PROJECT BRIEF

UF Transportation Institute UNIVERSITY of FLORIDA STRIDE

Accommodating Pedestrians & Bicyclists at Continuous Flow Intersections

(STRIDE Project F: Integrated Implementation of Innovative Intersection Designs)

PROJECT OVERVIEW

Continuous Flow Intersections (CFIs), also known as Displaced Left-Turn intersections (DLTs) have grown in popularity primarily due to the reduced number of signal phases for vehicles. However, due to its large footprint and unconventional displaced left-turn movement, pedestrians and bicycles experience unique mobility challenges at this type of intersection.

RESEARCH GOALS

This study evaluated the performance of pedestrian-bicycle crossing alternatives at Continuous Flow Intersections (CFI). Three CFI crossing alternatives were tested: Traditional, Offset, and Midblock crossings. In total, 24 alternative scenarios were generated by incorporating two bicycle path types, two right-turn control types, and two CFI geometry types. These scenarios were analyzed through microsimulation on the basis of stopped delay (length of time a pedestrian/bicyclist is waiting), travel time from their origin to destination, and number of stops from the same origin to the destination.

FINDINGS

The results indicated that Traditional crossing (Figure A) would generate the least number of stops for pedestrians and bicyclists; an Offset crossing (Figure B) would perform best in terms of stopped delay; and a Midblock crossing (Figure C) would incur very short travel times only along some routes that start and end near the midblock locations. The most notable differences observed are between the stopped delays in Offset and Midblock crossing. If adequate space is available, an exclusive bicycle path is operationally preferable to the shared-use path in most cases.

Regarding the tradeoffs between a standard intersection and a CFI, a CFI with Traditional or Offset crossing would incur less stopped delay because of the reduced number of signal phases. However, a CFI with an Offset or a Midblock crosswalk would generate a higher number of stops than a standard intersection because of the increased number of phases.

IMPACTS

Many intersection designs are selected for vehicular operational benefits with little-to-no consideration for pedestrian and bicycle impacts. This is due in part to the lack of information regarding crossing designs and their impact on pedestrians and bicyclists. This project provides guidance broken down by crossing design. With this research, engineers can work to minimize the delays and, therefore, minimize the unsafe behavior of pedestrians and bicyclists crossing against the signal indication.

WHO BENEFITS?

Engineers, pedestrians, bicyclists

RESEARCH TEAM

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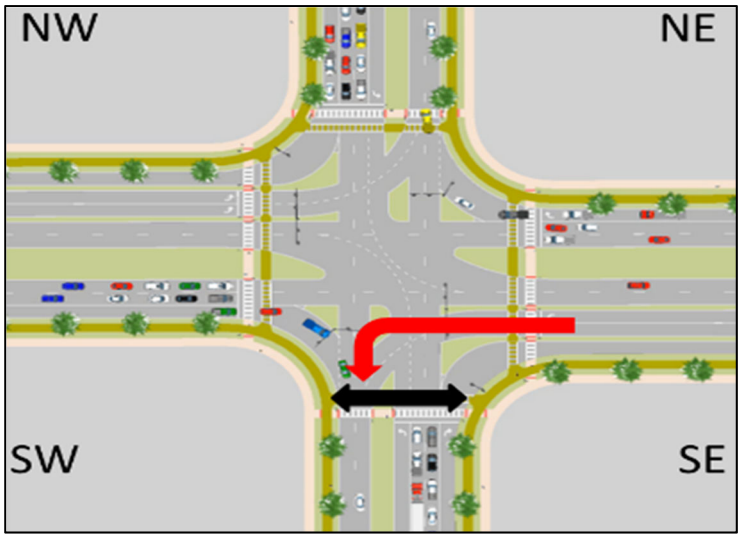
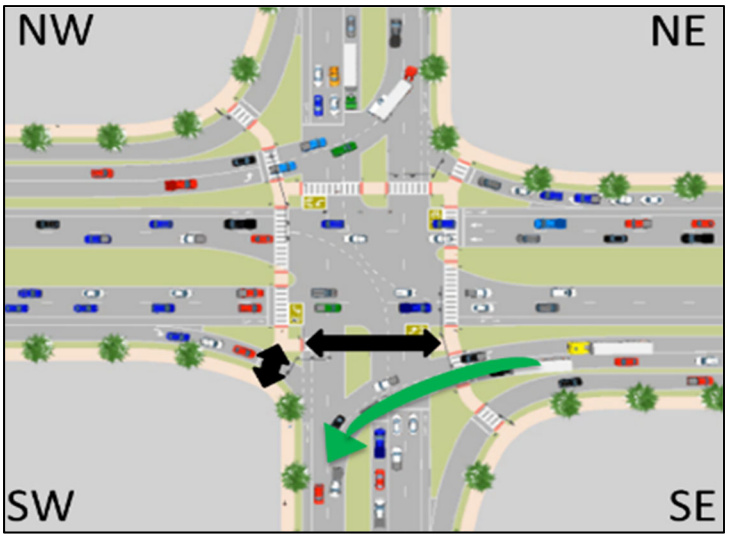
About STRIDE

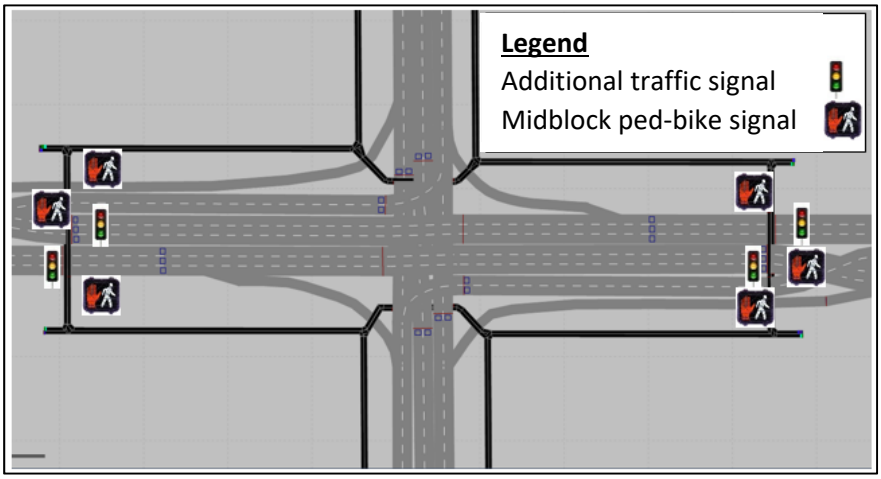
The Southeastern Transportation Research, Innovation, Development & Education Center (STRIDE) is the 2016 Region 4 (Southeast) U.S. Department of Transportation University Transportation Center headquartered at the University of Florida Transportation Institute (UFTI).



A) Schematic of **Traditional Crossing** where vehicular left-turn movement from one approach (red) conflicts with the parallel pedestrian-bicycle crossing (black)



B) Schematic of **Offset Crossing** where crosswalks are "offset" toward the inside of the intersection (black) and do not conflict with the parallel left turns (green)



C) Schematic of a **Midblock Crossing** where pedestrians have a very short travel path between the left corners of the NW and SW quadrant and between the right corners of NE and SE quadrant. However, some other routes experience significant out of direction travel.

PRODUCTS

Microsimulation Models of Continuous Flow Intersection Designs
Researchers developed 24 microsimulation models of different CFI (Continuous Flow Intersection) geometries and pedestrian-bicycle crossing facilities. The simulations included various timing plans for three alternative CFI designs (traditional, offset, and midblock) and included considerations for on- and off-road bicyclists. These models could also be used in a 'street view' or 'drive through' mode to show the public how these designs look from the perspective of the pedestrian or bicyclist.

For more information on Project F (Integrated Implementation of Innovative Intersection Designs), visit https:/ /stride.ce.ufl.edu/project-f/

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