Pedestrian Signal Design – Technical Info – 1/30/20

Pedestrian Timing (WALK, PED CLR)

BEGINNING OF PEDESTRIAN PHASE (WALK):

- The beginning of the pedestrian phase is signified by the display of the steady walking person symbol.
  - symbol is typically on for seven seconds
  - allows pedestrians to begin crossing the roadway while being mindful of turning vehicles.

PEDESTRIAN CHANGE INTERVAL (PED CLR):

- Following the WALK indication is a calculated pedestrian clearance time which consists of the pedestrian change interval (PED CLR) and a buffer interval. The PED CLR is symbolized by the flashing upraised hand symbol. The buffer interval is symbolized by a steady upraised hand symbol.
- The calculated pedestrian clearance time provides sufficient time for a pedestrian to walk from the near curb line to the far side of the traveled way or to a median of sufficient width for pedestrian refuge at a walking speed of 3.5 feet per second.
  - PED CLR (exclusive pedestrian phase) – The calculated pedestrian clearance time minus a 4 second buffer interval. The 4 second buffer interval is typically placed in the yellow change interval for the exclusive pedestrian phase.
  - PED CLR (concurrent pedestrian phase) – The calculated pedestrian clearance time minus the yellow and red interval of the associated vehicle phase. The PED CLR should be a minimum of 7 seconds.

Accessible Pedestrian Signals (APS)

The APS system includes a:

- pushbutton locator tone;
- vibrotactile arrow pushbutton; and
- percussive tone and/or speech walk message(s).

A summary of the design requirements and features associated with the APS system is provided below.

- APS shall be available every day for 24 hours per day.
- A pushbutton locator tone shall be:
  - a repeating tone with a 0.15 second duration that repeats at 1 second intervals,
  - audible within a 6 to 12 foot radius from the pushbutton or to the building line (whichever is less) at all times, except during the walk interval and the emergency flash operation, when it is silenced.
- A vibrotactile pushbutton arrow shall point parallel to the associated crosswalk and vibrate only when the walking person symbol (Walk) indication is displayed.
- "Wait" speech message shall be initiated by the actuation of the pushbutton.

- For concurrent phasing:
  - A percussive tone shall be provided where two accessible pedestrian signals on the same corner are separated by a distance of at least 10 feet. This is the preferred design and should be utilized wherever possible.
  - Speech walk messages shall be used only where it is technically infeasible to install two accessible pedestrian signals at one corner separated by a distance of at least 10 feet.
- For exclusive phasing, a percussive tone shall be provided.
  - NOTE: The FHWA made an official interpretation (July 30, 2010) that speech walk messages are not required at intersections with an exclusive pedestrian phase.
- Percussive tone information
  - Percussive tones shall:
    - repeat at 8 to 10 ticks per second during the pedestrian walk interval
    - consist of multiple frequencies with a dominant component at 880 Hz
    - be audible from the beginning of the associated crosswalk
  - The "PERCUSSIVE TONE ONLY DURING WALK INTERVAL" technical note shall be placed on the signal plan and referenced to the applicable pushbutton(s).
- Speech walk message information
  - Speech walk message shall be audible from the beginning of the associated crosswalk.
  - The following technical note (multiple may be necessary) shall be placed on the signal plan and referenced to the applicable pushbutton(s):
    SPEECH MESSAGE OF "MAIN. WALK SIGN IS ON TO CROSS MAIN" TO PLAY DURING WALK INTERVAL.
- All sounds are emitted from the pushbutton assembly.
- The volume of all tones shall:
  - be set to a maximum of 5 dB above the ambient noise volume,
  - have a maximum volume of 100 dB.
  - automatically adjust in real time based on the ambient noise volume.
- The note "ACCESSIBLE PEDESTRIAN SIGNAL" shall be placed on the traffic control signal plan as shown in **Figure 16-2** of the Traffic Control Signal Design Manual (TCSDM).

Countdown Pedestrian Signals

- To be consistent with MUTCD requirements, the following technical note should be placed on the signal plan: "COUNTDOWN ONLY DURING FLASHING PEDESTRIAN CHANGE INTERVAL."
- The note "COUNTDOWN PEDESTRIAN SIGNAL" shall be placed on the traffic control signal plan as shown in **Figure 16-2** of the TCSDM.
- For signals with railroad pre-emption phasing:
    - If a railroad pre-emption call occurs during the countdown sequence, the next one or two subsequent pedestrian actuations may result in an inconsistent countdown display time. However, the pedestrian change interval (PED CLR) entered in the controller will not be violated in these subsequent pedestrian actuations.
- The countdown timer repeats the previous cycle pedestrian clearance time and operates independent of the controller setting. To prevent an incorrect countdown time, shortening the pedestrian change interval is not allowed for non-priority pre-emption.

Concurrent & Leading Pedestrian Interval (LPI)

- Where LPI can be used:
    - the Traffic Signal Plan border will need to be revised accordingly
    - its duration should typically be set as 4 seconds
- New Technical Note
    - Add Technical Note "CONCURRENT PED PHASE ONLY COMES IN WHEN ACTUATED BY PUSHBUTTON" and reference the note at applicable concurrent phase(s) on movement diagram.
- Movement diagram and Phasing diagram should show LPI, where used
- "TURNING VEHICLES YIELD TO PEDS" signs to be provided on vehicular approaches parallel to concurrent pedestrian crossings. Locate signs for best target value to motorists, which is typically considered as:
    - Near right corner for right-turning motorists
    - Far left corner for left-turning motorists