

Attachment No. 26

RRLRT No. 05

APPROVED BY NCUTCD COUNCIL ON JANUARY 19, 2007

**TECHNICAL COMMITTEE:** Railroad and Light Rail Transit Technical Committee

**DATE OF ACTION:** January 19, 2007

**TOPIC:** 8A.01 Introduction

**ORIGIN:** Railroad and Light Rail Transit Technical Committee

**DISCUSSION:** In response to modifications approved by the national committee on January 18, 2007, for 5F.01, the first support paragraph of 8A.01 is proposed to be modified to provide uniformity in the manual.

**STATUS:** APPROVED BY NCUTCD COUNCIL ON JANUARY 19, 2007

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### Section 8A.01 Introduction

Support:

Traffic control for highway-rail grade crossings includes all signs, signals, markings, other warning devices, and their supports along highways approaching and at highway-rail grade crossings. The function of this traffic control is to promote safety and effective operation of both rail and highway traffic at highway-rail grade crossings.

Deleted: permit reasonably safe

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For purposes of installation, operation, and maintenance of traffic control devices at highway-rail grade crossings, it is recognized that the crossing of the highway and rail tracks is situated on a right-of-way available for the joint use of both highway traffic and railroad traffic.

The highway agency or authority with jurisdiction and the regulatory agency with statutory authority, if applicable, jointly determine the need and selection of devices at a highway-rail grade crossing.

In Part 8, the combination of devices selected or installed at a specific highway-rail grade crossing is referred to as a “traffic control system.”

**Standard:**

**The traffic control devices, systems, and practices described herein shall be used at all highway-rail grade crossings open to public travel, consistent with Federal, State, and local laws and regulations.**

**To promote an understanding of common terminology between highway and railroad signaling issues, the following definitions shall be used:**

- 1. Advance Preemption—**the notification of an approaching train that is forwarded to the highway traffic signal controller unit or assembly by the railroad equipment in advance of the activation of the railroad warning devices.
- 2. Advance Preemption Time—**the period of time that is the difference between the required maximum highway traffic signal preemption time and the activation of the railroad warning devices.
- 3. Cantilevered Signal Structure—**a structure that is rigidly attached to a vertical pole and is used to provide overhead support of signal units.
- 4. Clear Storage Distance—**the distance available for vehicle storage measured between 1.8 m (6 ft) from the rail nearest the intersection to the intersection stop line or the normal stopping point on the highway. At skewed highway-rail grade crossings and intersections, the 1.8 m (6 ft) distance shall be measured perpendicular to the nearest rail either along the centerline or edge line of the highway, as appropriate, to obtain the shorter distance. Where exit gates are used, the distance available for vehicle storage is measured from the point where the rear of the vehicle would be clear of the exit gate arm. In cases where the exit gate arm is parallel to the track(s) and is not perpendicular to the highway, the distance is measured either along the centerline or edge line of the highway, as appropriate, to obtain the shorter distance.
- 5. Design Vehicle—**the longest vehicle permitted by statute of the road authority (State or other) on that roadway.
- 6. Dynamic Envelope—**the clearance required for the train and its cargo overhang due to any combination of

- loading, lateral motion, or suspension failure (see Figure 8A-1).
7. **Dynamic Exit Gate Operating Mode**—a mode of operation where the exit gate operation is based on the presence of vehicles within the minimum track clearance distance.
  8. **Exit Gate Clearance Time**—for Four-Quadrant Gate systems, the exit gate clearance time is the amount of time provided to delay the descent of the exit gate arm(s) after entrance gate arm(s) begin to descend.
  9. **Exit Gate Operating Mode**—for Four-Quadrant Gate systems, the mode of control used to govern the operation of the exit gate arms.
  10. **Flashing-Light Signals**—a warning device consisting of two red signal indications arranged horizontally that are activated to flash alternately when a train is approaching or present at a highway-rail grade crossing.
  11. **Interconnection**—the electrical connection between the railroad active warning system and the highway traffic signal controller assembly for the purpose of preemption.
  12. **Maximum Highway Traffic Signal Preemption Time**—the maximum amount of time needed following initiation of the preemption sequence for the highway traffic signals to complete the timing of the right-of-way transfer time, queue clearance time, and separation time.
  13. **Minimum Track Clearance Distance**—for standard two-quadrant railroad warning devices, the minimum track clearance distance is the length along a highway at one or more railroad tracks, measured either from the highway stop line, warning device, or 3.7 m (12 ft) perpendicular to the track centerline, to 1.8 m (6 ft) beyond the track(s) measured perpendicular to the far rail, along the centerline or edge line of the highway, as appropriate, to obtain the longer distance. For Four-Quadrant Gate systems, the minimum track clearance distance is the length along a highway at one or more railroad tracks, measured either from the highway

stop line or entrance warning device, to the point where the rear of the vehicle would be clear of the exit gate arm. In cases where the exit gate arm is parallel to the track(s) and is not perpendicular to the highway, the distance is measured either along the centerline or edge of the highway, as appropriate, to obtain the longer distance.

14. **Minimum Warning Time—Through Train Movements**—the least amount of time active warning devices shall operate prior to the arrival of a train at a highway-rail grade crossing.
15. **Preemption**—the transfer of normal operation of highway traffic signals to a special control mode.
16. **Pre-signal**—supplemental highway traffic signal faces operated as part of the highway intersection traffic signals, located in a position that controls traffic approaching the highway-rail grade crossing in advance of the intersection.
17. **Queue Clearance Time**—the time required for the design vehicle of maximum length stopped just inside the minimum track clearance distance to start up and move through and clear the entire minimum track clearance distance. If presignals are present, this time shall be long enough to allow the vehicle to move through the intersection, or to clear the tracks if there is sufficient clear storage distance. If a Four-Quadrant Gate system is present, this time shall be long enough to permit the exit gate arm to lower after the design vehicle is clear of the minimum track clearance distance.
18. **Right-of-Way Transfer Time**—the maximum amount of time needed for the worst case condition, prior to display of the track clearance green interval. This includes any railroad or highway traffic signal control equipment time to react to a preemption call, and any traffic control signal green, pedestrian walk and clearance, yellow change, and red clearance intervals for conflicting traffic.
19. **Separation Time**—the component of maximum highway traffic signal preemption time during which

- the minimum track clearance distance is clear of vehicular traffic prior to the arrival of the train.**
- 20. Simultaneous Preemption—notification of an approaching train is forwarded to the highway traffic signal controller unit or assembly and railroad active warning devices at the same time.**
  - 21. Timed Exit Gate Operating Mode—a mode of operation where the exit gate descent is based on a predetermined time interval.**
  - 22. Vehicle Intrusion Detection Devices—a detector or detectors used as a part of a system incorporating processing logic to detect the presence of vehicles within the minimum track clearance distance and to control the operation of the exit gates.**
  - 23. Wayside Equipment—the signals, switches, and/or control devices for railroad operations housed within one or more enclosures located along the railroad right-of-way and/or on railroad property.**