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Regarding Chapter 3 – Multimodal
Pedestrian Crossings and Crosswalk Update

Effective with the April 6, 2022 turn-in, Chapter 3 has been updated to clarify our policy on pedestrian crossings at uncontrolled locations to new standards being introduced. This update is to give more information and guidance on how to properly design pedestrian crossings.

The revised section is shown below:

3-405.00 PEDESTRIAN CROSSINGS AND CROSSWALK MARKINGS AT INTERSECTIONS

In Tennessee, a legal Crosswalk is defined as the connection of pedestrian facilities on opposite corners at *any intersection* and at marked midblock crossings. This legal path exists if the crossing is controlled (signal, stop, or yield) or uncontrolled, and regardless of if crosswalk pavement markings are applied. Midblock crossings are only legal crossings when crosswalk markings applied as defined by TN codes.

Intersections without pedestrian facilities on opposite corners generally do not require crosswalk pavement markings, ADA Ramps, or other considerations for pedestrians. If a project includes the construction of new or alterations to existing pedestrian facilities, such as sidewalk or shared-use path, the designer should evaluate the existing roadway and intersection conditions to provide safe and reliable crosswalks for all users.

During the development of 3R projects the designer should evaluate the existing roadway conditions and study all existing controlled or uncontrolled crossings to provide a safe access to pedestrians and reliable transportation for motorists. At a minimum all pedestrian crossings are required to have curb ramps installed.

Controlled (signal, stop or yield) pedestrian crossings on **state routes** require crosswalk pavement markings, along with stop bar or yield marking with signs in accordance with MUTCD. It is recommended but not mandatory to have marked crosswalks at all controlled pedestrian crossings on **non-state routes**. See Figure 3-6 Required Crosswalk Markings along State Routes.

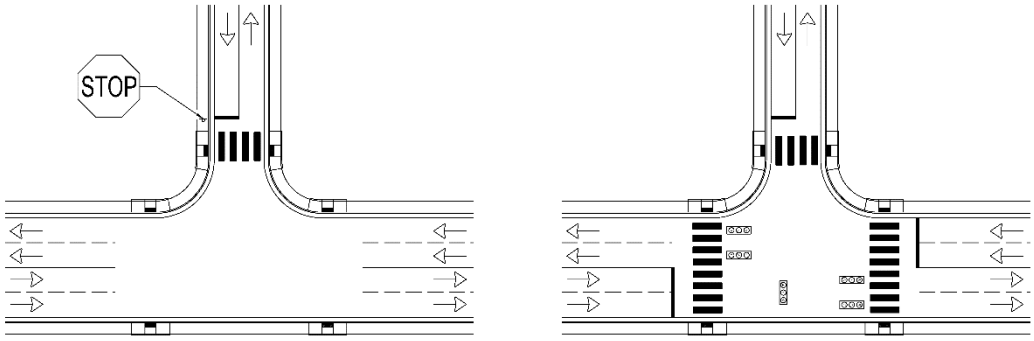

Figure 3-6 – Required Crosswalk Markings along State Routes

3-405.10 UNCONTROLLED PEDESTRIAN CROSSINGS

Uncontrolled Pedestrian Crossings are those legs of an intersection without signal, stop, or yield control with pedestrian facilities on opposite corners. Most common would be an intersecting minor street with stop control along a major roadway with no traffic signals or stop control. At these **uncontrolled pedestrian crossings,** legal crosswalks exist at all locations with pedestrian facilities on opposite corners. While these are legal crosswalks, they are also areas that pose an increased risk for vehicles and pedestrians.

Existing uncontrolled pedestrian crossings may not have existing marked crosswalks or compliant ADA curb ramps. During the development of 3R projects the designer should identify and study all existing uncontrolled crossings to provide a safe access to pedestrians and reliable transportation for motorists. *At a minimum all pedestrian crossings are required to have curb ramps installed.*

The decision to mark a crosswalk, provide signs or other safety measures at an uncontrolled crossing is one that is based on sound engineering judgement, that considers the demands (crash history, etc) and behavior of pedestrians and drivers at specific locations. The MUTCD states the following on crosswalk marking at uncontrolled locations.

Section 3B.18 Crosswalk Markings

> *Crosswalk lines should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.*
>
> *New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active*

warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:

A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater: or

B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.

Additionally, in 2018 the FHWA issued a comprehensive document "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations" to assist Designers on what countermeasures can be installed to increase driver awareness and pedestrian safety and when it is most appropriate to use those measures. See Table 3-2A for information regarding pedestrian safety countermeasures.

It is important to note that when using this table, the TDOT AADT ranges for the three columns are **AADT<10,000**; **10,000<AADT>15,000**; **AADT>15,000**. At certain types of uncontrolled crossings, such as roundabouts, single-lane entries and exits are preferred for pedestrian crossings. Splitter islands should be designed to fully accommodate pedestrians as a refuge location.

3-405.20 CROSSWALK MARKING AND TYPES

Crosswalk pavement marking shall be provided along state routes at signal-controlled intersections at pedestrian crossings, at all stop/yield controlled pedestrian crossings, and any mid-block crossings.

Marked crosswalks can be one of two pavement marking configurations: 1) Longitudinal, which is sometimes referred to as "piano keys", or 2) transverse. Longitudinal (piano keys) markings should be used where added emphasis is needed for the crosswalk, and on high speed and/or high ADT facilities to improve the visibility of location for motorist. Longitudinal and transverse crosswalks are shown in Roadway Standard Drawing T-M-4. Longitudinal and transverse crosswalks are the only crosswalk markings adopted by the department. If any deviation from the standard is proposed, the Designer is required to adhere to crosswalk design requirements contained in the MUTCD Section 3B.18 as well as PROWAG.

3-405.30 PEDESTRIAN CROSSING SAFETY CONSIDERATIONS

Designers should evaluate existing and proposed crosswalk locations on any new construction or rehabilitation project. Assuring the safety of both pedestrians and vehicles is the priority of every facility designed. Designer should evaluate, stopping sight distance, line of sight, turning movements to determine if pedestrian crossings warrant crosswalk, pavement marking, flashing beacons, advanced signs etc. It is important to evaluate illumination need and placement options since the practice offers great safety benefits.

It is critical to note that the decision to not mark a pedestrian crossing does not eliminate the requirement of a designer to make that crosswalk accessible, as it does not eliminate the legal right of pedestrians to cross or of vehicles to yield to those pedestrians.

3-405.40 CROSSWALK MARKING ARCHITECTURAL FEATURES

Asphalt or concrete are the proper materials to be used for the walking surface. A different look can be achieved by using stamped patterns. The placement of stamped patterns should meet Roadway Drawing T-M-4. Crosswalks may be textured on the edges but should maintain a five (5)-foot smooth section in the middle and must be marked with transverse (parallel) reflective pavement marking. Brick, granite, and cobblestones should not be used in accessible pathways. A reasonable pathway shall be provided approaching to crosswalks free of permeant obstructions i.e. light, ped, signal poles, guy wires, tree, sign supports, traffic control box, as well as other utilities such as fire hydrant, pay parking stations, ballads, planters.

3-405.50 UNMARKED CROSSWALKS

While having ADA accessible crosswalks is mandatory, leaving some crosswalk locations unmarked may be acceptable and even preferred on some roadways per engineering decision. While all controlled crossings (stop, yield, or signal) should have marked crosswalks, uncontrolled crossings may not require marked crosswalk treatment if conditions meet the minimum safety standards. (Midblock crosswalks are only considered legal crossings if they are marked crossings.)

3-405.60 ACCESSIBLE CROSSWALK DESIGN ELEMENTS

Crosswalk surfaces should be even, free of joints (less than ½”), lips (less than1/4”) and not slippery. Designer should avoid utility structures such as manholes, drainage grates and place crosswalks to minimize the walking distance across the vehicle traveled way. This could include applying pedestrian focused design treatments such as reducing lane widths, minimizing turning radii, providing pedestrian refuge islands, constructing curb extensions, and limiting the use of turn lanes. Designer should confirm the roadway cross slope is in accordance with PROWAG 302 where crosswalks are proposed. Where on-street parking is present and minimum radii can be met at the intersection, the Designer should consider curb extensions to further minimize the distance required to travel by pedestrians. The lateral offset of the curb extension should be at least one (1) foot from any through movement traffic such as motor vehicles or bicycle lanes. Refer to *Chapter 3-703.00* for additional information on curb extensions.

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KJL:LHC:JRQ
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