

## CHAPTER 4G. FLASHING OPERATION OF TRAFFIC CONTROL SIGNALS

### Section 4G.01 Flashing Operation of Traffic Control Signals – General

#### Standard:

- 01 The light source of a flashing signal indication shall be flashed continuously at a rate of not less than 50 or more than 60 times per minute.
- 02 The displayed period of each flash shall be a minimum of  $\frac{1}{2}$  and a maximum of  $\frac{2}{3}$  of the total flash cycle.
- 03 Flashing signal indications shall comply with the requirements of other Sections of this Manual regarding visibility limiting or positioning of conflicting signal indications, except that flashing yellow signal indications for through traffic shall not be required to be visibility limited or positioned to minimize visual conflict for road users in separately-controlled turn lanes.
- 04 Each traffic control signal shall be provided with an independent flasher mechanism that operates in compliance with this Chapter.
- 05 A manual switch shall be provided to initiate the flashing mode. A conflict monitor (malfunction management unit) circuit and, if appropriate, an automatic means shall also be provided to initiate the flashing mode.
- 06 The flashing operation shall not be terminated by removing or turning off the controller unit or the conflict monitor (malfunction management unit) or both.

#### Option:

- 07 Based on engineering study or engineering judgment, traffic control signals may be operated in the flashing mode on a scheduled basis during one or more periods of the day rather than operated continuously in the steady (stop-and-go) mode.

#### Support:

- 08 Sections 4I.06 and 4K.04 contain information regarding the operation of pedestrian signal heads and accessible pedestrian signal detector push button locator tones, respectively, during flashing operation.

### Section 4G.02 Flashing Operation – Transition Into Flashing Mode

#### Option:

- 01 The transition from steady (stop-and-go) mode to flashing mode, if initiated by a conflict monitor (malfunction management unit) or by a manual switch, may be made at any time.

#### Standard:

- 02 Programmed changes from steady (stop-and-go) mode to flashing mode shall be made under either of the following circumstances:
- A. At the end of the common major-street red interval (such as just prior to the start of the green in both directions on the major street), or
  - B. Directly from a CIRCULAR GREEN signal indication to a flashing CIRCULAR YELLOW signal indication, or from a GREEN ARROW signal indication to a flashing YELLOW ARROW signal indication, or from a flashing YELLOW ARROW signal indication (see Sections 4F.02, 4F.04, 4F.08, 4F.09, 4F.11, and 4F.15) to a flashing YELLOW ARROW signal indication (in a different signal section if the signal face displays the steady YELLOW ARROW signal indication in a different section than the flashing YELLOW ARROW signal indication).
- 03 During programmed changes into flashing mode, no green signal indication or flashing yellow signal indication shall be terminated and immediately followed by a steady red or flashing red signal indication without first displaying the steady yellow signal indication.

### Section 4G.03 Flashing Operation – Signal Indications During Flashing Mode

#### Guidance:

- 01 When a traffic control signal is operated in the flashing mode, a flashing yellow signal indication should be used for the major street and a flashing red signal indication should be used for the other approaches unless flashing red signal indications are used on all approaches.

#### Standard:

- 02 When a traffic control signal is operated in the flashing mode, all of the green signal indications at the signalized location shall be dark (non-illuminated) and shall not be displayed in either a steady or flashing

- manner, except for single-section GREEN ARROW signal indications as provided in Paragraph 6 of this Section.
- 03 **Flashing yellow signal indications shall be used on more than one approach to a signalized location only if those approaches do not conflict with each other.**
- 04 **Except as provided in Paragraph 5 of this Section, when a traffic control signal is operated in the flashing mode, one and only one signal indication in every signal face at the signalized location shall be flashed.**
- Option:
- 05 **If a signal face has two identical CIRCULAR RED or RED ARROW signal indications (see Section 4E.04), both of those identical signal indications may be flashed simultaneously.**
- Standard:**
- 06 **No steady indications, other than a single-section signal face consisting of a continuously- displayed GREEN ARROW signal indication that is used alone to indicate a continuous movement in the steady (stop-and-go) mode, shall be displayed at the signalized location during the flashing mode. A single-section GREEN ARROW signal indication shall remain continuously displayed when the traffic control signal is operated in the flashing mode.**
- 07 **If a signal face includes both circular and arrow signal indications of the color that is to be flashed, only the circular signal indication shall be flashed.**
- 08 **All signal faces that are flashed on an approach shall flash the same color, either yellow or red, except that separate turn signal faces (see Sections 4F.04, 4F.06, 4F.08, 4F.11, 4F.13, and 4F.15) shall be permitted to flash a RED ARROW signal indication when the adjacent through movement signal indications are flashed yellow. Shared signal faces (see Sections 4F.03, 4F.05, 4F.07, 4F.10, 4F.12, and 4F.14) for turn movements shall not be permitted to flash a CIRCULAR RED signal indication when the adjacent through movement signal indications are flashed yellow.**
- 09 **The appropriate RED ARROW or YELLOW ARROW signal indication shall be flashed when a signal face consists entirely of arrow indications. A signal face that consists entirely of arrow indications and that provides a protected only turn movement during the steady (stop-and-go) mode or that provides a flashing YELLOW ARROW or flashing RED ARROW signal indication for a permissive turn movement during the steady (stop-and-go) mode shall be permitted to flash the YELLOW ARROW signal indication during the flashing mode if the adjacent through movement signal indications are flashed yellow and if it is intended that a permissive turn movement not requiring a full stop by each turning vehicle be provided during the flashing mode.**

#### **Section 4G.04 Flashing Operation – Transition Out of Flashing Mode**

**Standard:**

- 01 **All changes from flashing mode to steady (stop-and-go) mode shall be made under one of the following procedures:**
- A. Yellow-red flashing mode: Changes from flashing mode to steady (stop-and-go) mode shall be made at the beginning of the major-street green interval (when a green signal indication is displayed to through traffic in both directions on the major street), or if there is no common major-street green interval, at the beginning of the green interval for the major traffic movement on the major street.**
  - B. Red-red flashing mode: Changes from flashing mode to steady (stop-and-go) mode shall be made by changing the flashing red indications to steady red indications followed by appropriate green indications to begin the steady mode cycle. These green indications shall be the beginning of the major-street green interval (when a green signal indication is displayed to through traffic in both directions on the major street) or if there is no common major-street green interval, at the beginning of the green interval for the major traffic movement on the major street.**

**Guidance:**

- 02 *The steady red clearance interval provided during the change from red-red flashing mode to steady (stop-and-go) mode should have a minimum duration of 6 seconds.*
- 03 *When changing from the yellow-red flashing mode to steady (stop-and-go) mode at a location where there is a common major-street green interval, the flashing red signal indications for the minor street should immediately change to steady red signal indications, and the flashing yellow signal indications for the through movements on the major street should change to green signal indications in both directions (after the minor-street signal indications have been steady red for a short time, if desired), or the flashing yellow signal indications for the through movements on the major*

*street should change to steady yellow signal indications followed by a steady red clearance interval before changing to green signal indications in both directions.*

- 04 *When changing from the yellow-red flashing mode to steady (stop-and-go) mode at a location where there is no common major-street green interval, the flashing red signal indications for the minor street should immediately change to steady red signal indications, and the flashing yellow signal indications for the through movements on the major street should change to steady yellow signal indications followed by a steady red clearance interval before changing to green signal indications for the major traffic movement on the major street.*

**Standard:**

- 05 **During programmed changes out of flashing mode, no flashing yellow signal indication shall be terminated and immediately followed by a steady red or flashing red signal indication without first displaying a steady yellow signal indication.**

**Option:**

- 06 Because special midblock signals that rest in flashing circular yellow in the position normally occupied by the green signal indication do not have a green signal indication in the signal face, these signals may go directly from flashing circular yellow (in the position normally occupied by the green signal indication) to steady yellow without going first to a green signal indication.