

ATTACHMENT NO. 14

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RRLRT No.5

Comment [b1]:



**National Committee on
Uniform Traffic Control Devices**

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TECHNICAL COMMITTEE: Railroad / Light Rail Transit Technical Committee

TOPIC: Proposed Changes and Additions to Section 8C.06

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STATUS/DATE OF ACTION:

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TC Drafts:	06/25/2014
RRLRT Approval:	06/27/2014
Transmitted to Sponsors:	Not sent to Sponsors
RRLRT editorial revisions & Approval:	06/27/2014
Council Approval:	<u>06/28/2014</u>

ORIGIN OF REQUEST: Railroad and Light Rail Transit Technical Committee

DISCUSSION:

The proposed changes provide for consistency between changes approved by Council on 06/26/2014 and accepted industry practice.

Section 8C.06 Four-Quadrant Gate Systems

Option:

Four-Quadrant Gate systems may be installed to improve safety at grade crossings based on an engineering study when less restrictive measures, such as automatic gates and median islands, are not effective.

Standard:

A Four-Quadrant Gate system shall consist of entrance and exit gates that control and block road users on all lanes entering and exiting the grade crossing.

The Four-Quadrant Gate system shall use a series of ~~automatic gates with drive mechanisms~~ and fully retroreflectorized red- and white-striped gate arms with lights, and when in the down position the gate arms extend individually across the entrance and exit lanes of the roadway as shown in **Figure 8C-2**. Standards contained in Sections 8C.01 through 8C.03 for flashing-light signals shall be followed for signal specifications, location, and clearance distances.

Support:

~~Provisions Standards contained in Section 8C.04 for automatic gates shall be applicable for exit gates be followed for gate specifications and operation.~~

Standard:

In the normal sequence of operation, unless constant warning time detection or other advanced system requires otherwise, the flashing-light signals and the lights on the gate arms (in their normal upright positions) shall be activated immediately upon the detection of approaching rail traffic. The gate arms for the entrance lanes of traffic shall start their downward motion not less than 3 seconds after the flashing-light signals start to operate and shall reach their horizontal position at least 5 seconds before the arrival of the rail traffic. Exit gate arm activation and downward motion shall be based on detection or timing requirements established by a ~~Diagnostic Team for an engineering study of the individual site.~~ The gate arms shall remain in the down position as long as the rail traffic occupies the grade crossing.

When the rail traffic clears the grade crossing, and if no other rail traffic is detected, the gate arms shall ascend to their upright positions, following which the flashing-light signals and the lights on the gate arms shall cease operation.

~~Gate arm design, colors, and lighting requirements shall be in accordance with the Standards contained in Section 8C.04.~~

Except as provided in Paragraph 19, the exit gate arm mechanism shall be designed to fail-safe in the up position.

At locations where gate arms are offset a sufficient distance for highway vehicles to drive between the entrance and exit gate arms, median islands (see Figure 8C-2) shall be installed in accordance with the needs established by an engineering study.

Guidance:

The gate arm should ascend to its upright position in 12 seconds or less.

~~*Constant warning time train detection circuits should be used with Four-Quadrant Gate systems should only be used in locations with constant warning time detection where practical.*~~

~~*The operating mode of the exit gates should be determined based upon a Diagnostic Team inspection an engineering study, with input from the affected railroad company or LRT agency.*~~

~~*If the Timed Exit Gate Operating Mode is used, the Diagnostic Team engineering study, with input from the affected railroad company or LRT agency, should also determine the Exit Gate Clearance Time (see definition in Section 1A.13).*~~

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If the Dynamic Exit Gate Operating Mode is used, highway vehicle intrusion detection devices that are part of a system that incorporates processing logic to detect the presence of highway vehicles within the minimum track clearance distance should be installed to control exit gate operation. Exit gates should be independently controlled for each direction of roadway traffic.

Regardless of which exit gate operating mode is used, the Exit Gate Clearance Time should be considered when determining additional time requirements for the Minimum Warning Time.

If a Four-Quadrant Gate system is used at a location that is adjacent to an intersection that could cause highway vehicles to queue within the minimum track clearance distance, the Dynamic Exit Gate Operating Mode should be used unless an engineering study indicates otherwise.

If a Four-Quadrant Gate system is interconnected with a highway traffic signal, backup or standby power should be considered for the highway traffic signal. Also, circuitry should be installed to prevent the highway traffic signal from leaving the track clearance green interval until all of the gates are lowered. See Section 8C.10 for additional information.

~~At locations where sufficient space is available, exit gates should be positioned downstream from the track a distance that provides a safety zone long enough to accommodate at least one design vehicle between the exit gate and the nearest rail.~~

Four-Quadrant Gate systems should include remote health (status) monitoring capable of automatically notifying railroad or LRT signal maintenance personnel when anomalies have occurred within the system.

Option:

Exit gate arms may fail in the down position if the grade crossing is equipped with remote health (status) monitoring.

Four-Quadrant Gate installations may include median islands between opposing lanes on an approach to a grade crossing.

Guidance:

Where sufficient space is available, median islands should be at least 60 feet in length.