

**Approved by NCUTCD Council January 20, 2006**

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

**DATE OF ACTION:** January 20, 2006

**TOPIC:** Standby power for preempted traffic controls signals

**ORIGIN OF REQUEST:** NCUTCD Railroad and Light Rail Transit Technical Committee

**AFFECTED PORTIONS OF MUTCD:** Section 8D.07

**DISCUSSION:** Railroad flashing light signals utilize standby power supplies to provide warning during power outages. Traffic signals that utilize standby power during power outages help prevent vehicles from queuing on approaches crossing tracks. Sponsor comments were reviewed by the Technical Committee and significant discussion before the National Committee transpired prior to approval by the National Committee.

**ACTION:** Approved by National Committee

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### **Section 8D.07 Traffic Control Signals at or Near Highway-Rail Grade Crossings**

Option:

Traffic control signals may be used instead of flashing-light signals to control road users at industrial highway rail grade crossings and other places where train movements are very slow, such as in switching operations.

**Standard:**

**The appropriate provisions of Part 4 relating to traffic control signal design, installation, and operation shall be applicable where traffic control signals are used to control road users instead of flashing-light signals at highway-rail grade crossings.**

**Traffic control signals shall not be used instead of flashing-light signals to control road users at a mainline highway-rail grade crossing.**

Guidance:

The highway agency with jurisdiction, the regulatory agency with statutory authority, if applicable, and the railroad company should jointly determine the preemption operation at highway-rail grade crossings adjacent to signalized highway intersections.

If a highway-rail grade crossing is equipped with a flashing-light signal system and is located within 60 m (200 ft) of an intersection or midblock location controlled by a traffic control signal, the traffic control signal should be provided with preemption in accordance with Section 4D.13. Coordination with the flashing-light signal system, queue detection, or other alternatives should be considered for traffic control signals located farther than 60 m (200 ft) from the highway-rail grade crossing.

Factors to be considered should include traffic volumes, vehicle mix, vehicle and train approach speeds, frequency of trains, and queue lengths.

**Standard:**

**If preemption is provided, the normal sequence of traffic control signal indications shall be preempted upon the approach of trains to avoid entrapment of vehicles on the highway-rail grade crossing by conflicting aspects of the traffic control signals and the highway-rail grade crossing flashing-light signals.**

**This preemption feature shall have an electrical circuit of the closed-circuit principle, or a supervised communication circuit between the control circuits of the highway-rail grade crossing warning system and the traffic control signal controller. The traffic control signal controller preemptor shall be activated via the supervised communication circuit or the electrical circuit that is normally energized by the control circuits of the highway-rail grade crossing warning system. The**

approach of a train to a highway-rail grade crossing shall de-energize the electrical circuit or activate the supervised communication circuit, which in turn shall activate the traffic control signal controller preemptor. This shall establish and maintain the preemption condition during the time the highway-rail grade crossing warning system is activated, except that when crossing gates exist, the preemption condition shall be maintained until the crossing gates are energized to start their upward movement. When multiple or successive preemptions occur, train activation shall receive first priority.

Guidance:

If a highway-rail grade crossing is located within 15 m (50 ft) (or within 23 m (75 ft) for a highway that is regularly used by multi-unit vehicles) of an intersection controlled by a traffic control signal, the use of pre-signals to control traffic approaching the grade crossing should be considered.

**Standard:**

**If used, the pre-signals shall display a red signal indication during the track clearance portion of a signal preemption sequence to prohibit additional vehicles from crossing the railroad track.**

Guidance:

Consideration should be given to using visibility-limited signal faces (see Section 4A.02) at the intersection for the downstream signal faces that control the approach that is equipped with pre-signals.

Option:

The pre-signal phase sequencing may be timed with an offset from the signalized intersection such that the railroad track area and the area between the railroad track and the downstream signalized intersection is generally kept clear of stopped vehicles.

**Standard:**

**If a pre-signal is installed at an interconnected highway-rail grade crossing near a signalized intersection, a STOP HERE ON RED (R10-6) sign shall be installed near the pre-signal or at the stop line if used. If there is a nearby signalized intersection with insufficient clear storage distance for a design vehicle, or the highway-rail grade crossing does not have gates, a NO TURN ON RED (R10-11) sign shall be installed for the approach that crosses the railroad track.**

Option:

At locations where a highway-rail grade crossing is located more than 15 m (50 ft) (or more than 23 m (75 ft) for a highway regularly used by multi-unit vehicles) from an intersection controlled by a traffic control signal, a pre-signal may be used if an engineering study determines a need.

If highway traffic signals must be located within close proximity to the flashing-light signal system, the highway traffic signals may be mounted on the same overhead structure as the flashing-light signals.

Support:

Section 4D.13 describes additional considerations regarding preemption of traffic control signals at or near highway-rail grade crossings.

Guidance:

Except for traffic control signals interconnected with light rail transit systems, traffic control signals with railroad preemption or coordinated with flashing light signal systems should be provided with a back-up power supply.