



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 20-20

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TO: All Design, Operations, District Personnel, and Consultants

FROM: /s/ Katherine Smutzer
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SUBJECT: Accessible Pedestrian Signal (APS) Studies, Pedestrian Push Buttons, and Curb Ramps

REVISES: Sections 51-1.06(01), 51-1.06(02), 51-1.06(03), 502-3.03(05), and 502-3.04 (05)

EFFECTIVE: Projects Letting on or after March 10, 2021

Indiana Design Manual (IDM) Sections 51-1.06(01), 51-1.06(02), 51-1.06(03), 502-3.03(05), and 502-3.04(05) have been revised to reflect changes in design procedure for pedestrian push buttons, including updates to the approved material list and Operations Memo 14-01. The operation memo has been attached and revised sections included below for reference.

When pedestrian signals are included in a project an APS Study will no longer be required. APS will always be used, except in rare cases when there is a determination of technical infeasibility by INDOT's ADA Technical Advisory Committee for situations noted in IDM Section 502-3.04(05).

Questions regarding project specific applications for pedestrian signals should be discussed with the appropriate district Traffic Engineer and questions regarding ADA specific items should be sent to ADA@indot.in.gov.

51-1.06(01) Accessible Pedestrian Signal [R209 and R307] [Rev. Nov. 2016, Oct. 2020]

An accessible pedestrian signal (APS) is a device that communicate information about the WALK and DON'T WALK intervals at signalized intersections in visual and non-visual format. This device is essential for a pedestrian who is blind or has low vision to effectively navigate the crossing.

For a new signal installation, signal modernization, or intersection improvement project, the Department will determine whether pedestrian heads are appropriate for the location. If pedestrian heads are appropriate, APS must be used in accordance with Section 502-3.04(05).

51-1.06(02) Placement and Configuration [Rev. Nov. 2016, Oct. 2020]

The placement and configuration of the pedestrian pushbutton assembly is critical to proper function. Engineering judgment is required to determine the optimal installation at each crossing. Variations in curb radius, available right of way, presence of a buffer or curb ramp, and existing infrastructure make each crossing unique.

Details for pedestrian pushbutton assembly placement and configuration are shown in INDOT *Standard Drawing* series 805-PPBA. The details are in accordance with the IMUTCD 4E.08 – 4E.13 and the PROWAG.

1. Pushbutton Clear Space. [R404] A pushbutton clear space must be provided adjacent to a pedestrian pushbutton assembly. The running slope and cross slope should be 2.00% maximum. The minimum required clear dimensions are 4 ft by 4 ft. Where the clear space is constrained on two or more sides by a barrier over 2 inches in height, the minimum clear dimensions should be increased to 5 ft by 5 ft. The clear space must be free of grade breaks, may overlap a curb ramp turning space or sidewalk, and may overlap a ramp with a running slope of 2% or less. Providing a clear space that is concurrent with the curb ramp turning space is preferred. This approach increases the likelihood that the dimensional and slope requirements will be met and provides a reasonable distance to the crosswalk.

The running slope and cross slope of a pushbutton clear space are based on the orientation of the pushbutton assembly. See [Figure 51-1P](#), Pushbutton Clear Space. The running slope may be consistent with the grade of the sidewalk. The cross slope must be 2.00% maximum.

2. Placement. Where the offset between the face of curb or edge of pavement and the back edge of sidewalk is 10 ft or less, placing the pedestrian pushbutton assembly outside the back edge of sidewalk, is preferred. Where the assembly can be accessed from two directions, consideration should be given to centering the assembly relative to the crosswalk. That is, do not require a pedestrian to travel down one ramp, then up another to reach the assembly.

Where the offset between the face of curb or edge of pavement and the back edge of sidewalk is greater than 10 ft, or other site constraints exist, e.g. a building at the back edge of sidewalk, placement within the sidewalk or buffer may be necessary.

- a. Pedestrian Pushbutton Assembly Outside the Back Edge of Sidewalk. A pedestrian pushbutton assembly should not be placed more than 5 ft outside the associate crosswalk. A pushbutton assembly should be centered adjacent a pushbutton clear space. See [Figure 51-1Q](#), Pedestrian Pushbutton Assembly Outside the Back Edge of Sidewalk, Preferred.

A pushbutton assembly must not be blocked by obstructions, e.g. behind guardrail.

- b. Pedestrian Pushbutton Assembly Within a Sidewalk or Buffer. A pedestrian pushbutton assembly should not be placed more than 5 ft outside the associate crosswalk. A pushbutton assembly should be adjacent a pushbutton clear space. Centering on the pushbutton clear space is not required, however the grade break guidance in Item 3 would apply.

The distance from the nearest face of a pushbutton assembly to face of the curb or edge of pavement should be between 1.5 ft and 6 ft and should not be greater than 10 ft. A minimum offset of 1.5 ft from the face of curb or edge of pavement will allow a wheelchair user to remain out of traffic while actuating the pushbutton assembly. A minimum offset of 1.5 ft also provides an appurtenances-free zone along the roadway. See Section 55-5.02, Item 5.

A 4-ft minimum sidewalk clear width must be provided where a pushbutton assembly is placed within a sidewalk.

See [Figure 51-1R](#), Pedestrian Pushbutton Assembly Within a Sidewalk or Buffer.

A pushbutton assembly must not be blocked by an obstruction, e.g. behind street furniture.

3. Grade Break. Where a grade break is adjacent a pushbutton clear space it is preferred to offset the nearest face of the pedestrian pushbutton assembly a minimum of 1.5 ft from the grade break. A wheelchair user positioned on a grade break may become unstable while actuating the pushbutton assembly and enter into traffic prematurely. [Figure 51-1R](#), Pedestrian Pushbutton Assembly Within a Sidewalk or Buffer.

4. Spacing. Where two pedestrian pushbutton assemblies are provided on the same corner of a signalized intersection or within a median, the pushbutton assemblies should be separated by at least 10 ft. Where constraints prevent a 10-ft separation, pushbutton assemblies may be placed closer together or on the same pole. Where two APS pushbutton assemblies are closer than 10 ft., special features must be included in accordance with IMUTCD 4E.10-4E.13, Section 502-3.04(05), and INDOT *Standard Drawing* series 805-PBBA. RSP 805-T-202, Accessible Pedestrian Signals with Speech Walk Messages, should be completed by the designer and included in the contract for APS pushbutton.
5. Mounting Height and Side Reach. [R406] The actuator of the pedestrian pushbutton assembly must be located between 42 in. and 48 in. above the pushbutton clear space and within a 10-in. unobstructed side reach. See [Figure 51-1S](#), Pedestrian Pushbutton Assembly Mounting Height and Side Reach. Where pole placement is limited, a 6 in. or 12 in. pushbutton assembly extension may be used to meet the side reach criteria. If a longer extension is required coordinate with the District Traffic Engineer.
6. Orientation. The face of a pedestrian pushbutton assembly must be aligned parallel to the direction of pedestrian travel on the associated crosswalk or as close as practical. See [Figure 51-1T](#), Orientation of Pedestrian Pushbutton Assembly. The face of the pedestrian pushbutton assembly should be mounted to allow the pedestrian sign to be read.

51-1.06(03) Plan Requirements [Rev. Nov. 2016, Rev. Nov. 2018, Oct. 2020]

Each pedestrian pushbutton assembly should be detailed as follows:

1. Plan Views. A symbol and lines representing the pushbutton assembly and pushbutton clear space, respectfully, should be shown in plan view over existing survey.
2. Stations and Offsets. The station and offset for each pushbutton assembly should be tabulated or detailed. Where two pedestrian pushbutton assemblies are provided on the same corner of a signalized intersection or within a median, the distance between the two should also be detailed.

3. Dimensions. Length and width for each pushbutton clear space should be tabulated or detailed.
4. Slopes. Slopes of the pushbutton clear space, if not detailed with the curb ramp or sidewalk, should be tabulated or detailed.
5. Pushbutton Mounting Height. Where an existing pushbutton mounting height requires adjustment to meet ADA criteria, the required adjustment should be noted as a callout on the plans. Otherwise, “No mounting height adjustment required” should be noted as a callout for the existing pushbutton. For new pushbutton installation, *Standard Drawing* series E 805-PBBA will govern and a mounting height note is not required on the plans.
6. Pushbutton Side Reach. Where a new or existing pushbutton side reach requires an extension to meet ADA criteria, the extension length should be noted as a callout on the plans. Otherwise, “No side reach adjustment required” should be noted as a callout.
7. Pushbutton Direction. The predominant direction of pedestrian traffic crossing serviced by the pushbutton should be noted as a callout on the plans (e.g. N-S or E-W).

An approved Determination of Technical Infeasibility or Technical Inquiry must accompany each pushbutton assembly or pushbutton clear space that does not meet the ADA requirements. Examples of non-compliance include a pushbutton assembly placement or pushbutton clear space slope or dimensions falling outside of the minimum or maximum criteria. See Section 40-8.04(01) Item 3 for requesting a Determination of Technical Infeasibility or Technical Inquiry.

502-3.03(05) Detector [Rev. Jan. 2016, Nov. 2016, Oct. 2020]

4. Pedestrian Detector. The most common pedestrian detector is the pedestrian pushbutton assembly. Where pedestrian signals are provided at pedestrian street crossings, they must include pedestrian pushbutton assemblies complying with INDOT *Standard Drawing* series 805-PBBA, Section 51-1.06 and Section 502-3.04(05).

An accessible pedestrian signal (APS) is an integrated device that communicates information about the “Walk” and “Don’t Walk” intervals at signalized intersections in visual and non-visual formats, i.e., audible tones and vibrotactile surfaces, to pedestrians who are blind or have low vision. These features are in addition to the traditional pedestrian signal head and pedestrian pushbutton.

The Department refers to traditional pedestrian pushbuttons as non-APS and these must have an actuator with a minimum diameter of 2 in., although they do not have the audible and vibrotactile features of APS.

See Section 502-3.04(05) for information on the use of a pedestrian signals, APS, and Non-APS.

502-3.04(05) Pedestrian Signal [Rev. Jan. 2016, Oct. 2020]

Pedestrian signal indications should be provided on a new or modernized traffic-signal installation in accordance with *IMUTCD* Section 4E.03.

Unless technically infeasible on a project, accessible pedestrian signals (APS) must be used for all pedestrian signal installations on the state highway system, on all federal-aid projects, and on 100% LPA funded projects. APS may be technically infeasible at a location if right-of-way constraints, such as historic districts, wetlands, or cemeteries, prevent the installation of an M (NEMA Size 5) or larger controller cabinet or if the ambient noise levels are above 100 dB. The determination of technical infeasibility for locations on the state highway system or for a LPA project must be made by the Department's ADA Technical Advisory Committee or LPA, in accordance with Section 40-8.04(01).

The percussive tone should be specified for APS when the pushbuttons at a curb ramp are separated by 10 ft or more. The speech walk message should be specified for APS when the pushbuttons at a curb ramp are separated by less than 10 ft. The speech walk message should normally be patterned after the model, "Broadway. Walk sign is on to cross Broadway." The speech walk message must not include commands or tell pedestrians that it is safe to cross. The speech walk message should also avoid superfluous street name terms such as "street" or "avenue" unless necessary to avoid confusion. When a speech walk message is required the RSP 805-T-202, Accessible Pedestrian Signals with Speech Walk Messages should be completed and inserted into the contract. The tactile arrows on APS should be aligned parallel, or as close as practical, to the direction of travel on the associated crosswalk. *IMUTCD* Section 4E.11 through 4E.13, Section 51-1.06, and the INDOT *Standard Drawing* series 805-PBBA provide additional information regarding the placement, programming, and assembly of APS.

Where a median cut through is less than 6 ft in the direction of pedestrian travel, the signal should be timed for a complete crossing of the street.

Where crosswalks are longer or the ambient noise level is greater, it may be necessary to specify speakers or baffling for the APS.