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Part 8 - HIGHWAY-RAIL GRADE CROSSINGS

800 GENERAL

OMUTCD Part 8 addresses traffic controls at highway-rail grade crossings. Part 8 of the **Traffic Engineering Manual (TEM)** provides additional guidance for use of traffic control devices at these crossings. The **FHWA Railroad-Highway Grade Crossing Handbook** ***(Section 895-4)*** also provides useful guidance when evaluating and prioritizing improvements to highway-rail grade crossings.

801 SIGNING

801-1 General

Signs used at highway-rail grade crossings are addressed in **OMUTCD Chapter 8B**.

801-2 STOP Signs at Highway-Rail Grade Crossings

801-2.1 General

ORC Section 4511.43 defines the obedience required to a STOP sign and **ORC Section 4511.61** allows erection of STOP signs at railroad crossings where approved by **ODOT**.

Prior studies have indicated that: STOP signs at highway-rail grade crossings are generally not effective; driver compliance to these devices is poor; the use of these devices creates contempt and disrespect for all STOP signs; and that STOP signs at highway-rail grade crossings are often responsible for an increase in rear-end collisions at these crossings. Therefore, it is **ODOT's** policy to disapprove the installation of STOP signs at highway-rail grade crossings, except for very unusual or exceptionally hazardous locations.

The purpose of this section is to identify the principles and guidelines which shall be used in determining if a highway-rail grade crossing approach shall have STOP sign control.

801-2.2 Grade Crossings Identified for Lights and Gates

When a highway-rail grade crossing has been identified by the **Ohio Rail Development Commission (ORDC)** or the **Public Utilities Commission of Ohio (PUCO)** as warranting flashers and gates, temporary STOP signs shall be installed at the crossing unless it is determined that the STOP signs presents more of a hazard to the traveling public than the crossing.

The location shall be evaluated considering the following:

1. The condition of any traffic control devices in immediate proximity of the crossing.
2. Cross-corner sight distances for both approaches to the crossing.
3. Geometrics and approximate relative elevations, if relevant.
4. Location of all traffic control devices (standard and non-standard).
5. Location and type of visual obstructions.

6. Average daily traffic (provided on diagnostic survey form).

7. Other corrective action, such as rumble strips, site view improvements or illumination, that could be used instead of STOP signs.

On **ODOT**-maintained highways, **ODOT** shall evaluate whether placing a STOP sign at a particular crossing presents some overriding highway safety issue. If not, the STOP signs shall be installed.

For requests involving highway-rail grade crossings on other highways, the process is under review. The jurisdiction should contact **OTE**, **ORDC** or the **PUCO**.

If the location is currently signed with a Buckeye Crossbuck, **ODOT** or the local public agency, as appropriate, shall instruct the railroad company to remove the YIELD shields prior to installation of the STOP signs. Also, where feasible, when a STOP sign is installed, a Stop Ahead sign (W3-1 or W3-1a) shall be placed in conjunction with the Railroad Advanced Warning Sign (W10-1).

When the flasher and gates are installed, the STOP and Stop Ahead signs shall be removed.

801-2.3 Grade Crossings Not Approved for Lights and Gates

As noted in ***Section 801-2***, **ORC Section 4511.61** allows the installation of STOP signs at highway-rail grade crossings only with the approval of the **Director of Transportation**.

It was agreed that for the life of the Buckeye Crossbuck experiment ***(Section 880-2)*** no changes would be made in the traffic control at highway-rail grade crossings in the **State**, except for the process described in ***Section 801-2.2*** for temporary STOP signs at crossings approved for installation of lights and gates. This will continue to be the case until that project is finalized. At that time new guidelines will be established.

802 MARKINGS

802-1 General

The general standards for markings at highway-rail grade crossings are addressed in **OMUTCD Chapter 8B and Figures 8B-2 through 8B-4**.

802-2 Railroad Pavement Marking Symbol

As noted in **OMUTCD Figure 8B-2**, the standard railroad pavement marking symbol consists of the "RXR and two 24-inch wide transverse lines." However, for contract plan payment purposes, the "railroad symbol marking" is described in **CMS Item 641.08** as including the crossbuck, two Rs, two transverse lines and a stop line. The symbol is also illustrated in **SCD TC-71.10**.

The alternate symbol layout for the railroad symbol markings shown in **OMUTCD Figure 8B-3** should not be used on **ODOT**-maintained routes unless a narrow roadway makes the standard symbol impractical.

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803 ILLUMINATION

When an engineering study determines that better nighttime visibility of the train and the highway-rail grade crossing is needed, illumination at and adjacent to the highway-rail crossing may be installed. Standards and guidelines for highway lighting highway-rail grade crossings are discussed in **OMUTCD Section 8C.01** and in ***Part 11*** of this Manual. Illumination at these grade crossings is also addressed in the **American National Standards Institute's (ANSI) Practice for Roadway Lighting (RP8)**, available from the **Illuminating Engineering Society** ***(see Section 1103)***.

804 FLASHING LIGHT SIGNALS, GATES & TRAFFIC CONTROL SIGNALS

Signals and gates used at highway-rail grade crossings are addressed in **OMUTCD Chapter 8D**.

805 RUMBLE STRIPS

Rumble strips are considered a geometric feature of the roadway. They may be used as an audible warning device at highway-rail grade crossings after all other appropriate standard traffic control devices have been considered. Rumble strips at highway-rail grade crossings shall be designed in accordance with the guidelines established by the **Office of Traffic Engineering (OTE)** and the **Office of Roadway Design** (available upon request from **OTE**).

The **Appropriations Bill for 2001-2003** provided $1.2 million in the **ODOT** budget to award grant or pay reimbursements to political subdivisions or state agencies for the costs of installing rumble strips at active railroad crossings without gates or lights. During this biennium, **ODOT** will grant $1,500 per crossing to each jurisdiction requesting the installation of rumble strips. If rumble strips are determined to be inappropriate at a location, the jurisdiction may also use the $1,500 toward alternative safety measures, such as lighting the crossing, raised pavement markers and flashing lights on the Railroad Warning Signs.

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830 PLANNING / PROGRAMMING

830-1 General

This part of the chapter is intended to provide planners and designers assistance in the planning phase of a project or work assignment. There are a lot of tools available for temporary traffic control and this information is intended to help in making the choice of which tool to use and how. As needed, information will also be provided about other considerations involved in the planning phase.

830-2 Grade Separation Program

The Railroad Grade Separation Program was developed to mitigate the impacts of increased rail traffic in **Ohio**. It is governed by a subcommittee of the **Transportation Review Advisory Council (TRAC)**. The subcommittee appointed a technical advisory group (TAG) comprised of representatives from **ODOT**, **ORDC**, **PUCO, the Ohio Emergency Management Agency (OEMA)**, **FHWA**, and the **CSX and Norfolk Southern Railroads**. This committee prepares the initial feasibility study. This in turn is ranked by the subcommittee of the **TRAC** for final acceptance. Details of the process are found in the **Railroad Grade Separation Program Policies and Procedures Manual** ***(Section 895-3)***.

840 DESIGN INFORMATION

Design information regarding highway-rail grade crossings is found in the **L&D Manual Volume One, Section 700**, and in **AASHTO's A Policy on Geometric Design of Highways and Streets, Chapter IX**. For projects involving railroads, it is important to get early coordination with the railroad companies and **ORDC**.

850 CONSTRUCTION

This area has been reserved for information regarding construction related information regarding highway-rail grade crossing situations.

860 MAINTENANCE / OPERATIONS

This area has been reserved for information regarding maintenance and/or other operational information regarding highway-rail grade crossing situations.

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880 RESEARCH

880-1 General

This area is reserved for information about pertinent research regarding traffic control at highway-rail grade crossing.

880-2 Buckeye Crossbuck

The final report on this experiment, evaluating the Buckeye Crossbuck at public, passive highway-rail grade crossings, was issued in December 2000. Currently, a recommendation to amend the national standard for Railroad Crossbucks in the **MUTCD**, and to include the Buckeye Crossbuck as an alternate design, is being reviewed by the **FHWA**. The experiment has been extended to allow the signs to remain in place and the agency time to make a decision.

For copies of the report contact the **Office of Research Development**.

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895 REFERENCE RESOURCES

895-1 General

Various reference resources that may be useful have been noted in ***Sections 193, 194 and 195***. Additional specific resource references are noted herein.

895-2 Related ORC References

The following are some specific **ORC** references that may be helpful regarding Railroad Crossings:

4511.61 Stop Signs at Grade Crossings
4511.62 Driving Across Grade Crossings
4511.63 Vehicles Required to Stop at Grade Crossings
4513.40 Warning Sign Before Safety Device at Street Crossing
4955.33 Warning Signs at Railroad Crossings(Crossbuck Signing)
4955.36 Removal of Obstructive Vegetation at Crossing
5515.06 Procedure to Remove Buildings or Other Obstructions near Railroad Crossing

895-3 Railroad Grade Separation Program Policies and Procedures Manual

The **Railroad Grade Separation Program Policies and Procedures Manual** provides information on the program history, an overview of the annual process to select projects, the initial feasability study process, project development activities, and financial and project management

895-4 Railroad-Highway Grade Crossing Handbook

As noted in ***Section 193-11***, the **Railroad-Highway Grade Crossing Handbook**, published by **FHWA**, presents guidelines for prioritizing improvements to railroad-highway grade crossings and information on the various types of improvements that can be made to the crossing. This handbook provides formulas which can be used to determine the risk at the crossing, to identify locations in need of improvement and to prioritize the hazardous locations which are scattered throughout the **State**. Also, various types of at-grade crossing improvements are described including:

1. Closing the crossing,

2. Grade separation,

3. Active warning devices,

4. Passive warning devices,

5. Sight distance improvements,

6. Operational improvements, and

7. Crossing surface improvements.

In addition, the handbook provides guidelines to determine which crossing improvement is the most cost effective for the site.

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