



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 16-36 Technical Advisory

November 29, 2016

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

FROM: /s/Elizabeth W. Phillips
Elizabeth W. Phillips
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Bridges Division

SUBJECT: Pedestrian Pushbutton Assemblies Plan Details Required for
New and Relocated Assemblies

REVISES: *Indiana Design Manual 51-1.06 and 502-3.03(05), item 4*

EFFECTIVE: Letting on or after January 2017 and as noted.

Where a pedestrian pushbutton assembly is relocated or newly placed, the construction plans should reflect the requirements in the *Public Rights-of-Way Accessibility Guidelines* (PROWAG), and the *Indiana Manual on Uniform Traffic Control Devices* (IMUTCD). Recurring Plan Details (RPD) E-805-T-201d, Pedestrian Pushbutton Assembly reflects these requirements and illustrates various assembly placement configurations. The RPD should be included in contracts that have an APS or Non-APS Pedestrian Pushbutton pay item until such time as the details are incorporated into INDOT Standard Drawing series 805-PPBA.

To assist in the review and placement of pedestrian pushbutton assemblies and the adjacent pushbutton clear space, additional plan detailing is needed.

Plan Detailing

Each pedestrian pushbutton assembly should be detailed as follows:

1. **Plan Views.** The pushbutton clear space may be a separate space or concurrent with the curb ramp turning space or sidewalk. A symbol and lines representing the pushbutton assembly and pushbutton clear space, respectively, should be shown in

- plan view over existing survey or an aerial survey. Use of an aerial survey should consider the effect on file size.
2. Stations and Offsets. The station and offset for each pushbutton assembly should be tabulated or detailed. Where two separate pedestrian pushbutton assemblies are provided on the same corner of a signalized intersection or within a median, the distance between the assemblies should be tabulated or detailed.
 3. Dimensions. Length and width for each pushbutton clear space should be tabulated or detailed.
 4. Slopes. Slopes of the pedestrian clear space, if not detailed with the curb ramp or sidewalk, should be tabulated or detailed.

For projects that have not included the above mentioned plan details and have completed the Stage 3 submission by the date of this memo, plan details may be incorporated in the Final Tracings or provided to the Area Engineer prior to the pre-construction meeting.

Non-Compliant Features

An approved Determination of Technical Infeasibility or Technical Inquiry must accompany each non-compliant pushbutton assembly or pushbutton clear space. Examples of non-compliance may include any of the following:

1. Absence of a pushbutton clear space.
2. Pushbutton clear space slopes exceeding 2.0%.
3. Pushbutton clear space dimensions less than 4ft x 4ft.
4. Obstructed side reach or side reach exceeding 10 in.
5. Mounting height outside the 42 in. to 48 in. range.
6. Incorrect orientation of the pushbutton assembly relative to the crosswalk.

See IDM Section 40-8.04(01) Item 3 for requesting a Determination of Technical Infeasibility or Technical Inquiry.

The referenced *Indiana Design Manual* sections have been revised to reflect the plan detailing requirements as well as to update pedestrian pushbutton assembly guidance to reflect the new recurring plan details.

51-1.06 Pedestrian Pushbutton Assembly, APS and Non-APS [Add. Mar. 2016, Rev. Nov. 2016]

This section applies to both accessible pedestrian signal (APS) and non-APS pedestrian pushbutton assemblies unless otherwise stated. See Section 502-3.04(05), Pedestrian Signal for additional information.

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

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, an APS Study in accordance with Section 502-3.04(05) must be conducted.

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

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 on RPD 805-T-201d until such time as they are incorporated into INDOT *Standard Drawings* 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 a pedestrian pushbutton assembly. The minimum required clear dimensions are 4 ft by 4 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 and RSP 805-T-201, Accessible Pedestrian Signals until such time as the RSP is incorporated into the *Standard Specifications*. RSP 805-T-202, Accessible Pedestrian Signals with Speech Walk Messages should be completed by the designer and included in the contract, when an APS pushbutton assembly is required.

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

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.

6. Actuator. The actuator must have a 2-in. minimum diameter and contrast visually with the housing or mounting. See Section 502-3.03(05), Detector.

7. Orientation. The face of a pedestrian pushbutton assembly must be aligned parallel to the direction of pedestrian travel on the associated crosswalk. See Figure 51-1T, Orientation of Pedestrian Pushbutton Assembly.

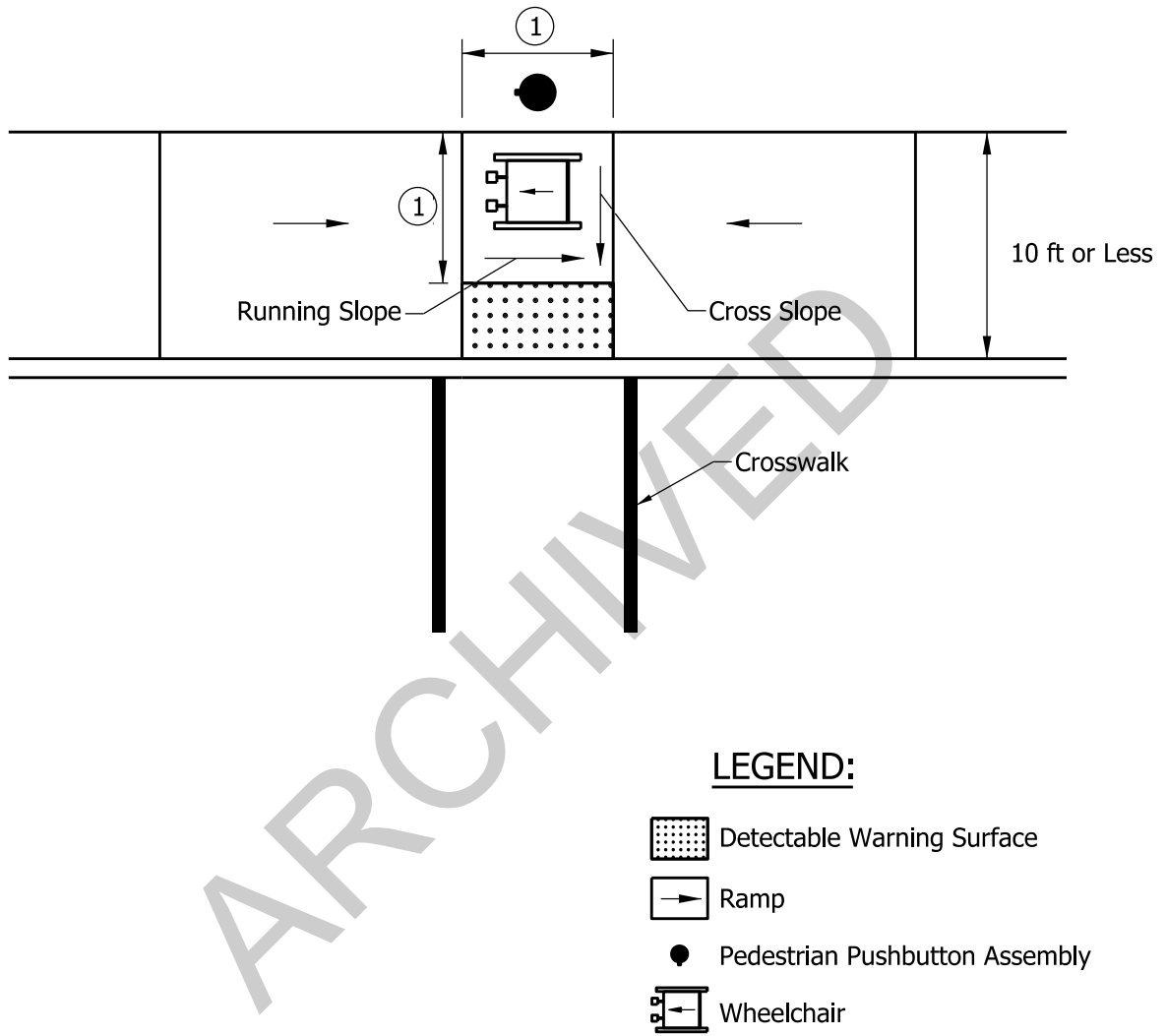
8. Signage. Pedestrian signal signs must be mounted immediately above or incorporated into the pedestrian pushbutton assembly.

51-1.06(03) Plan Requirements [Added Nov. 2016]

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 or an aerial survey. Use of an aerial survey should consider the effect on file size.
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 tabulated or 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.

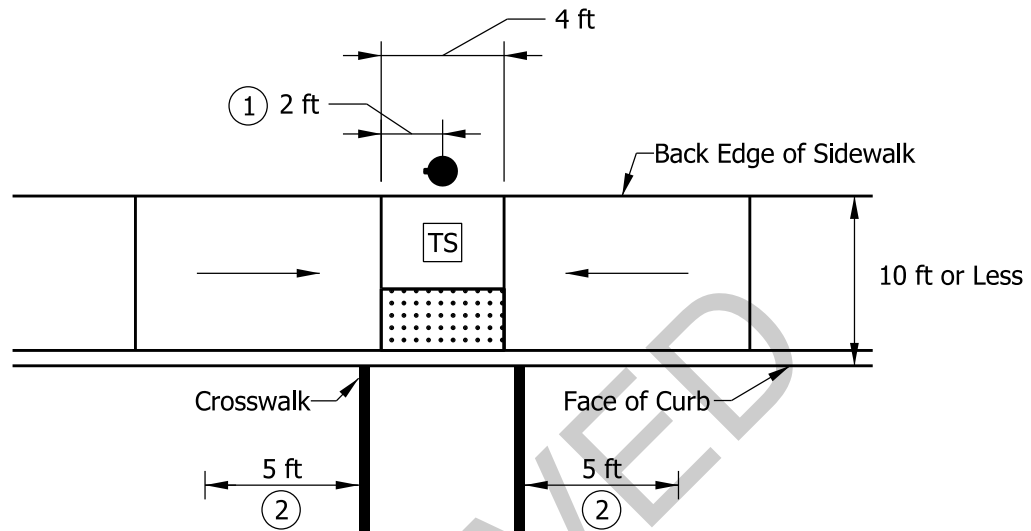
An approved Determination of Technical Infeasibility or Technical Inquiry must accompany each pushbutton assembly or pushbutton clear space that does not meet the ADA requirements. Examples of non-compliance include a pushbutton assembly placement or pushbutton clear space slope or dimensions falling 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.



① The minimum required clear dimensions of a pushbutton clear space are 4 ft by 4 ft.





PUSHBUTTON CLEAR SPACE

Figure 51-1P



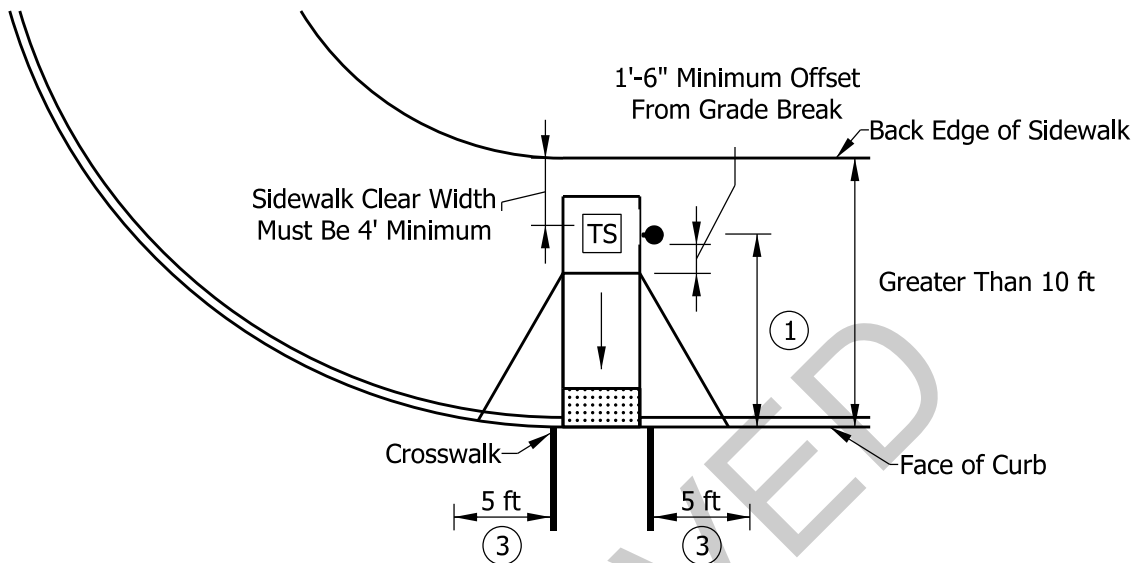
- ① A pushbutton assembly should be centered adjacent a pedestrian clear space and centered relative to the crosswalk. Overlapping a pushbutton clear space with a curb ramp turning space is preferred.
- ② A pushbutton assembly should not be placed more than 5 ft outside the crosswalk. A pushbutton assembly may only be placed adjacent a ramp with a running slope of 2% or less.

LEGEND:

-  Detectable Warning Surface
-  Ramp
-  Pedestrian Pushbutton Assembly
-  Turning Space\Pushbutton Clear Space





PEDESTRIAN PUSHBUTTON ASSEMBLY OUTSIDE THE BACK EDGE OF SIDEWALK, PREFERRED

Figure 51-1Q



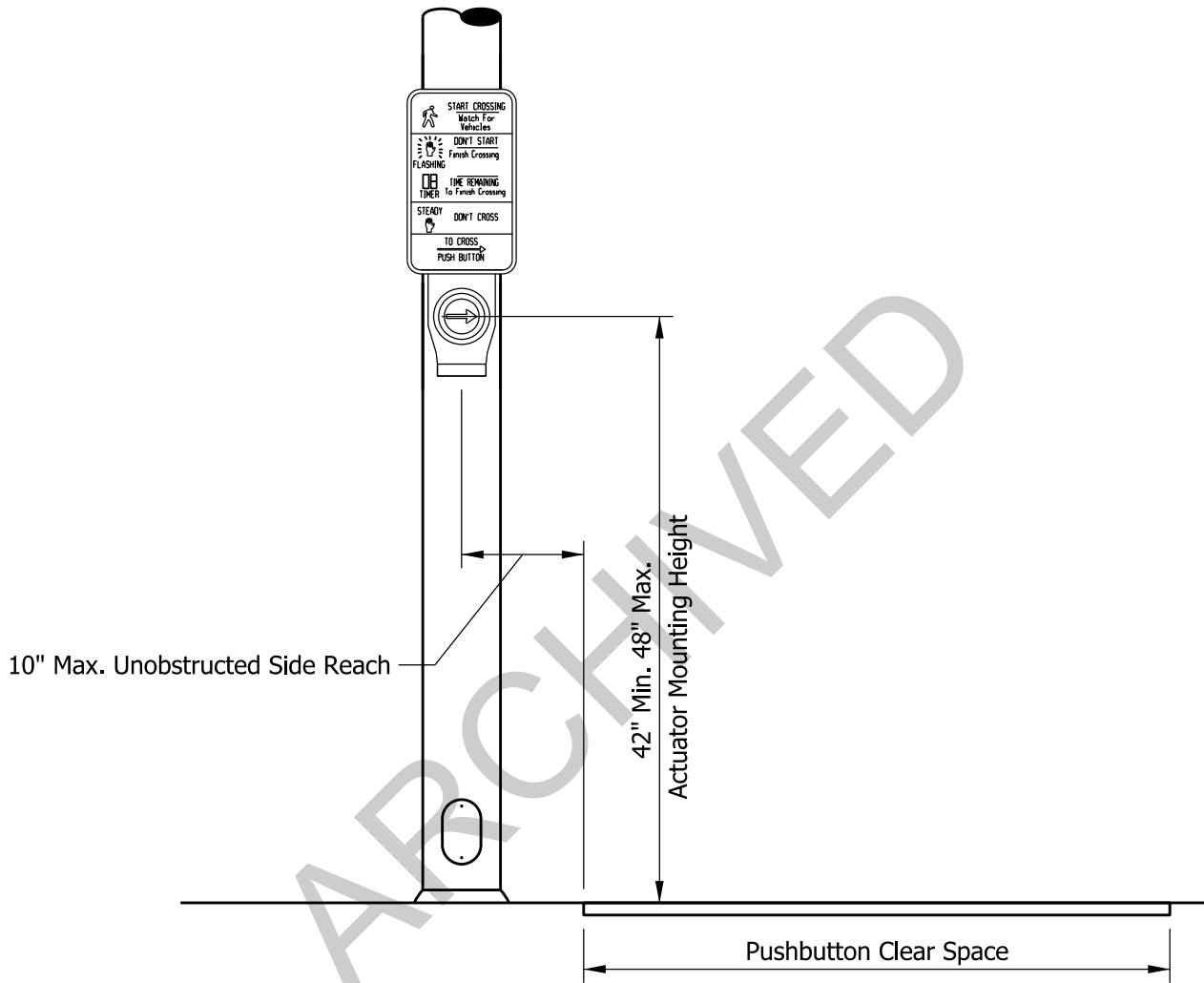
- ① The distance from a pushbutton assembly to face of the curb or edge of pavement should be between 1.5 ft and 6 ft and should not be greater than 10 ft. A minimum offset of 1.5 ft from the face of curb or edge of pavement will allow a wheelchair user to remain out of traffic while actuating the pushbutton assembly. A minimum offset of 1.5 ft also provides an appurtenances-free zone along the roadway.
2. A pedestrian pushbutton assembly should be adjacent a pedestrian clear space. Overlapping the pushbutton clear space with a curb ramp turning space is preferred.
- ③ A pushbutton assembly should not be placed more than 5 ft outside the crosswalk. A pushbutton assembly may only be placed adjacent a ramp with a running slope of 2% or less.

LEGEND:

-  Detectable Warning Surface
-  Ramp
-  Pedestrian Pushbutton Assembly
-  Turning Space\ Pushbutton Clear Space

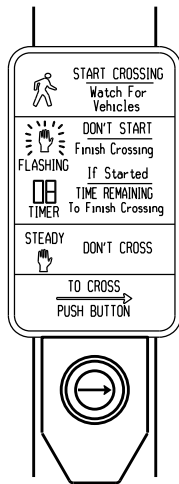
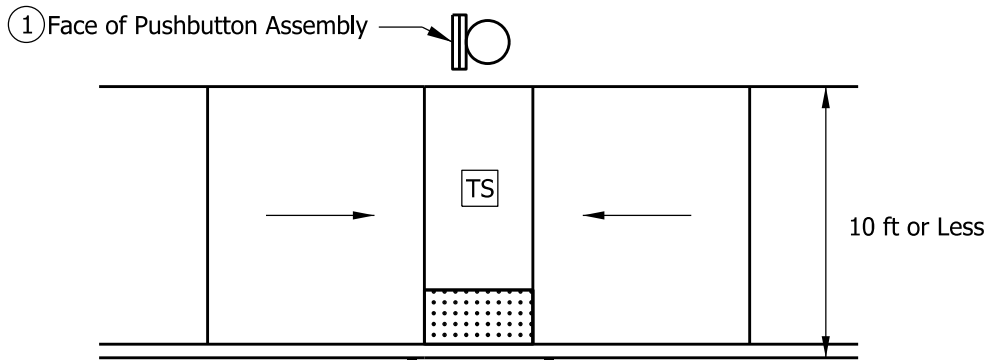
**PEDESTRIAN PUSHBUTTON ASSEMBLY
WITHIN A SIDEWALK OR BUFFER**

Figure 51-1R







PEDESTRIAN PUSHBUTTON ASSEMBLY MOUNTING HEIGHT AND SIDE REACH

Figure 51-1S



**FACE OF PEDESTRIAN
PUSHBUTTON**

LEGEND:

-  Detectable Warning Surface
-  Ramp
-  Pedestrian Pushbutton Assembly
-  Turning Space

- ① The face of a pedestrian pushbutton assembly must be aligned parallel to the direction of pedestrian travel on the associated crosswalk.

**ORIENTATION OF PEDESTRIAN PUSHBUTTON
ASSEMBLY**

Figure 51-1T

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 sections 4E.08 of the *MUTCD*.

For an accessible pedestrian signal (APS) and pedestrian pushbutton 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.

A pedestrian pushbutton assembly must meet the requirements of the *Americans with Disabilities Act* (ADA). The actuator must have a 2-in. minimum diameter and contrast visually with the housing or mounting. The actuator for an APS pushbutton assembly, must vibrate during the walk interval and a tactile arrow should be mounted on the actuator or the housing directly above or below the actuator. The tactile arrow must contrast with the background. The actuator must be operable with one hand without grasping, pinching or twisting of the wrist and require no more than 5 pounds of force to actuate.

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