	WALLACE BR.	6.97
091166D	900806	31	ID	017	MRL	BONNER	NEAR	CLARK FORK	FISH HATCHERY	SYSTEM	4TH	MAIN LINE	86.45
091169Y	900807	31	ID	017	MRL	BONNER	IN	CLARK FORK	STEPHENS ST	SYSTEM	4TH	MAIN LINE	93.82
091170T	900807	31	ID	017	MRL	BONNER	IN	CLARK FORK	MAIN STREET	SYSTEM	4TH	MAIN LINE	93.90
091180Y	920101	31	ID	017	MRL	BONNER	NEAR	EAST HOPE		SYSTEM	4TH	MAIN LINE	102.65
091183U	900806	31	ID	017	MRL	BONNER	NEAR	HOPE	IDAHO CO. RESOR	SYSTEM	4TH	MAIN LINE	106.40
091184B	900806	31	ID	017	MRL	BONNER	NEAR	HOPE	KAMLOOPS RV PAR	SYSTEM	4TH	MAIN LINE	106.53
091187W	900807	31	ID	017	MRL	BONNER	NEAR	HOPE	SUNNYSIDE CUTOF	SYSTEM	4TH	MAIN LINE	111.71
095865S	930101	31	ID	055	BN	KOOTENAI	IN	POST FALLS	4TH AVE.	SPOKANE	COEUR D'ALENE	COUR D ALENE	3.90

INVENTORY AND ACCIDENT/INCIDENT REPORT

1. Inventory Report (One-page-per-crossing)

2. Accident Report

EXAMPLES OF SEVERAL STANDARD COMPUTER GENERATED FILL-IN-THE-BLANKS LISTS FOR MASS UPDATES

Examples Shown:

1. Crossing Closure.

2. Ownership Change.

3. Railroad Identification Information.

4. Identification of Railroads Operating on a Separate Track or on the Same Track.

5. Railroad Ownership, Milepost, Warning Devices, Train Counts & Speeds.

6. Train Counts and Speeds.

7. State Highway Information (Railroad, Advance Warning Sign, Pavement Markings, Warning Device, AADT, Highway Name and Number, Road Name). Note, list was produced for condition where data indicates "No Advanced Warning Signs are Present."

NOTE: Milepost shown as "******" results when there is an alpha character in the field and will not print. Railroads should remove all such characters and use numbers only in the Milepost field.

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 1
FILL-IN-THE-BLANKS LIST FOR INDICATING CLOSED CROSSINGS 12/22/93

ON THE DIVISION IN THE STATE OF MINNESOTA

ID. NO.	DATE CLOSED	ST	CNTY	RR	COUNTY	LOCATED	CITY	DIVISION	SUBDIVISION	BRANCH	MILEPOST
252367R	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		0.59
252355W	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		10.93
252356D	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		11.78
252357K	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		20.30
252358S	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		30.29
252359Y	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		32.50
252360T	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		33.65
252361A	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		34.09
252362G	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		34.70
252363N	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		35.09
252364V	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		36.56
252365C	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		37.43
252366J	_____	27	075	DMIR	LAKE		NEAR TWO HARBORS	IRON RANGE	WALES		37.87

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 1
FILL-IN-THE-BLANKS LIST FOR INDICATING SOLD CROSSING 01/11/94

ON THE DIVISION, IRON RANGE SUBDIVISION, IN THE STATE OF MINNESOTA

ID. NO.	DATE SOLD	RAILROAD ST	CNTY OLD	NEW	COUNTY	LOCATED	CITY	DIVISION	SUBDIVISION	BRANCH	MILEPOST
252253D	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE		39.55
252239H	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	2.40
252240C	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	2.52
252241J	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	3.14
252242R	_____	27	075	DMIR	____	LAKE	IN TWO HARBORS		IRON RANGE	LOOP	4.19
252243X	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	4.40
252244E	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	4.77
252245L	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	4.95
252246T	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	5.14
252247A	_____	27	075	DMIR	____	LAKE	NEAR TWO HARBORS		IRON RANGE	LOOP	5.47
252218P	_____	27	075	DMIR	____	LAKE	IN TWO HARBORS		IRON RANGE	MAIN	*******
252219W	_____	27	075	DMIR	____	LAKE	IN TWO HARBORS		IRON RANGE	MAIN	*******
252230W	_____	27	075	DMIR	____	LAKE	IN TWO HARBORS		IRON RANGE	MAIN	*******
252231D	_____	27	075	DMIR	____	LAKE	IN TWO HARBORS		IRON RANGE	MAIN	*******

1 DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 3
FILL-IN-THE-BLANKS LIST FOR UPDATING IDENTIFICATION INFORMATION 12/22/93

ON THE DIVISION, IRON RANGE SUBDIVISION, IN THE STATE OF MINNESOTA

CROSSING	EFFECTIVE DATE CLOSED	RAILROAD ST	CNTY	COUNTY OLD	NEW/OR	TYPE	CITY STREET	DIVISION	SUBDIVISION	BRANCH	MILEPOST	RR-ID	WD
252328A		MN	137	DMIR	21	ST LOUIS	NEAR MCKINLEY J&L HAUL RD	IRON RANGE	X		********		
252329G		MN	137	DMIR	21	ST LOUIS	IN MCKINLEY J&L PLANT RD	IRON RANGE	X		********		
252337Y		MN	137	DMIR	21	ST LOUIS	IN FRANKLIN MINE RD	IRON RANGE	X		0.65		
252338F		MN	137	DMIR	21	ST LOUIS	IN FRANKLIN MINE RD	IRON RANGE	X		0.73		
252339M		MN	137	DMIR	21	ST LOUIS	IN FRANKLIN	IRON RANGE	X		0.89		
252327T		MN	137	DMIR	21	ST LOUIS	NEAR MCKINLEY J&L HAUL RD	IRON RANGE	X		17.11		
252331H		MN	137	DMIR	21	ST LOUIS	IN GILBERT MINING CO RD	IRON RANGE	X		19.69		
252332P		MN	137	DMIR	32	ST LOUIS	NEAR GILBERT	IRON RANGE	X		20.10	OH	20.1 X

ON ATSF IN THE STATE OF OKLAHOMA
FILL-IN-THE-BLANKS LIST FOR UPDATING IDENTIFICATION INFORMATION 01/11/94

OPERATING ON SAME OR SEPARATE TRACK

IN THE STATE OF OKLAHOMA

NUMBER	DATE	COUNTRY CITY TYPE	ST	STREET	DIVISION SUBDIVISION RR	BRANCH	MILE POST	SEP IND	RAILROAD ON SEPARATE TRACK	RAILROAD ON SAME IND	SAME TRACK
		GARFIELD ENID			SOUTHERN ENID						
011704P	_____	33	OK	GRAND AVE	ATSF		61.42	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		YES	SLSF	NO		
011705W	_____	31	OK	2ND ST	ATSF		61.54	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		YES	SLSF	NO		
011706D	_____	31	OK	ENID BLVD 4TH ST	ATSF		61.83	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		YES	SLSF	NO		
011707K	_____	31	OK	10TH ST	ATSF		62.44	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		NO	YES	SLSF		
011708S	_____	31	OK	16TH ST	ATSF	ELEV Y TRK	0.75	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		YES	SLSF	NO		
011709Y	_____	31	OK	16TH	ATSF		62.99	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		NO	NO			
011710T	_____	31	OK	26TH ST	ATSF		63.68	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		NO	NO			
011711A	_____	31	OK	30TH ST	ATSF		63.94	___	_____	___	_____
		GARFIELD ENID			SOUTHERN ENID		NO	NO			
011712G	_____	31	OK		ATSF		64.94	___	_____	___	_____

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 1
FILL-IN-THE-BLANKS LIST 12/22/93
FOR RAILROAD, CROSSING STATUS, WARNING DEVICES, TRAIN COUNTS, AND SPEEDS

CROSSING COUNTY ROAD	STATE CNTY EFFECTIVE DATE	BRANCH HWY #	RR	MILEPOST XBR	XB NR	FL OVR	FL NOV	FL MST	GT RW	GT OTH	STP STD	LT1 MAX DAY THRU	DAY SWT	NGT THRU	NGT SWT	PER DAY	TT SPD	MIN SPD	MAX SPD
ON Duluth, Missabe & Iron Range Railway Com																			
252245L LAKE	_____ LOOP	MN	075 DMIR	000495	2	0	0	0	0	0	0	2	0	2	0	NO	22	10	22
252247A LAKE	_____ LOOP CO 33	MN	075 DMIR	000547	2	0	0	0	0	0	0	2	3	0	3	0	NO	22	10	22
252248G LAKE	_____ MAIN UT 33	MN	075 DMIR	002903	2	0	0	0	0	0	0	2	3	0	3	0	NO	35	5	35
252249N LAKE	_____ MAIN CO 122	MN	075 DMIR	002960	0	0	0	0	2	2	0	0	3	0	3	0	NO	35	5	35
252250H LAKE	_____ MAIN CO 12	MN	075 DMIR	003078	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35
252251P LAKE	_____ MAIN CO 13	MN	075 DMIR	003221	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35
252252W LAKE	_____ MAIN CO 38	MN	075 DMIR	003304	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35
252254K LAKE	_____ MAIN CO	MN	075 DMIR	004151	2	0	0	0	0	0	0	2	6	0	6	0	NO	35	20	35

DULUTH MISSABE AND IRON RANGE RAILWAY COMPANY PAGE 1
FILL-IN-THE-BLANKS LIST 01/07/94
FOR TRAIN MOVEMENTS AND SPEEDS THRU PUBLIC-AT-GRADE CROSSINGS

CROSSING	EFFECTIVE DATE	STATE	CNTY	RR	DIVISION SUBDIVISION BRANCH	MILEPOST MX-TT-SP	WDCODE MIN-SPD	DAY-THRU MAX-SPD	DAY-SWT SPD-SEL	NGT-THRU AND	NGT-SWT COMMENTS	LT-1-MOV	NOTES
252239H	_____	27	075	DMIR		7	3 ____	0 ____	3 ____	0 ____	NO ____		
		MN			IRON RANGE	2.40							
					LOOP	20 ____	10 ____	20 ____	NO ____				
252241J	_____	27	075	DMIR		7	3 ____	0 ____	3 ____	0 ____	NO ____		
		MN			IRON RANGE	3.14							
					LOOP	20 ____	10 ____	20 ____	NO ____				
252242R	_____	27	075	DMIR		4	3 ____	0 ____	3 ____	0 ____	NO ____		
		MN			IRON RANGE	4.19							
					LOOP	22 ____	10 ____	22 ____	N/A ____				
252245L	_____	27	075	DMIR		4	2 ____	0 ____	2 ____	0 ____	NO ____		
		MN			IRON RANGE	4.95							
					LOOP	22 ____	10 ____	22 ____	N/A ____				
252247A	_____	27	075	DMIR		4	3 ____	0 ____	3 ____	0 ____	NO ____		
		MN			IRON RANGE	5.47							
					LOOP	22 ____	10 ____	22 ____	N/A ____				
252234Y	_____	27	075	DMIR		4	0 ____	0 ____	0 ____	0 ____	YES ____		
		MN			IRON RANGE	********							
					MAIN	5 ____	1 ____	5 ____	N/A ____				
252236M	_____	27	075	DMIR		4	0 ____	0 ____	0 ____	0 ____	YES ____		
		MN			IRON RANGE	********							
					MAIN	5 ____	1 ____	5 ____	N/A ____				
252237U	_____	27	075	DMIR		4	0 ____	0 ____	0 ____	0 ____	YES ____		
		MN			IRON RANGE	********							
					MAIN	5 ____	1 ____	5 ____	N/A ____				

1 STATE OF ALASKA PAGE 1
FILL-IN-THE-BLANKS LIST FOR CROSSINGS 12/22/93
WITH NO ADVANCED WARNING SIGNS

ON THE DIVISION, ANCHORAGE SUBDIVISION, IN THE COUNTY OF ANCHORAGE

CROSSING	EFFECTIVE DATE	STATE BRANCH MILEPOST	CNTY ADV WRN RR	SGN	PAVEMENT MARKINGS	XB XBR	FL NR	FL OVR	FL NOV	GT MST	GT	STP RW	HWY TYP OTH	STD AADT	AND NBR	ROAD
868303J		AK 020 ARR	NO	NONE	2	0	0	0	0	0	0	2	150			ARTILLERY RD
	MAIN															
	127.98															
868550B		AK 020 ARR	NO	NONE	2	0	0	0	0	0	0	0	200			ORCA ST.
	ZONE															
	114.30															
868551H		AK 020 ARR	NO	NONE	1	0	0	0	0	0	0	0	200			SITKA ST
	ZONE															
	114.30															
868552P		AK 020 ARR	NO	NONE	1	0	0	0	0	0	0	0	200			SITKA ST
	ZONE															
	114.30															
868554D		AK 020 ARR	NO	NONE	1	0	0	0	0	0	0	0	100			N. WRANGELL ST
	ZONE															
	114.30															
868564J		AK 020 ARR	NO	NONE	1	0	0	0	0	0	0	0	400			GULL AVE
	ZONE															
	114.30															
910257X		AK 020 ARR	NO	NONE	1	0	0	0	0	0	0	0	200			SMALL BOAT HARBOR
	ZONE															
	114.30															
910258E		AK 020 ARR	NO	NONE	0	0	0	0	0	0	0	0	200			WESTERN AVE
	ZONE															
	114.30															

SPECIAL INFORMATION REPORTS

The following are examples of lists which can be produced to provide specific types of information. In general, they are the same types of lists as the fill-in-the-blanks lists used for mass updating but without provision for writing in updated information.

The examples shown are:

Stop Sign Eligibility

Crossing with Automated Warning Devices with Min/Max Speed greater than 30 mph.

PUBLIC AT-GRADE HIGHWAY-RAIL CROSSINGS PAGE 1
ELIGIBLE FOR STOPSIGNS* 01/07/94

FOR Burlington Northern Railroad Company IN ILLINOIS

CROSSING	CITY	WARNING DEVICE	LOCAL ROAD	HWY #	COUNTY	TTL AADT	TYPE TRN	TRACK	MILEPOST	RR DIVISION AND SUBDIVISION	BRANCH
063774X	AUGUSTA	CROSSBUCKS	RURAL	TR472	ADAMS	79	12	MAIN SECOND	231.97	GALESBURG	GALES-QUINCY
063775E	AUGUSTA	CROSSBUCKS	RURAL	TR35	ADAMS	25	12	MAIN SEVENTH	231.23	GALESBURG	GALES-QUINCY
063776L	AUGUSTA	CROSSBUCKS	RURAL	TR474	ADAMS	19	12	MAIN SEVENTH	230.88	GALESBURG	GALES-QUINCY
063778A	AUGUSTA	CROSSBUCKS	RURAL	TR 19	ADAMS	25	12	MAIN SEVENTH	230.08	GALESBURG	GALES-QUINCY
072410W	FOWLER	CROSSBUCKS	RURAL	TR 271	ADAMS	259	12	MAIN SEVENTH	253.90	GALESBURG	GALES-QUINCY
072411D	FOWLER	CROSSBUCKS	RURAL	TR 166	ADAMS	59	12	MAIN SEVENTH	252.83	GALESBURG	GALES-QUINCY
072414Y	FOWLER	CROSSBUCKS	RURAL	TR 261	ADAMS	59	12	MAIN SEVENTH	251.40	GALESBURG	GALES-QUINCY
072416M	PALOMA	CROSSBUCKS	RURAL	TR 244	ADAMS	19	12	MAIN SEVENTH	249.62	GALESBURG	GALES-QUINCY
072417U	PALOMA	CROSSBUCKS	RURAL	TR 286	ADAMS	25	12	MAIN SEVENTH	246.70	GALESBURG	GALES-QUINCY
072422R	CAMP POINT	CROSSBUCKS	RURAL	TR 338	ADAMS	125	12	MAIN SEVENTH	244.28	GALESBURG	GALES-QUINCY
072427A	CAMP POINT	CROSSBUCKS	RURAL	TR 362A	ADAMS	50	12	MAIN SEVENTH	243.03	GALESBURG	GALES-QUINCY
072620L	LA PRAIRIE	CROSSBUCKS	RURAL	TR 5	ADAMS	19	12	MAIN SEVENTH	228.99	GALESBURG	GALES-QUINCY

* CRITERIA PER FHWA TRAFFIC CONTROL DEVICES HANDBOOK (PASSIVE WARNING DEVICES; LOCAL ROADS; UNDER 400 ADT-RURAL, 1500 ADT-URBAN; AT LEAST 10 TRAINS/DAY; SINGLE TRACK). REFER TO THE HANDBOOK FOR DETAILS.

PUBLIC HIGHWAY-RAIL CROSSINGS PAGE 19
IN KANSAS 01/12/94
EQUIPPED WITH AUTOMATIC WARNING DEVICES
AND WITH TRAIN SPEED VARIATIONS GE 30 MPH
IN THE COUNTY OF ELLSWORTH

XING NUMBER	MAP-REF	CITY	ROAD	HWY	NBR RLRD	WARNING DEVICE	MX TT SP	TT	MAX SPD	MIN SPD	SPD	SPD SEL	VAR SPD	VAR	EQP
814511K	10	IN ELLSWORTH	DOUGLAS AVE	K 14	UP	FLASHING LIGHTS		35	35	5	30	30		NO	
814525T	545	NEAR WILSON	GOLDEN BELT HWY RS- 240		UP	FLASHING LIGHTS		60	60	20	40	40		NO	
814537M	539	IN WILSON	K-232		UP	AUTOMATIC GATES		40	40	10	30	30		NO	
814539B	3	IN WILSON	AVE "E"		UP	FLASHING LIGHTS		40	40	5	35	35		NO	
814541C	2	IN WILSON	AVE. F		UP	FLASHING LIGHTS		40	40	5	35	35		NO	
818248A	13	IN KANOPOLIS	MISSOURI ST		UP	AUTOMATIC GATES		60	60	20	40	40		NO	

APPENDIX C

FRA MAGNETIC TAPE FORMAT

APPENDIX C

National Highway-Rail Grade Crossing Inventory Data Field Specifications for Magnetic Tape Updates

Columns 1 - 25

The first 25 columns of each record are to contain the identification data for the crossing. The data in these columns is validated against the inventory record for the crossing before any of the update data is posted.

Columns 26 - 80

Columns 26 - 80 may contain one or more sets of information. Each set of information or data-unit identifies the data element and the data. It consists of four parts: the data element identifier, a comma, the data, and a slash. The slash signifies the end of the data-unit.

The first set of characters, followed by a comma, is the data element number. The remaining set of characters, from the comma to the slash, is the data itself. The data can again be divided into two parts, the first character(s) of data being a number and the remaining characters being the description. This applies only to the following elements:

a.	Part I	16C	Private crossing signs or signals
b.	Part II	3	Non-main tracks
c.	Part II	4	Other RR separate track
d.	Part II	5	Other RR same track
e.	Part II	6A-05	Other signs
f.	Part II	6A-07	Other signs
g.	Part II	6B-14	Other flashing lights

A slash is entered when the description is complete. For descriptive data the length is equal to or less than the number of spaces indicated on the form. For numeric information the data length is the exact number, zero filled to the left.

When one data element is completed, another may be started by entering the data

element number, a comma, the data, then a slash. This can be continued up to and including column 80. If the ending slash was not entered in column 80, then duplicate the first 25 columns and continue in column 26 on the next line. A slash must end a data unit even if the information has to be entered with only the identification information and a slash in column 26.

Since there are no easily keyed Roman equivalents of sections I, II, III, and IV, the numerics 1, 2, 3, and 4 are to be used.
The following tables present a concise guide to entering the data accurately and in the proper format. Table C-1 begins with the guidelines for completing the identification data into columns 1 through 25. Tables C-2 through C-5 continue with the rules for entering the data into columns 26 - 80, as necessary, for the data elements within each of the sections of the four-part form. Information for the same set of identification data can be continued from column 80 to column 26 of the following line, with no spaces, as long as a data unit ends with a slash. The identification data must be repeated in columns 1 - 25 for each line in which its data is entered.

Field Name	Length/Type	Position	Valid Values
Init(iating) Agency (A)	(1N)	1	"1" or "2"
Crossing No. (B)	(6N, + 1A)	2-8	First 6 = Num, 7th = Alpha, leading zeros must be entered, valid check character
Reason (C)	(1N)	9	"1" = Change "3" = Closed crossing
E(ffective) Date (D)	(6N)	10-15	"MMDDYY" - Month/Day/Year
State	(2A)	16-17	Valid 2-digit State code
County	(3N)	18-20	Valid county code
RR Code	(4A)	21-24	Valid DOT-AAR code
Control	(1A)	25	Leave blank

Sample Updates: (seven closed and two changes)

1631267H305059337071DTNC
1631269W305059337071DTNC
1631270R305059337071DTNC
1631271X305059337071DTNC
1631272E305059337071DTNC
1631273L305059337071DTNC
1631274T305059337071DTNC
1163548A104279317031CSX 110,51ST COURT(1-WAY)/114,0001.28/221,010/222,000/223,0
1163548A104279317031CSX 10/
1346514N104299317189CSX 114,0434.26/221,030/222,000/223,030/232,01INDUSTRY /26
1346514N104299317189CSX 01,0/2613,4/2618,2/32,3/38,6/

This is an example of two types of updates. The first seven lines represent updates to close seven grade crossings. Note that for each closing, only the identification data is required in the 80-character record. The last four lines are changes to two grade

Field Name	Length/Type	Position	Valid Values
crossings.			

Table C-1. Identification Data

Data Element Number	Field Name	Length/Type	Valid Values
11,	RR Operating Company (1)	(4A)	Valid DOT-AAR railroad code
12,	RR Division (2)	(14 A/N)	Any 1-14 alphanumeric
13,	RR Subdivision (3)	(14 A/N)	Any 1-14 alphanumeric
14,	State (4)	(2A)	Valid 2-digit State code
15,	County (5)	(3 A/N)	Valid 3-digit county code
16,	County Map Ref (6)	(10 A/N)	Any 1-10 alphanumeric
17,	City (7)	(4N)	Valid 4-digit city code
18,	Near (EST) City	(1 A/N)	"0" if in-city, "1" if near city
19,	Hwy Type	(7 A/N)	Any 1-7 alphanumeric
110,	Street/Road (10)	(17 A/N)	Any 1-17 alphanumeric
111,	RRID No. (11)	(10 A/N)	Any 1-10 alphanumeric
112,	TT Station (12)	(6 N)	Valid 6-digit SPLC code
113,	Branch (13)	(15 A/N)	Any 1-15 alphanumeric
114,	Milepost (14)	(7 A/N)	Any alphanumeric (must have 2-digits to right of decimal)
115,	Ped Xing (15)	(1 A/N)	"1", "2", or "3"
116A,	Priv X-use (16A)	(1 A/N)	"1" to "4"
116B,	Priv X-type (16B)	(1 A/N)	"5", "6", or "7"
116C,	Priv X-WD (16C)	(1 A/N; 15A)	"8", "9", or "0" (+ 1 to 15 character description if "8" or "9")
117,	Pub Xing (17)	(1 A/N)	"1", "2", or "3"

Sample Updates: (Private to Public)

1632918W112018745061CSX 12,FL /13,HARTSVILLE /16,31 /17,01
1632918W112018745061CSX 90/18,0/19,SC0154 /112,445130/113,SJA /114,0
1632918W112018745061CSX 331.39/117,1/118,NINWX/211,00/212,00/213,00/214,00/215,
1632918W112018745061CSX 1/221,025/222,005/223,015/231,1/232,00 /24,2
1632918W112018745061CSX /25,2 /2601,2/2620,0/27,1/
1632918W112018745061CSX 28,3/29,2/31,1/32,3/33,2/34,2/35,1/36,2/37,1/38,3/39,2/
1632918W112018745061CSX 310,2/41,04/42,1/43,07/44,001050/45,08/

This is an example of a crossing that was either Private or Pedestrian and is being changed to Public-at-Grade. For this type of change, all of Parts II through IV information must be provided. Only one type of crossing can be given.

Sample updates: (RR Change - TT to CSX)

1851573G109289239173TT 11,CSX /222,020/223,025/

Data Element Number	Field Name	Length/Type	Valid Values
This update shows a change in the Railroad Operating Company from TT to CSX.			

Table C-2. Part I Data

Table C-3. Part II Data

Data Element Number	Field Name	Length/Type	Valid Values
211,	Day Thru Trn (1A-1)	(2N)	00 to 99
212,	Day Switch Trn (1A-2)	(2N)	00 to 99
213,	Night Thru Trn (1A-3)	(2N)	00 to 99
214,	Night Switch Trn (1A-4)	(2N)	00 to 99
215,	Less 1/day (1A-5)	(1N)	"1" or "0"
221,	Max Timetable Speed (2A-1)	(3N)	001 to 130
222,	Typ Min Spd	(3N)	000 to 130
223,	Typ Max Spd (2B-3)	(3N)	001 to 130
231,	Main Track (3-1)	(1N)	0 to 9
232,	Other Track (3-2)	(12 A/N)	First 2 = Num (00-99) last 10 = any 1 to 10 alphanumeric
24,	RR Sep Trk (4-1 & 2)	(17 A/N)	"1" or "2" (+ valid DOT-AAR RR code(s) in groups of four characters each if "1")
25,	RR Same Trk (5-1 & 2)	(17 A/N)	"1" or "2" (+ valid DOT-AAR RR code(s) in groups of four characters each if "1")
2601,	Xbucks - Ref-01 (6A-01)	(1N)	0 to 9
2602,	Xbucks - Non-02 (6A-02)	(1N)	0 to 9
2603,	Stop - Stand-03 (6A-03)	(1N)	0 to 9
2604,	Stop - Other-04 (6A-04)	(1N)	0 to 9
2605,	Oth Sign-05 (6A-05 & 06)	(11 A/N)	First character = 0 to 9, next 10 = any 1 to 10 alphanumeric if first character is greater than 0
2607,	Oth Sign-07 (6A-07 & 08)	(11 A/N)	First character = 0 to 9, next 10 = any 1 to 10 alphanumeric if first character is greater than 0

Data Element Number	Field Name	Length/Type	Valid Values
2609,	Gates - 09 (6B-09)	(1N)	0 to 9
2610,	Gates - 10 (6B-10)	(1N)	0 to 9
2611,	Fl-Over-Tr-11 (6B-11)	(1N)	0 to 9
2612,	Fl-Not-Over-12 (6B-12)	(1N)	0 to 9
2613,	Fl-Mast-13 (6B-13)	(1N)	0 to 9
2614,	Fl-Oth-14 (6B-14 & 15)	(10 A/N)	First character = 0 to 9, next 9 = any 1 to 9 alphanumeric if first character is greater than 0
2616,	Tr-Sig-16 (16B16)	(1N)	0 to 9
2617,	Wigwags-17 (6B-17)	(1N)	0 to 9
2618,	Bells-18 (6B-18)	(1N)	0 to 9
2619,	Special W.D. (6C-19)	(20 A/N)	Any 1 to 20 alphanumeric
2620,	(6D) Nosigns-Sig-20 (6D-20)	(1N)	"0" or "1"
27,	Commercial Power (7)	(1N)	"1" or "2"
28,	Speed Selection (8)	(1N)	"1", "2", or "3"
29,	Signal Method (9)	(1N)	"1" or "2"

Sample Updates:

1623372N109189212121CSX 114,0717.29/221,045/222,045/223,045/
1623373V109189212121CSX 114,0718.20/221,045/222,045/223,045/
1623374C109189212121CSX 114,0718.89/221,045/222,045/223,045/

1170029P112018917021CIM 15,179/110,MCLEAN /111,105A /114,0010.33
1170029P112018917021CIM /117,1/211,04/212,04/213,04/214,00/221,010/222,001/223,
1170029P112018917021CIM 010/231,1/232,00 /24,2 /25,2
1170029P112018917021CIM /2613,2/27,1/28,2/29,2/31,3/32,3/33,2/34,2
1170029P112018917021CIM /35,1/36,3/37,2/38,6/39,2/310,1/41,08/42,2/43,19/44,000
1170029P112018917021CIM 059/45,01/

The following is a list of cross-field checks which should be performed to insure consistency in the Part II data:

a. If the sum of daily train movements is zero (211,00/212,00/213,00/214,00, the Less Than One Movement field must equal "1" (215,1/). Conversely, if the sum of daily train movements exceeds 1, field 215, cannot equal "1".

b. Maximum speed over crossing (223,) must not exceed maximum timetable speed (221,).

c. Minimum speed over crossing (222,) must not exceed maximum speed over crossing (223,).

d. Main tracks (231,) and other tracks (232,) cannot both be 0.

Data Element Number	Field Name	Length/Type	Valid Values
e.	**If the sum of all warning devices (2601, to 2619,) exceeds 0, Field 2620, cannot equal "1". Conversely, if the total of all warning devices equals 0, Field 2620, must equal "1".**		
f.	**If the sum of Train Activated Devices (2601, to 2618,) equals 0, Field 28, cannot equal "1".**		

Table C-3. Part II Data (Continued)

Data Element Number	Field Name	Length/Type	Valid Values
31,	(1) Type Devel	(1N)	"1" to "5"
32,	(2) Xing Angle	(1N)	"1", "2", or "3"
33,	(3) No Tr Lanes	(1N)	0 to 9
34,	(4) Truck Pullout Lns	(1N)	"1" or "2"
35,	(5) Hwy Paved?	(1N)	"1" or "2"
36,	(6) Pavement Markings	(1N)	"1" or "2" or "3" or "4"
37,	(7) Advance Warning	(1N)	"1" or "2"
38,	(8) Crossing Surface	(1N)	"0" to "9"
39,	(9) Down Street	(1N)	"1" or "2"
310,	(10) Intersecting Hwy?	(1N)	"1" or "2"

Sample Updates:

2079899V106219355063BN 38,2/
2079900M106219355063BN 38,2/
2079944M106219355011BN 37,2/38,2/
2079945U106219355011BN 38,2/
2079951X106219355011BN 38,2/
2079957N106219355011BN 36,1/

Cross-Field Edit: In Part III, if the highway is not paved (35,2/) pavement markings can only be "None" (36,3/).

Table C-4. Part III Data

Data Element Number	Field Name	Length/Type	Valid Values
41,	(1) Highway System	(2N)	"01" to "04" or "08"
42,	(2) State Highway?	(1N)	"1" or "2"
43,	(3) Functional Class	(2N)	"01, 02, 06, 07, 08, 09, 11, 12, 14, 16, 17, and 19"
44,	(4) AADT	(6N)	000001 to 999999
45,	(5) Percent Trucks	(2N)	00 to 99

Sample Updates:

2229275V106149321161CSX 44,002450/
2229276C106149321161CSX 44,000600/
2229278R106149321161CSX 44,001490/
2229279X106149321161CSX 44,001100/
2229280S106149321161CSX 44,001000/
2229281Y106149321161CSX 44,001440/
2229282F106149321161CSX 44,000800/

Table C-5. Part IV Data

APPENDIX D

GX DATA FILE STRUCTURE

APPENDIX D

GX DATA FILE STRUCTURE (.DBF FORMAT)

FIELD NAME	FIELD TYPE	WIDTH	FULL NAME OF THE FIELD
CROSSING	Character	7	Crossing Number
RRCODE	Character	4	Railroad
TYPE_XING	Character	1	Crossing Type
POS_XING	Character	1	Crossing Position
STATE_CD	Character	2	State numeric code
COUNTY_CD	Character	4	County numeric code
CITY_CD	Character	4	City numeric code
NEAREST	Character	1	Nearest city
RR_DIV	Character	14	Railroad Division Name
RR_SUBDIV	Character	14	Railroad Sub-Division Name
HIGHWAY	Character	7	Highway Name
STREET	Character	17	Street Name
RR_ID	Character	10	Railroad Identification Number
TTCODE	Character	6	TimeTable Station numeric code
BRANCH	Character	15	Branch or line name
MILEPOST	Character	6	Railroad Milepost
MAP_REF	Character	10	County Map Reference Number
A_PRV_CAT	Character	1	Category of Private Crossing
C_PRV_IND	Character	1	Private crossing signs
PRV_SIGNS	Character	15	Private Xing signs - specify
EFFEC_DATE	Character	6	Effective Date
INIT_AGY	Character	1	Initiating agency
REASON	Character	1	Reason for Update
DAY_THRU	Numeric	2	Day thru train movements
DAY_SWT	Numeric	2	Day switching train movements
NIGHT_THRU	Numeric	2	Night thru train movement
NIGHT_SWT	Numeric	2	Night switching train movement
LESS_1_MOV	Character	1	Less than 1 movement per day?
MAX_TT_SPD	Numeric	3	Maximum time Table speed
MIN_SPD	Numeric	3	Minimum speed range over Xing
MAX_SPD	Numeric	3	Maximum speed range over Xing
MAIN_TRK	Numeric	1	Number of Main tracks
OTH_TRK	Numeric	2	Number of Other tracks

OTH_DESCRP	Character	10	Description of other tracks
SEP_IND	Character	1	Other RR on sep. trk at Xing
SEP_RR	Character	16	Specify Railroads

FIELD NAME	FIELD TYPE	WIDTH	FULL NAME OF THE FIELD
SAME_IND	Character	1	Other RR on same track at Xing
SAME_RR	Character	16	Specify Railroads
XBUCK_RF	Numeric	1	Reflectorized crossbucks
XBUCK_NRF	Numeric	1	Non-reflectorized crossbucks
STAND_STOP	Numeric	1	Standard Highway Stop sign
OTH_STOP	Numeric	1	Other Stop Signs
OTH_SG1	Numeric	1	Number of other signs #1
OTH_SGDES1	Character	10	Specify other signs
OTH_SG2	Numeric	1	Number of other signs #2
OTH_SGDES2	Character	10	Specify other signs
GATE_RW	Numeric	1	Red/White reflectorized gates
GATE_OTH	Numeric	1	Number of other colored gates
FLASH_OV	Numeric	1	Lights over traffic lanes
FLASH_NOV	Numeric	1	Lights not over traffic lanes
FLASH_MAST	Numeric	1	Mast Mounted flashing lights
OTH_FLASH	Numeric	1	Other flashing lights
OTH_FLDESC	Character	9	Description of other lights
HWY_SIGNAL	Numeric	1	Highway Traffic Signals
WIGWAGS	Numeric	1	Wigwags
BELLS	Numeric	1	Bells
SPEC_PRO	Character	20	Device not train activated
NO_SIGNS	Character	1	No signs or Signals
COM_POWER	Character	1	Commercial Power available
SGNL_EQP	Character	1	Is track equipped with signals
SPD_SELECT	Character	1	Speed of selection trains
TYP_DEVEL	Character	1	Type of development
HWY_PVED	Character	1	Highway paved
DOWN_ST	Character	1	Does track run down street
PAVE_MARKS	Character	1	Pavement Markings
HWY_NEAR	Character	1	Nearby intersecting highway
ADV_WARN_S	Character	1	Advance Warning signs ?
XNG_ANGLE	Character	1	Smallest crossing angle
XNG_SURFAC	Character	1	Crossing surface
TRAF_LANE	Character	1	No. of Traf. lanes crossing RR
TRUCK_LANE	Character	1	Truck Pullout lanes present?
ST_HWY_1	Character	1	Is crossing on Highway System?
HWY_SYS	Character	2	Highway System Code Number
FUNC_CLS	Character	2	Functional Class of road /Xing
AADT	Character	6	Estimate AADT
PERC_TRUCK	Character	2	Estimate percent trucks

CHGDATE	Date	8	Date of record update
IDENT	Character	4	RESERVED
OUTFLAG1	Character	1	RESERVED

APPENDIX E

RAILROAD CODES

as of November, 1996

APPENDIX E
RAILROAD CODES

ARE	A & R Line Inc.
AGRD	A&G Railroad, L.L.C. (formerly Abbeville-Grimes - AG)
AG	Abbeville-Grimes Rwy Co (Use Code AGRD - A&G RR, L.L.C.)
ACWR	Aberdeen, Carolina & Western Railroad
AR	Aberdeen & Rockfish Railroad Company
AKDN	Acadiana Railway Company
ADCX	Adirondack Scenic Railroad (Previously Adir. Centennial)
ADBF	Adrian & Blissfield Railroad
AB	Akron Barberton Cluster Railway Company
ABB	Akron & Barberton Belt Railroad Company
ALAB	Alabama Railroad Company, Incorporated
AF	Alabama & Florida Railway Company
AGS	Alabama Great Southern Railroad (NS)
ABL	Alameda Belt Line
AGCR	Alamo Gulf Coast Railroad Company
ARR	Alaska Railroad Corporation
APRR	Albany Port Railroad
ARC	Alexander Railroad Company
AWW	Algers, Winslow & Western Railway Company
ALQS	Aliquippa & Southern Railroad Company
AVR	Allegheny Valley Railroad Company
ALC	Allegheny Central Railroad
ALY	Allegheny And Eastern Railroad
AL	Almanor Railroad Company
ALS	Alton & Southern Railroad
AMC	Amador Central Railroad Company
AMHR	Amhearst Railroad Industries, Incorporated/Landisville RR
ATK	Amtrak (National Railroad Passenger Corporation)
ACRC	Andalusia & Conecuh Railroad Company, Incorporated
ANR	Angelina & Neches River Railroad Company
AA	Ann Arbor Railroad
APA	Apache Railway Company
AN	Apalachicola Northern Railroad Company
APNC	Appanoose County Community Railroad Company
ARA	Arcade & Attica Railroad Corporation
AZCR	Arizona Central Railroad, Incorporated
ARZC	Arizona & California Railroad Company
AZER	Arizona Eastern Railroad
AKMD	Arkansas Midland Railroad Company, Incorporated
ALM	Arkansas Louisiana & Mississippi Railroad Company
AM	Arkansas & Missouri Railroad Company
AOK	Arkansas-Oklahoma Railroad Inc.
ACRY	Arkansas Central Railway Company

AVL	Aroostook Valley Railroad Company
ASRY	Ashland Railway Incorporated
ADN	Ashley, Drew & Northern Railway Company(Use Code ALM)
ACJR	Ashtubula, Carson & Jefferson Railroad
ATSF	Atchison, Topeka & Santa Fe Railway Company
ASML	Atlanta, Stone Mountain & Lithonia
ATW	Atlantic & Western Railway, L.P.
AGLF	Atlantic & Gulf Railroad
ATCX	Austin & Texas Central Railroad
AUNW	Austin & Northwestern Railroad
ATLT	Austin, Todd & Ladd Railroad Company
ATC	Autotrain Corporation
BLA	Baltimore & Annapolis Railroad Company
BOCT	Baltimore & Ohio Chicago Terminal Railroad Company
BAR	Bangor & Aroostook Railroad
BKRR	Batten Kill Railroad
BXN	Bauxite & Northern Railway Company
BCLR	Bay Colony Railroad
BAYL	Bay Line Railroad, L.L.C.
BMH	Beaufort & Morehead Railway Incorporated
BEEM	Beech Mountain Railroad Company
BML	Belfast & Moosehead Lake Railroad Company
BHRX	Bellefonte Historical Railroad Society
BRC	Belt Railway Company Of Chicago
BMS	Berlin Mills Railway
BLE	Bessemer & Lake Erie Railroad Company
BSDA	Bi-State Development Agency, St. Louis (Operated By RSM)
BSFX	Big South Fork Scenic Railway
BS	Birmingham Southern Railroad Company
BHC	Black Hills Central Railroad
BRW	Black River & Western Railroad
BLOL	Bloomer Shippers Connecting Railroad Company
BMRG	Blue Mountain & Reading Railroad
BRTR	Blue Rock Transportation Company
BRRX	Blue Rapids Railway
BLMR	Blue Mountain Railroad, Incorporated
BRMI	Bluegrass Railroad Museum, Incorporated
BSV	Boone Scenic Valley
BOP	Border Pacific Railroad
BM	Boston & Maine Corporation
BRAN	Brandon Corporation
BSRX	Brandywine Scenic Railroad Company
BVRY	Brandywine Valley Railroad Company
BITY	Bristol Industrial Terminal Railway
BWDX	Broadway Dinner Train

BRG	Brownsville & Rio Grande International Railroad
BCRR	Buckeye Central Scenic Railroad
BB	Buckingham Branch Railroad Company
BSOR	Buffalo Southern Railroad, Incorporated
BPRR	Buffalo & Pittsburgh Railroad, Incorporated
BJRY	Burlington Junction Railway
BN	Burlington Northern Railroad Company
CSKR	C&S Railroad Corporation
CALX	Caddo, Antonine And Little Missouri
CTML	Cairo Terminal Railroad Company
CWCY	Caldwell County Railroad Co.
CWR	California Western Railroad
CFNR	California Northern Railroad Company
CSRM	California State Railroad Museum
CSP	Camas Prairie Railroad Company
CCRA	Camp Chase Industrial Railroad Corp
CN	Canadian National - North America
CARX	Canadian Atlantic Railroad (Use Code CDAC)
CDAC	Canadian American Railroad Company
CPVM	Canadian Pacific Railway (Vermont & Michigan)
CP	Canadian Pacific Railway Company
CFWR	Caney Fork & Western Railroad
CTN	Canton Railroad Company
CCRX	Cape Cod Railroad
CF	Cape Fear Railways, Incorporated
CMSX	Cape May Seashore Lines, Inc.
CHSX	Carbon Schuykill
CALA	Carolina Southern Railroad Company
CLNA	Carolina Coastal Railway, Incorporated
CRIJ	Carolina Rail Services Company
CPDR	Carolina Piedmont Division-South Carolina Central Railroad
CARR	Carrollton Railroad (CSX)
CKSI	Carthage, Knightstown & Shirley Railroad
CASS	Cass Scenic
CMRR	Catskill Mountain Railroad
CBRX	CBEC Railway, Inc.
CVAR	Cedar Valley Railroad
CEDR	Cedar River Railroad Company
CIC	Cedar Rapids & Iowa City Railway Company
CRLX	Centex Rail Link, Limited
CERA	Central Railroad Company Of Indianapolis
CEIW	Central Indiana & Western Railroad Company
CGA	Central Of Georgia Railroad Company (NS)
CCT	Central Calfornia Traction Company
CTRN	Central Of Tennessee Railway & Navigation Company

CORP	Central Oregon & Pacific Railroad, Inc.
CV	Central Vermont Railway (Out Of Operation)
CM	Central Montana Railroad
CNYK	Central New York Railroad Corporation
CIND	Central Railroad Company Of Indiana
CKRY	Central Kansas Railway, Incorporated
CMGN	Central Michigan Railway Company
CGNE	Champagne Railroad, Incorporated
CIRR	Chattahoochee Industrial Railroad
CCKY	Chattooga & Chickamauga Railroad
CHNY	Cheney Railroad Company, Incorporated
CHRR	Chesapeake Railroad Company
CHW	Chesapeake Western Railway
CA	Chesapeake & Albemarle Railroad Company
CHR	Chestnut Ridge Railway Company
CWP	Chicago, West Pullman & Southern Railroad Company
CRI	Chicago River And Indiana Railroad Company
CHTT	Chicago Heights Terminal Transfer Railroad Company
CIW	Chicago & Illinois Western Railroad
CCUO	Chicago-Chemung Railroad Corporation
CSS	Chicago Southshore & South Bend Railroad
CRL	Chicago Rail Link
CNW	Chicago And North Western Railway Company
CIM	Chicago & Illinois Midland Railway Company
CC	Chicago, Central & Pacific Railroad Company
CSL	Chicago Short Line Railway Company
CBRM	Chillicothe-Brunswick Rail Maintenance Authority
CVR	Cimarron Valley Railroad L C
CNTP	Cincinnati, New Orleans & Texas Pacific Railway (NS)
CTER	Cincinnati Terminal Railway Company
COP	City Of Prineville Railway
CCRR	Claremont Concord Railroad Corporation
CLP	Clarendon & Pittsford Railroad Company
CTR	Clinton Terminal Railroad Company
CRLE	Coe Rail Incorporated
CISD	Colonel's Island Railroad Company
CW	Colorado & Wyoming Railway Company
CS	Colorado And Southern Railway
CT	Columbia Terminal Railroad Company
CBCX	Columbia Business Center
CLC	Columbia & Cowlitz Railway Company
CNOW	Columbia & Northern Railway Company
CUOH	Columbus & Ohio River Railroad
CAGY	Columbus & Greenville Railway Company
CWRY	Commonwealth Railway, Incorporated
CBL	Conemaugh & Black Lick Railroad Company

CDT Conn. Dept. Of Transportation
CCCL Connecticut Central Railroad
CTV Connecticut Valley
CGBX Consolidated Grain & Barge Company
CR Consolidated Rail Corporation
CONW Conway Scenic Railroad
CACV Cooperstown & Charlotte Valley Railway Corporation
CMRX Coopersville & Marne Railroad
CBRY Copper Basin Railway, Incorporated
CRCX Cornhusker Rail Car Services, Inc.
CCTA Corpus Christi Terminal Association
CSRX Corydon 1883 Scenic Railroad
CBGR Council Bluffs Railway Company
CPRS CP Rail System/CP Tarrif, Inc.
COER Crab Orchard & Egyptian Railroad
CYCY Crystal City Railroad, Incorporated
CSX CSX Transportation
CTSR Cumbres & Toltec Scenic Railroad
CVSX Cuyahoga Valley Scenic Railway
CUVA Cuyahoga Valley Railway Company

DAIR D & I Railroad Company
DME Dakota, Minnesota & Eastern Railroad
DAKR Dakota Railroad
DI Dakota & Iowa Railroad
DMVW Dakota, Missouri Valley & Western Railroad, Incorporated
DSRC Dakota Southern Railway Company
DGNO Dallas, Garland & Northeastern Railroad
DTRR Danbury Terminal Railroad Company
DMM Dansville & Mount Morris Railroad Company
DR Dardanelle & Russellville Railroad
DRI Davenport, Rock Island & North Western Railway Company
DQE De Queen & Eastern Railroad Company
DCRX Deadwood Central Railroad Company
DT Decatur Junction Railway Company
DH Delaware & Hudson Railway Company
DL Delaware Lackawanna Railroad (replaces LVAL,lRWY)
DURR Delaware & Ulster Rail Ride
DV Delaware Valley Railroad Company, Inc.
DC Delray Connecting Railroad Company
DVS Delta Valley & Southern Railway Company
DSRR Delta Southern Railroad Company
DRGW Denver & Rio Grande Western Railroad Company
DRIR Denver Rock Island Railroad
DUT Denver Union Terminal Railway
DOE Department Of Energy

DOD Department Of Defense - Other
DLWR Depew, Lancaster & Western Railroad Company, Incorporated
DKS Doniphan, Kensett & Searcy Railway
DCRR Dubois County Railroad
DMIR Duluth, Missabe & Iron Range Railway Company
DNE Duluth & Northeastern Railroad Company
DWP Duluth, Winnipeg & Pacific Railway
DSNG Durango & Silverton Narrow Guage Railroad Company
DS Durham And Southern Railway Company
DRHY Durham Transport Incorporated

EPRY East Penn Railways, Inc.
EACH East Camden & Highland Railroad Company
EJR East Jersey Railroad & Terminal Company
ECBR East Cooper & Berkeley Railroad
ETRY East Tennessee Railway, L.P.
EEC East Erie Commercial Railroad
EPTC East Portland Traction Company
EIRC Eastern Illinois Railroad Company
EIRR Eastern Idaho Railroad
ESHR Eastern Shore Railroad Incorporated
EARY Eastern Alabama Railway Company
EMRX Eastern Maine Railroad
EMRY Eastern Maine Railroad Company
TXTX Econo Rail Corporation
EDW El Dorado & Wesson Railway Company
EJE Elgin, Joliet & Eastern Railway Company
ELKR Elk River Railroad, Incorporated
EERZ Ellis & Eastern Company (Use EE)
ETMX Entertrainment Line
ELS Escanaba & Lake Superior Railroad Company
EKNA Eureka Springs & North Arkansas Railroad
EV Everett Railroad Company

FMRC Farmrail Corporation
FRA Federal Railroad Administration
FMWX Fillmore And Western
FGLK Finger Lakes Railway Corporation
FIR Flats Industrial Railroad Company
FGC Florida Gulf Coast Railrod Museum, Incorporated
FWCR Florida West Coast Railway
FMID Florida Midland Railroad Company, Incorporated
FCEN Florida Central Railroad Company
FEC Florida East Coast Railway Company
FNOR Florida Northern Railroad Company, Incorporated
FAPR Floydada & Plainview Railroad Company

FP Fordyce & Princeton Railroad Company
FSR Fort Smith Railroad Company
FWWR Fort Worth & Western Railroad
FVW Fox Valley & Western Ltd.
FEVR Freemont & Elkhorn Valley Railroad
FWHS Ft. Wayne Historical Society

GVSR Galveston Railroad, L.P.
GCW Garden City Western Railway Company
GWWR Gateway Western Railway
GWWE Gateway Eastern Railroad Company
GNWR Genesee & Wyoming Railroad Company
GRR Georgetown Railroad Company
GC Georgia Central Railroad
GAAB Georgia & Alabama Division
GFRR Georgia & Florida Railroad Co., Inc.
GNRR Georgia Northeastern Railroad Company
GGS Georgia Great Southern Division-South Carolina
GSWR Georgia Southwestern Railroad Division
GMA Georgia Marble
GSF Georgia Southern & Florida Company (NS)
GWRC Georgia Woodlands Railroad
GPSX Gettysburg Passenger Service
GETY Gettysburg Railroad Company
GRC Glasgow Railway Company
GLSR Gloster Southern Railroad
GCR Gold Coast Railroad
GGMX Golden Gate Railroad Museum
GTRA Golden Triangle Railroad Company
GCRC Golden Cat Railroad Corporation
GU Grafton & Upton Railroad Company
GNBC Grainbelt Corporation
GR Grand Rapids Eastern Railroad Incorporated
GTW Grand Trunk Western Railroad Incorporated
GCRX Grand Canyon Railway
GSM Great Smokey Mountain Railroad
GRWR Great Walton Railroad Company
GWR Great Western Railway Company
GTR Great River Railroad
GMRY Great Miami & Scioto Railway Company
GRMX Great Miami & Western Railway
GMRC Green Mountain Railroad Corporation
GRN Greenville & Northern Railway Company
GUIL Guilford Transportation Industries, Inc
GRS Guilford Rail System
GORX Gulf And Ohio Railways

GCSR Gulf, Colorado San Saba Railway Corporation
GSSZ Gulf State Steel, Inc.
GWSW Gwi Switching Services L.P. (Formerly Genessee & Wyoming Switching Svcs)

HS H & S Railroad Company, Incorporated
HB Hampton & Branchville Railroad Company
HBL Harbor Belt Line Railroad
HSRR Hardin Southern Railroad, Incorporated
HRT Hartwell Railroad Company
HVRX Heber Valley Railroad Utah
HPTD High Point, Thomasville & Denton Railroad Company
HVSR Hocking Valley Scenic Railroad
HRS Hollidaysburg And Roaring Spring Railroad Company
HE Hollis & Eastern Railroad Company
HCRR Honey Creek Railroad, Incorporated
HOS Hoosier Southern Railroad
HRRC Housatonic Railroad Company, Incorporated
HBT Houston Belt & Terminal Railway Company
HRR Huckleberry Railroad
HMCR Huntsville & Madison County Railroad Authority
HESR Huron & Eastern Railway
HN Hutchinson & Northern Railway Company

INPR Idaho Northern & Pacific Railroad Company
IRYM Illinois Railway Museum
IMRR Illinois & Midland Railroad Inc.
IC Illinois Central Railroad Company
IHB Indiana Harbor Belt Railroad Company
IHRC Indiana Hi-rail Corporation
ISRR Indiana Southern Railroad Company, Incorporated
IN Indiana Northeastern Railroad Company, Incoporated
INOH Indiana & Ohio Railroad, Incorporated
ITMZ Indiana Transportation Museum
INRD Indiana Rail Road Company
IOCR Indiana & Ohio Central Railroad, Incorporated
IORY Indiana & Ohio Railway
IOSX Indiana & Ohio Scenic Rail Corporation
IRM Indiana Railway Museum
ISSX Interchange Specialty Service Inc
IATR Iowa Traction Railroad Company
IANR Iowa Northern Railway Company
IAIS Iowa Interstate Railroad
ISSR Iss Rail, Inc.

JKL J. K. Line Incorporated (TIPP)
JGDX Jackson Gordonville & Delta Railroad

JPA	Jacksonville Port Authority
JXPT	Jaxport Terminal Railway Company
JEFW	Jefferson Warrior Railroad
JJRX	Joliet Junction Railroad
JERX	Joppa & Eastern Railroad Company
KWT	K.W.T. Railway, Incorporated
KLSC	Kalamazoo, Lake Shore & Chicago Rwy (Reinstated 2/14/94)
KRTX	Kanawha River Terminal
KBSR	Kankakee, Beaverville & Southern Railroad Company
KCT	Kansas City Terminal Railway Company
KCS	Kansas City Southern Railway Company
KGEZ	Kansas Gas & Electric
KSW	Kansas Southwestern Railway
KRM	Kentucky Railway Museum
KT	Kentucky & Tennessee Railway
KJRY	Keokuk Junction Railway
KMRY	Kettle Moraine Railway
KRR	Kiamichi Railroad Company LLC
KKRR	Knox & Kane Railroad Company
KYLE	Kyle Railroad Company
LKWR	Lackland Western Railroad Company
LT	Lake Terminal Railroad Company
LWAT	Lake Whatcom Railway
LSMR	Lake Superior & Mississippi Railroad
LSI	Lake Superior & Ishpeming Railroad Company
LSRC	Lake State Railway Company
LSMT	Lake Superior Museum Of Transportation
LSRX	Lake Shore Railway
LVRC	Lamoille Valley Railroad Company
LC	Lancaster & Chester Railway Company
LR	Landisville Railroad ** Use Code AMHR **
LNO	Laona & Northern Railway
LRS	Laurinburg & Southern Railroad Company
LCSR	Leadville, Colorado & Southern Railroad, Company
LSR	Leelanau Scenic Railroad
LINC	Lewis & Clark Railroad Company
LBCX	Lewisburg & Buffalo Creek Railroad
LXOH	Lexington & Ohio Railroad Company Incorporated
LFIZ	Litchfield Industrial Railroad
LRWN	Little Rock & Western Railway, L.P.
LRR	Little River Railroad
LKRR	Little Kanawha River Rail
LRPA	Little Rock Port Railroad Company

LPSG Live Oak, Perry, South Georgia Railway Company
LAL Livonia, Avon & Lakeville Railroad Corporation
LER Logansport & Eel River Short Line Company, Incorporated
LI Long Island Rail Road
LHRR Longhorn Railway Company
LS Longview Switching
LPN Longview, Portland & Northern Railway Company
LAJ Los Angeles Junction Railway Company
LNW Louisiana & North West Railroad Company
LDRR Louisiana & Delta Railroad
LA Louisiana & Arkansas Railway Company
LW Louisville & Wadley Railway Company
LIRC Louisville & Indiana Railroad Company
LNAL Louisville, New Albany & Corydon Railroad
LBR Lowville & Beaver River Railroad Company
LUN Ludington & Northern Railway
LSX Luzerene & Susquehanna Rwy Co.

MGRI M. G. Rail, Incorporated
CMPA Madison Railroad Division
MAA Magma Arizona Railroad Company
MVRY Mahoning Valley Railroad Company
MEC Maine Central Railroad Company
MDTT Maine Department Of Transportation
MC Maine Coast Railroad Corporation
MCPA Manattee County Port Authority ** Use Code MAUP **
MPP Manitou & Pike's Peak Railroad Company
MJ Manufacturers' Junction Railway Company
MRS Manufacturers' Railway Company
MACZ Maryland Association Of Rail Commuters
MMID Maryland Midland Railway, Incorporated
MDT Maryland Dept. Of Transportation
MPAD Maryland Port Authority
MPA Maryland & Pennsylvania Railroad Company
MDDE Maryland & Delaware Railroad Company
MCCL Mason City & Clear Lake Electric Railway Historical Society
MTAX Mass Transit Administration
MCER Massachusetts Central Railroad Corporation
MSTR Massena Terminal Railroad Company
MCR Mccloud Railway Company
MKC Mckeesport Connecting Railroad Company
MCLR Mclaughlin Line Railroad
MBRR Meridian & Bigbee Railroad Company
MNCW Metro North Commuter Railroad Company
MS Michigan Shore Railroad
MSTP Michigan State Trust For Railway Preservation

MSO Michigan Southern Railroad Company, Incorporated
MCRY Mid-Continent Railway
MRR Mid-Atlantic Railroad Company, Inc. (Use Code CALA)
MMRR Mid-Michigan Railroad Company
MIDH Middletown & Hummelstown Railroad Company
MNJ Middletown & New Jersey Railway Company, Incorporated
MDLR Midland Terminal Company
MDRY Midlands Railway
MWCL Midwest Coal Handling, Incorporated
MBRX Milford-Bennington Railroad Company
MRSX Military Ocean Terminal Railroad At Sunny Point
MNNR Minnesota Commercial Railway
MNTM Minnesota Transportation Museum
MDW Minnesota, Dakota & Western Railway Company
MCTA Minnesota Central Railroad Company
MZL Minnesota Zephyr, Limited
MMR Minnesota & Manitoba Railroad
MSV Mississippi & Skuna Valley Railroad Company
MSCI Mississippi Central Railroad Company
MSE Mississippi Export Railroad Company
MSDR Mississippi Delta Railroad
MSRW Mississippian Railway Cooperative, Incorporated
MNA Missouri & Northern Arkansas Railroad Company, Inc.
MP Missouri Pacific Railroad Company
MET Modesto & Empire Traction Company
MHWA Mohawk, Adirondack & Northern Railroad Corporation
MWRL Molalla Western Railway Company
MCRR Monongahela Connecting Railroad Company
MRL Montana Rail Link
MWRR Montana Western Railway Company
MRMZ Monticello Railway Museum
MB Montpelier And Barre Railroad Company Former Code MN, Now WACR
ME Morristown & Erie Railway, Incorporated
MCSA Moscow, Camden & San Augustine Railroad
MVT Mount Vernon Terminal Railway, Incorporated
MH Mount Hood Railway Company
MRSR Mount Rainier Scenic Railroad
MNL Mountain Laurel Railroad Company
MWR Muncie & Western Railroad Company
METW Municipality Of East Troy

NCMX N C Transportation Museum
NJT N. J. Dept. Of Transportation
NVRR Napa Valley Railroad
NCYR Nash County Railroad
NERR Nashville & Eastern Railroad

NRI	Nebkota Railway, Incorporated
NCRC	Nebraska Central Railroad
NNRX	Nevada Northern Railway
NSWX	Neversweat & Washoe Railroad
NEGS	New England Southern Railroad Company, Incorporated
NECR	New England Central Railroad
NYLE	New York & Lake Erie
NEWG	New Georgia Railroad
NYCH	New York Cross Harbor Railroad Terminal Corporation
NHCR	New Hampshire Central Railroad, Incorporated
NHIR	New Hope & Ivyland Railroad Company
NHN	New Hampshire North Coast Railroad
NHRR	New Hope & Ivyland Rail Road
NHVT	New Hampshire & Vermont Railroad Company
NYSW	New York, Susquehanna & Western Railroad Company
NOT	New Orleans Terminal Company
NOLR	New Orleans Lower Coast Railroad, Incorporated
NOPB	New Orleans Public Belt Railroad
NJTR	New Jersey Transit Rail Operations
NSR	Newburgh & South Shore Railroad
NPSX	Newport Star Clipper Dinner Train
NICX	Niles Canyon Railway
NTRY	Nimishillen & Tuscarawas Railway Company
NBER	Nittany & Bald Eagle
NRR	Nobles Rock Railroad (Former Code NRRX)
NPB	Norfolk & Portsmouth Belt Line Railroad Company
NFD	Norfolk, Franklin And Danville Railroad Company
NW	Norfolk & Western Railway Company
NS	Norfolk Southern Corporation
NSHR	North Shore Railroad
NCDX	North County Transit District
NCRR	North Coast Railroad
NSSR	North Shore Scenic Railroad
NCVA	North Carolina & Virginia Railroad Company
NIRC	Northeast Illinois Regional Comuter Rail Corp. (METRA)
NEKM	Northeast Kansas & Missouri
NICD	Northern Indiana Commuter Transportation District
NN	Northern Nevada Railroad Corporation
NOW	Northern Ohio & Western Railway, Ltd.
NCR	Northern Central Railway Co. (use Code KCS)
NOKL	Northwestern Oklahoma Railroad Company
OTR	Oakland Terminal Railway
OGEE	Ogeechee Railway Company
OHIC	Ohi Rail Corporation
OSRR	Ohio Southern Railroad Company

ORY	Ohio Railway Museum
OHCR	Ohio Central Railroad Company
OHPA	Ohio & Pennsylvania Railroad Company
OCTL	Oil Creek & Titusville Lines
OAR	Old Augusta Railroad Company
OCN	Olde Colony & New Port
OLB	Omaha, Lincoln & Beatrice Railway Company
ONCT	Ontario Central Railroad Corporation
OMID	Ontario Midland Railroad Corporation
OERR	Oregon Eastern Railroad
ORR	Osage Railroad
OTVR	Otter Tail Valley Railroad Company, Incorporated
OUCH	Ouachita Railroad
OHRY	Owego & Harford Railway, Incorporated
PLW	P L & W (former Code PLWX)
PSRM	Pacific SW Railway Museum (San Diego RR Museum)
PARN	Pacific & Arctic Railroad & Navigation Company
PRSX	Pacific Rail Services
PI	Paducah & Illinois Railroad Company
PAL	Paducah & Louisville Railway Company
PARX	Palouse River Railroad Company **Use Code BLMR**
PNR	Panhandle Northern Railroad Company
PRT	Parr Terminal Railroad
PBR	Patapsco & Back Rivers Railroad Company
PRV	Pearl River Valley Railroad Company
PVS	Pecos Valley Southern Railway Company
POVA	Pend Oreille Valley Railroad, Incorporated
PT	Peninsula Terminal Company
PC	Penn Central Transportation Company
PPHW	Peoria, Peoria Heights & Western Railroad
PPU	Peoria & Pekin Union Railway Company
PBNE	Philadelphia, Bethlehem & New England Railroad
PICK	Pickens Railway Company
PBRR	Pine Belt Southern RR
PVRR	Pioneer Valley Railroad Company, Incorporated
PWJ	Pioneer Railroad Company, Incorporated
PS	Pittsburg & Shawmut Railroad Company
PAM	Pittsburgh, Allegheny & Mckees Rocks Railroad
PCY	Pittsburgh, Chartiers & Youghiogheny Railway
PCDX	Pittsburgh & Conneaut Dock Company
PTC	Plainview Terminal Company (Peoria Terminal Used Code Til 1980)
PCIX	Plant City Industrial Park
PLL	Plymouth & Lincoln
PCN	Point Comfort & Northern Railway Company
PPBD	Port Of Palm Beach Terminal

POCA	Port Of Catoosa
POTB	Port Of Tillamook Bay Railroad
PRI	Port Railroads, Incorporated
PATH	Port Authority Trans Hudson
POBR	Port Of Royal Slope Railroad
POAK	Port Of Oakland
PRYL	Port Royal Railroad
PLCX	Port Of Lake Charles
PBVR	Port Bienville Railroad
MAUP	Port Of Manatee
PUCC	Port Utilities Commission Of Charleston, S.C.
PTRA	Port Terminal Railroad Association
PTR	Port Terminal Railroad Of South Carolina (Former Code PTRS)
PTO	Portland Terminal (Oregon)
PNWR	Portland & Western Railroad, Inc.
PDCZ	Portland Development Commission
PEX	Potomac Eagle Scenic Rail Excursion
PNW	Prescott & Northwestern Railroad Company
PGCX	Proctor & Gamble Cellulose
PW	Providence & Worcester Railroad Company
PSHX	Puget Sound Railway Historical Association
QARX	Queen Anne Railroad
QRR	Quincy Railroad Company
QBT	Quincy Bay Terminal Company
RJCM	R. J. Corman Railroad Company/Memphis Line
RJCW	R. J. Corman, Western Ohio Line
RJCR	R. J. Corman Railroad
RJCP	R. J. Corman Railroad Company/Pennsylvania Lines, Inc.
RJCL	R. J. Corman Railroad Company/Cleveland Line
RSIX	Rail Switching L.L.C.
RTI	Rail Tours, Incorporated
RSM	Railroad Switching Service Of Missouri, Incorporated
RARW	Rarus Railway Company
RERX	Reader Railroad
RBMN	Reading Blue Mountain & Northern Railroad Commision
RRVW	Red River Valley & Western Railroad
RBKR	Red Bank Railroad Company
RSNR	Red Spring & Northern Railroad
RRC	Redmont Railway Company, Inc.
RBX	Ringling Brothers, Barnum & Bailey Circus
RVSC	Rio Valley Switching Company
RT	River Terminal Railway Company
RS	Roberval & Saguenay Railway Company
RRCO	Rochelle Railroad Company

RSR	Rochester Southern Railroad, Incorporated
RSS	Rockdale, Sandow & Southern Railroad Company
RSP	Roscoe, Snyder & Pacific Railway Company
SRN	Sabine River & Northern Railroad Company
SCRT	Sacramento County Regional Transit District
SGVY	Saginaw Valley Railway Company, Incorporated
SL	Salt Lake City Southern Railroad Company, Incorporated
SLGW	Salt Lake, Garfield & Western Railway Company
SMA	San Manuel Arizona Railroad Company
SLC	San Luis Central Railroad Company
SWKR	San Pedro & Southwestern Railway Company
SJVR	San Joaquin Valley Railroad Company
SDNX	San Diego Northern Railway
SDIY	San Diego & Imperial Valley
SFBR	San Francisco Belt Railroad
SDTI	San Diego Trolley Incorporated
SS	Sand Springs Railway Company
SAN	Sandersville Railroad Company
SCBG	Santa Cruz, Big Tree & Pacific Railroad
SMV	Santa Maria Valley Railroad Company
SFS	Santa Fe Southern Railway, Incorporated
SBNX	Saracuse Binghampton And New York Railroad
SSDK	Savannah State Docks Railroad Company
SCRX	Schuylkill Country Rail Authority
SWGR	Seagraves, Whiteface & Lubbock Railroad Company
SVTX	Seaview Transportation Co., Inc.
SGLR	Seminole Gulf Railroad
SE	Semo Port Railroad, Inc.
SQVR	Sequatchie Valley Railroad
SVRR	Shamokin Valley Railroad Company
SVIZ	Shelbyville Industrial Railroad
SV	Shenandoah Valley Railroad
SMSX	Shortline Marketing Services
SLGG	Sidney & Lowe Railroad Incorporated
SRYC	Sierra Railway Company Of California Limited
SERA	Sierra Railroad Company
SMRR	Sisseton Milbank Railroad
SSL	Skaneateles Short Line RR
SHRX	Smokey Hill Railway
SLRS	SMS Rail Service, Inc.
SOM	Somerset Railroad Company
SOO	Soo Line Railroad Company
SKJA	Soo KCS Joint Agency
SLAL	South Plains Lamesa Railroad, Ltd.
SKOL	South Kansas & Oklahoma Railroad Company

SCRF	South Carolina Central Railroad Company, Incorporated
SCFE	South Central Florida Railroad
SCTR	South Central Tennessee Railroad Corporation
SCXF	South Central Florida Express, Inc.
SBK	South Brooklyn Railway Company
SO	South Orient Railroad Company, Ltd.
SB	South Buffalo Railway Company
SBVR	South Branch Valley Railroad
SEKR	Southeast Kansas Railroad
SEPA	Southeastern Pennsylvania Transportation Authority
SEI	Southeastern International Railroad
SMRS	Southern Michigan Railroad Society
SCAX	Southern California Regional Rail Authority
SUAB	Southern Alabama Railroad Company, Incorporated
SSC	Southern Switching Company
SSWN	Southern Pacific, Chicago-St. Louis Corporation
SERX	Southern Electric Railroad
SOU	Southern Railway Company (NS)
SP	Southern Pacific Transportation Company
SEGX	Southern Electric Generating Company
SIND	Southern Indiana Railway, Incorporated
SIM	Southern Illinois & Missouri Bridge Line
SRNJ	Southern Railroad Company Of New Jersey
SWP	Southwest Pennsylvania Railroad Company
SW	Southwestern Railroad Company, Incorporated
ST	Springfield Terminal Railway Company (Vermont)
SLR	St. Lawrence & Atlantic Railroad Company
SM	St. Marys Railroad Company
SJRT	St. John's River Terminal Company
SSW	St. Louis Southwestern Railway Company
SLCR	St. Louis & Chain Of Rocks Railroad
SLOI	St. Louis, Iron Mountain, & Southern
SLST	St. Louis Steam Train Association
STLH	St. Lawrence & Hudson Railway Company Limited
STMA	St. Maries River Railroad Company
SLRR	St. Lawrence & Raquette River Railroad
SF	Steamtown Foundation (Use Code SNCX)
SNCX	Steamtown National Historic Site (Former Code SF)
SH	Steelton & Highspire Railroad
STRT	Stewartstown Railroad Company
STE	Stockton Terminal & Eastern Railroad
SPBR	Stockton Public Belt Railroad
SMPX	Stone Mountain Park
SMRX	Stone Mountain Railroad
SBRR	Stourbridge Railroad Company
SRC	Strasburg Railroad Company

TE	Tacoma Eastern Railway Company
TMBL	Tacoma Municipal Belt Line Railway
TSRR	Tennessee Southern Railroad Company, Incorporated
TVRM	Tennessee Valley Railroad
TENN	Tennessee Railroad Company (NS)
TKEN	Tennken Railroad Company Incorporated
TASD	Terminal Railway Alabama State Docks
TRRA	Terminal Railroad Association Of St. Louis
TCT	Texas City Terminal Railway Company
TELX	Texas Limited (excursion Train, Incorporated)
TXTC	Texas Transportation Company
TXOR	Texas & Oklahoma Railroad Company
TXNW	Texas Northwestern Railway Company
TXGN	Texas, Gonzales & Northern Railway Company
TSR	Texas State Railroad
TM	Texas Mexican Railway Company
TSE	Texas South-Eastern Railroad Company
TOE	Texas, Oklahoma & Eastern Railroad Company
TN	Texas & Northern Railway Company
TNER	Texas Northeastern Division--Mid-Michigan Railroad
TNMR	Texas & New Mexico Railroad Company (Austin & Northwestern Div)
TNOX	Texas North Orient Railroad
TBRY	Thermal Belt Railway
TCRO	Three County Commuter Rail Organ. (Use Code TCCX)
TTR	Tijuana And Tecate Railway Company
TIOC	Tioga Central Railroad
TPW	Toledo, Peoria & Western Railway Corporation
TLEW	Toledo Lake Erie & Western Railroad
TR	Tomahawk Railway, L.P.
TIRL	Tonawanda Island Railroad Incorporated
TSWR	Toppenish Simcoe & Western
TMSS	Towanda Monroeton Shippers Lifeline, Incorporated
TULX	Trains Unlimited
TCSX	Trancisco Rail Services Company
TTIS	Transkentucky Transportation Railroad, Incorporated
TCCX	Tri-County Commuter Rail Authority
TRC	Trona Railway Company
TCG	Tucson, Cornelia & Gila Bend Railroad Company
TVRR	Tulare Valley Railroad Company
TSU	Tulsa-sapulpa Union Railway Company LLC
TCKR	Turtle Creek Industrial Railroad, Incorporated
TSBY	Tuscola & Saginaw Bay Railroad Company, Incorporated
TWIN	Twin State Railroad Corporation
TSRD	Twin State Railroad Company
TCWR	Twin City & Western Railroad

TYBR Tyburn Railroad Company

UCIR Union County Industrial Railroad Company
UT Union Term. Railway Co. "St. Joseph, Mo."
URR Union Railroad Company (Pittsburgh)
UP Union Pacific Railroad Company
USA United States Army
UMP Upper Merion & Plymouth Railroad Company
UCRY Utah Central Railway Company
UTAH Utah Railway Company

VS V&S Railway, Incorporated
VRCX Vaaughan Railroad Company
VR Valdosta Railway, L.P.
VALE Valley Railroad Company
VRRC Vandalia Railroad Company
VCY Ventura County Railway Company
VTR Vermont Railway, Incorporated
VSRR Virginia Southern Railroad
VREX Virginia Railway Express
VTRR Virginia & Truckee Railroad Company, Incorporated

WOHO Wabash & Ohio Railroad (Out Of Operation)
WAER Wabash & Erie Railroad (Out Of Operation)
WCLR Waccamaw Coast Line Railroad Company
WS Walkersville Southern Railroad, Incorporated
WHOE Walking Horse & Eastern Railroad Company
WSR Warren & Saline River Railroad Company
WTRM Warren & Trumbull Railroad Company
WCRC Washington Central Railroad Company
WACR Washington County Railroad Corporation
WCTR WCTU Railway Company
WCOR Wellsboro & Corning Railroad Company
WTSE West Shore Railroad
WTNN West Tennessee Railroad Corporation
WTLR West Texas And Lubbock Railroad Company Incorporated
WVN West Virginia Northern Railroad, Limited
WJSL West Jersey Short Line ** Now Code PWJ **
WJ West Jersey Railroad Company
WRRC Western Railroad Company
WKRL Western Kentucky Railway, LLC
WMSR Western Maryland Scenic Railroad
WPSX Western Plant Services, Incorporated (Ca)
WRM Western Railway Museum
WCTX Weyerhaeuder Woods Railroads
WTCX Weyerheuser Company

WE Wheeling & Lake Erie Railway Company
WCTU White City Terminal & Utility Company Use Code WCTR
WVRR Whitewater Valley Railroad
WTA Wichita Terminal Asosciation
WTJR Wichita, Tillman & Jackson Railway Company, Incorporated
WBC Wilkes-Barre Connecting Railroad Company
WPRR Willamette & Pacific Railroad, Inc.
WVR Willamette Valley Railway Company
WVRD Willamette Valley Railroad Use Code WVR
WGRR Willamette Valley Railroad Use Code WVR
WGR Willamina & Grand Ronde Railway Company
WWRC Wilmington & Western Railroad Company (Former Code WAW)
WTRY Wilmington Terminal Railroad Incorporated
WSRY Winamac Southern Railway Company
WW Winchester & Western Railroad Company
WSS Winston-Salem Southbound Railway
WGCR Wiregrass Central Railroad Company
WICT Wisconsin Calumet Railroad
WSOR Wisconsin & Southern Railroad Company
WC Wisconsin Central Ltd. (also Railway)
WYCO Wyoming & Colorado Railroad

YVRR Yadkin Valley Railroad Company
YVRX Yakima Valley Rail & Steam Museum
YSLR Yolo Shortline Railroad Company
YKR Yorkrail, Incorporated
YARR Youngstown & Austintown Railroad
YW Yreka Western Railroad Company