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ACOMMODATING ALL MODES AT NON-TRADITIONAL INTERSECTIONS

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PRESENTATION OUTLINE

1. Non-traditional intersections
2. Indirect Left Turns
   - Overview
   - Design Considerations
   - Alternative Modes
   - Access / Economic Considerations
   - Tucson Experience
3. Florida T (Green T)
   - Overview
   - Design Considerations
   - Alternative modes
4. Questions

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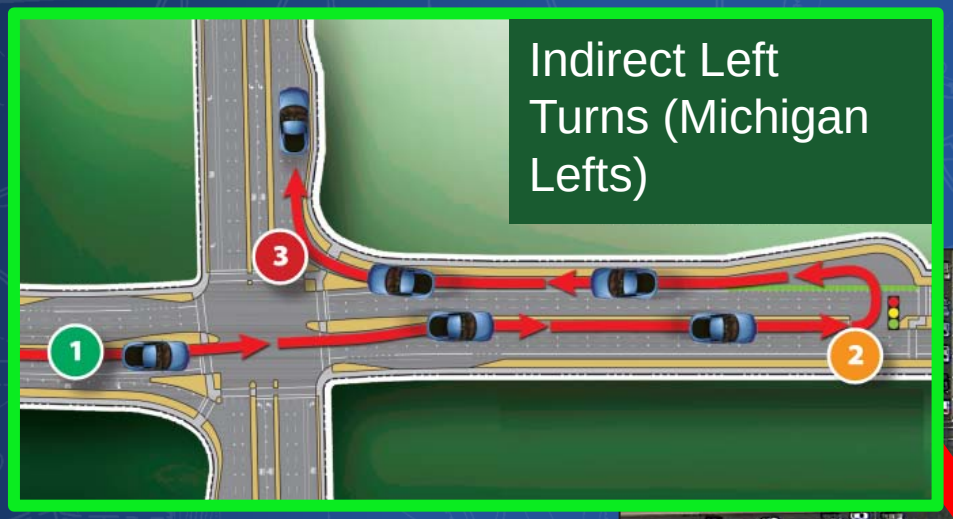
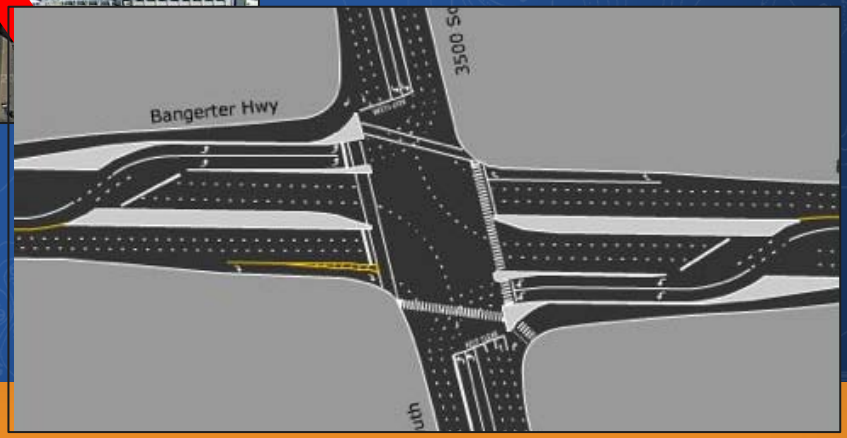
NON-TRADITIONAL INTERSECTIONS



Source: Regional Transportation Authority

Florida T (Cont. Green T)

Roundabouts



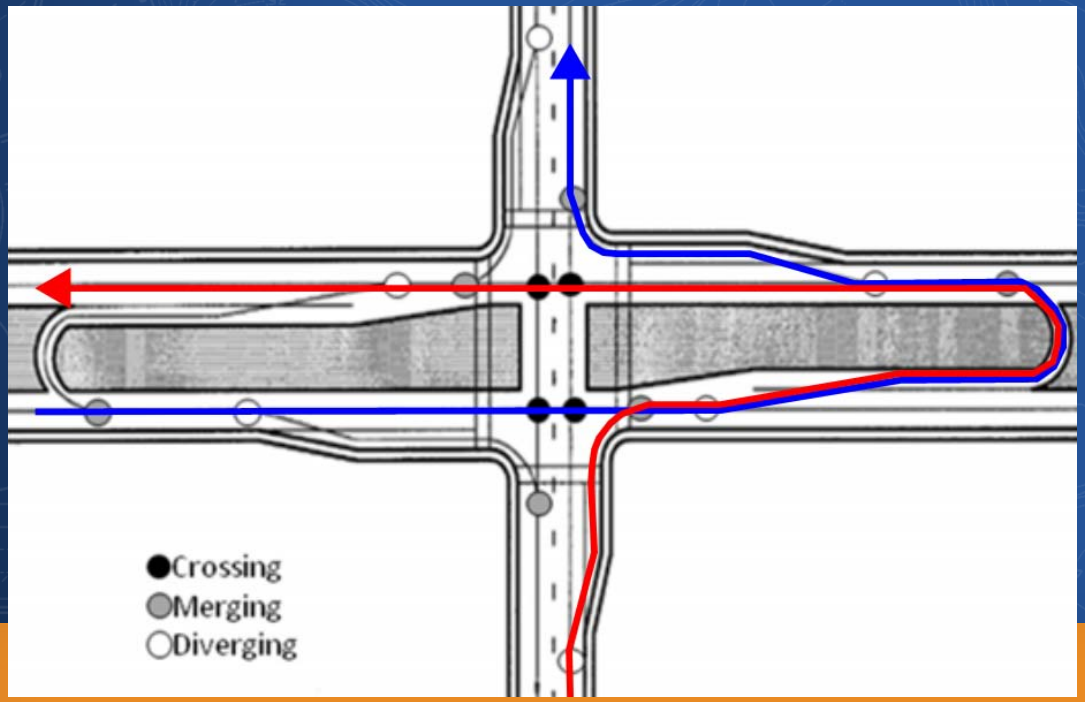
Continuous Flow Intersection (CFI), UDOT

INDIRECT LEFT TURNS (ILT)
Overview

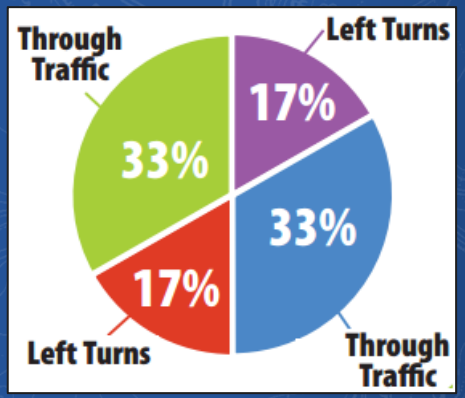
Basic Principle:

Eliminate left turn movement at main intersection

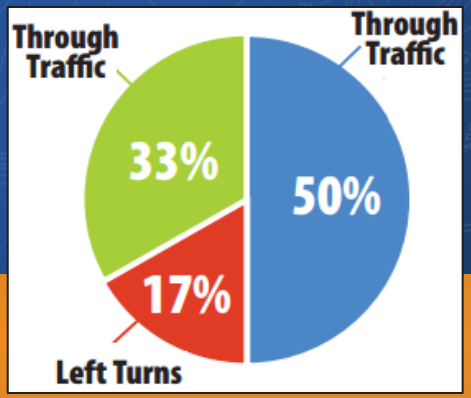
- Safety - Reduced vehicular conflicts (from 32 to 16)
- Operations – Fewer signal phases



ILT Intersection Conflict Diagram (FHWA)



Traditional intersection timing



Indirect Left Turn intersection timing

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INDIRECT LEFT TURNS (ILT)
Design Considerations

References (all free online):

- Alternative Intersections/ Interchanges: Informational Report (AIIR), 2010, FHWA-HRT-09-060

- Grant Road Design Concept Report, KHA, 2010

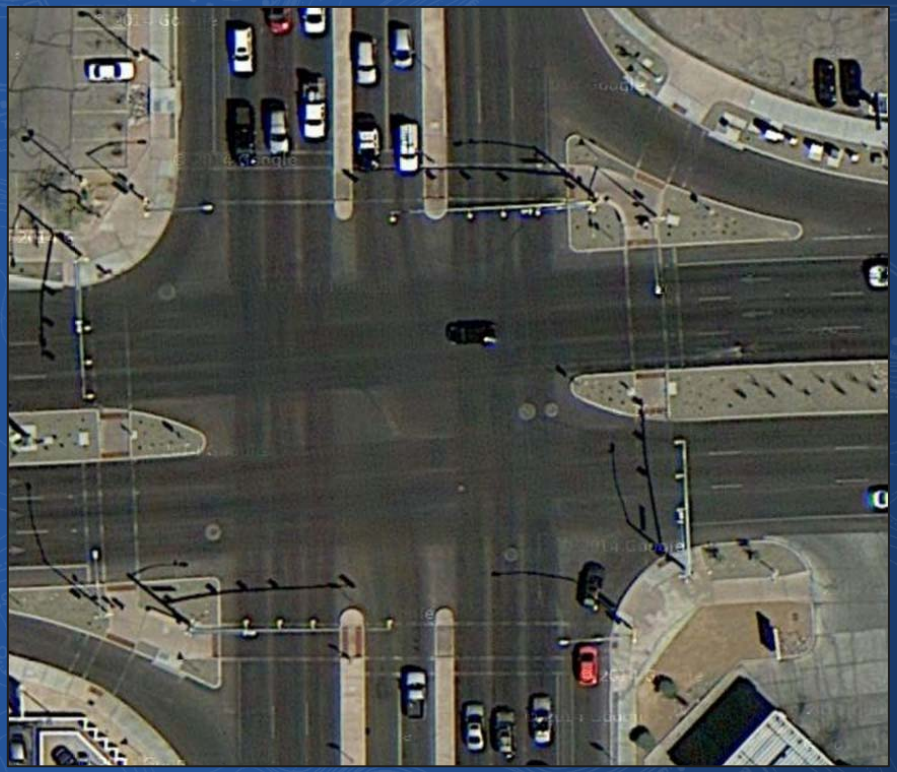
- Design Guideline Recommendations for the Arizona Parkway, MCDOT, 2008

INDIRECT LEFT TURNS (ILT)
Design Considerations

- Design Vehicle
- Bulb vs. wide median (ROW, context)
- Signalized vs. unsignalized bulbs
- Indirect Lefts for 2 vs. 4 directions
- Intersection spacing
- Accommodation of Alternative Modes
- Access

INDIRECT LEFT TURNS (ILT)
Alternative Modes

- Pedestrians
  - Main intersection
    - Smaller intersection, shorter crossing
    - No conflicts with permissive lefts
    - Channelized right turn lanes trade offs



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INDIRECT LEFT TURNS (ILT)
Alternative Modes

- Pedestrians
  - Possible additional two-stage crossings at bulbs

Photos Courtesy of Kimley-Horn and Steve Uzzell

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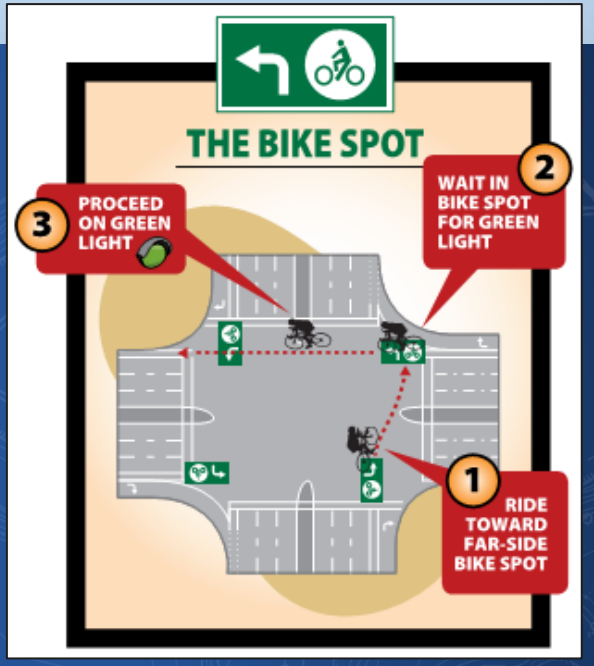
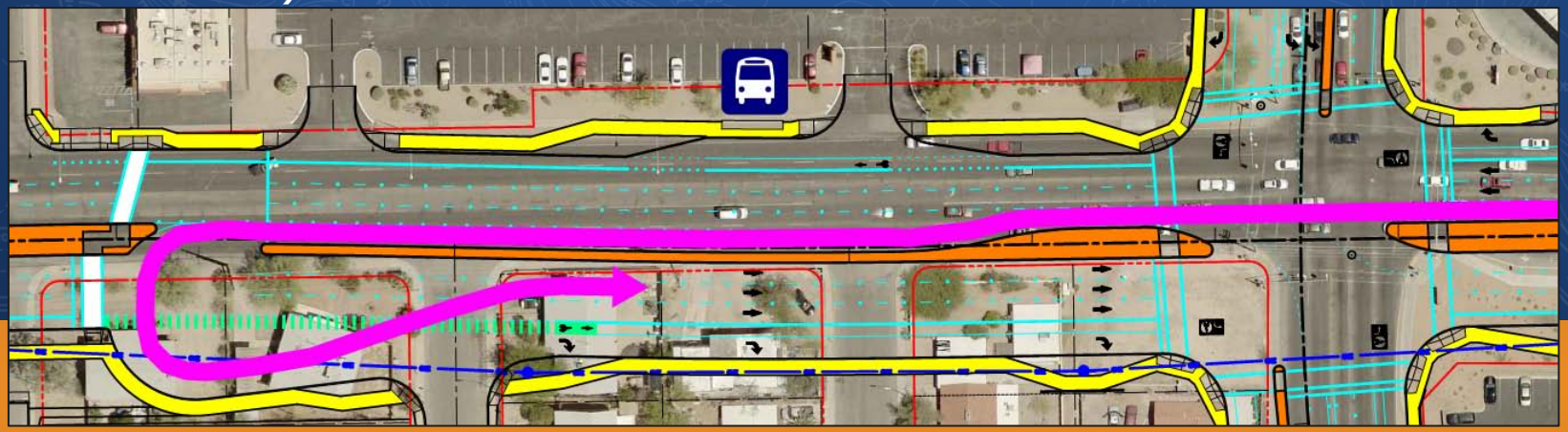
INDIRECT LEFT TURNS (ILT)
Alternative Modes

- Bicyclists
  - Long conflict area with right turn lane
    - Enhanced markings
  - Longer travel path for left turns, unless:
    - Allow bikes to use crosswalks
    - Use bike spots
- Transit – minimal/no difference (except left turns)

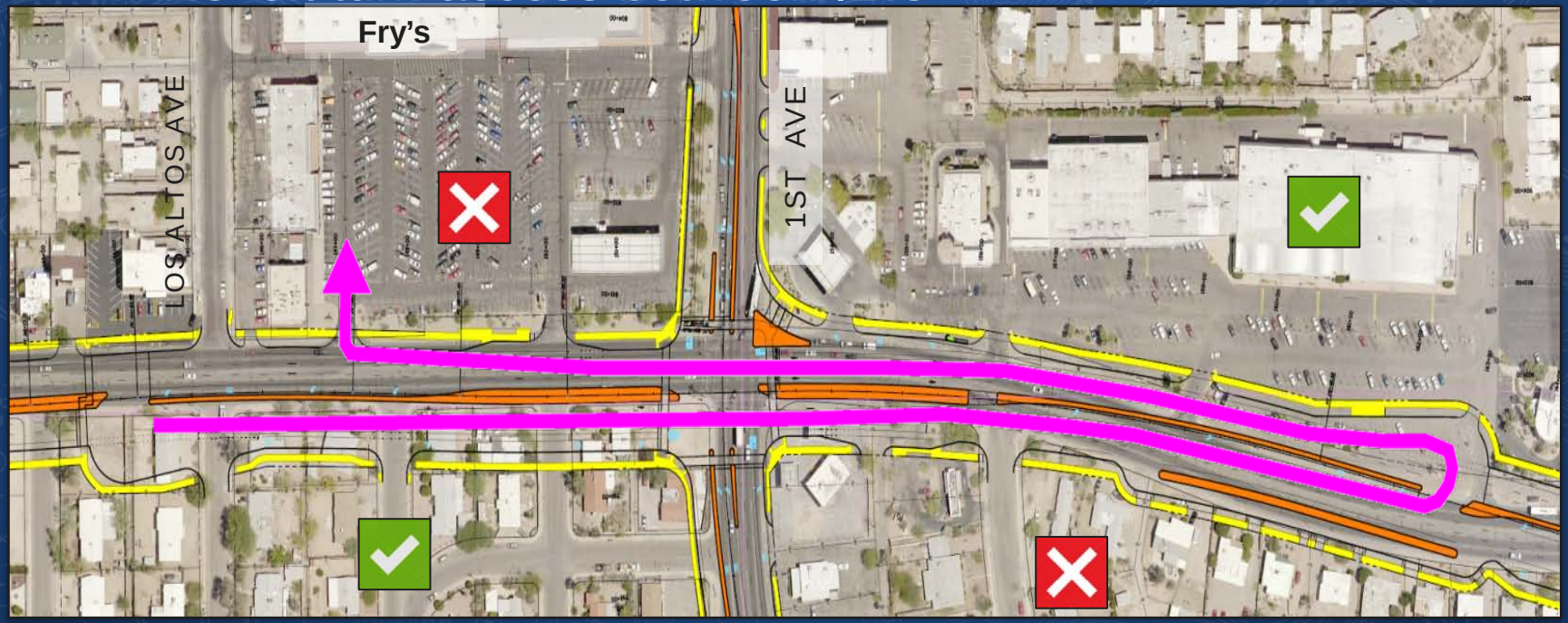


Source: Regional Transportation Authority



INDIRECT LEFT TURNS (ILT)
Access / Economic Considerations

- ILTs limit access to existing businesses in 2 quadrants
  - Example – Grant Road Fry's Plaza
    - No left turn access between ILTs



- Original concept - Increased travel distance of 0.65 mi

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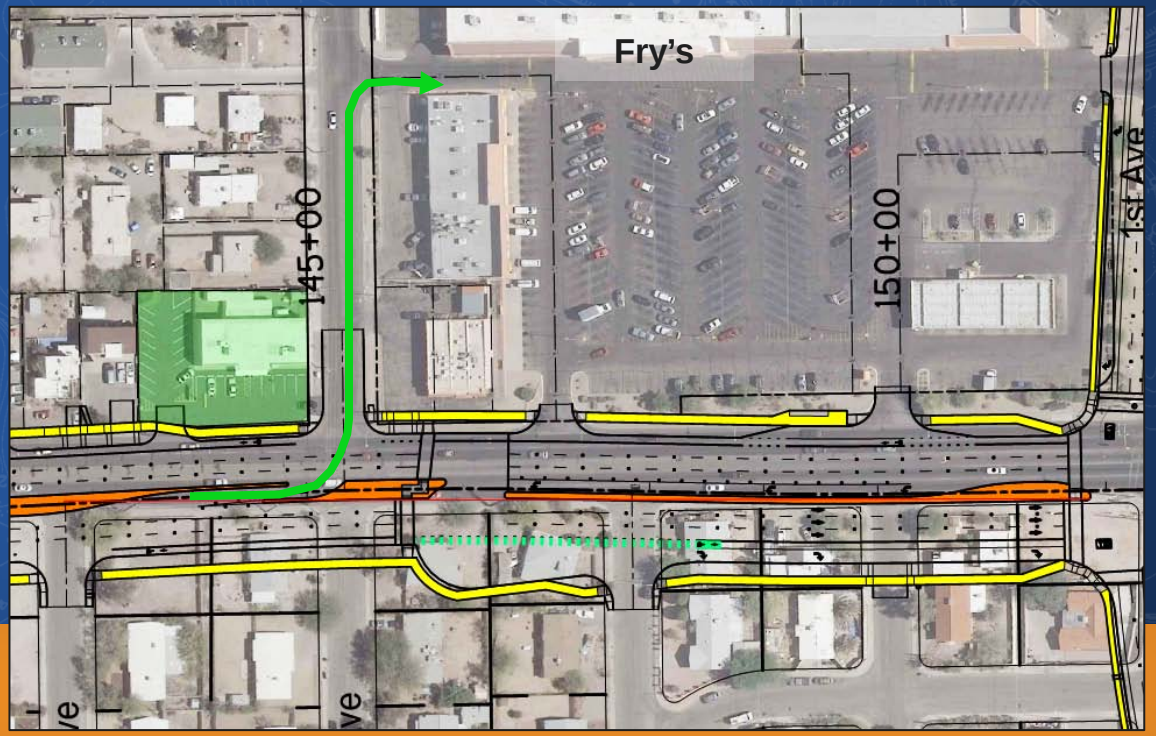
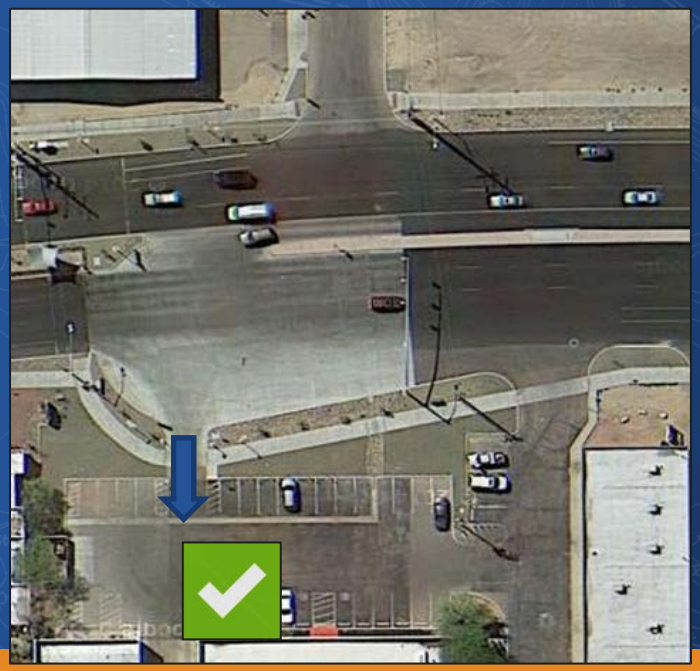
INDIRECT LEFT TURNS (ILT)
Access / Economic Considerations

- ILTs limit access to existing businesses in 2 quadrants
  - Example – Grant Road Fry's Plaza
  - Revised Design:
    - Move bulb east 200 ft
    - Add direct inbound access to retail
    - No change in ILT storage



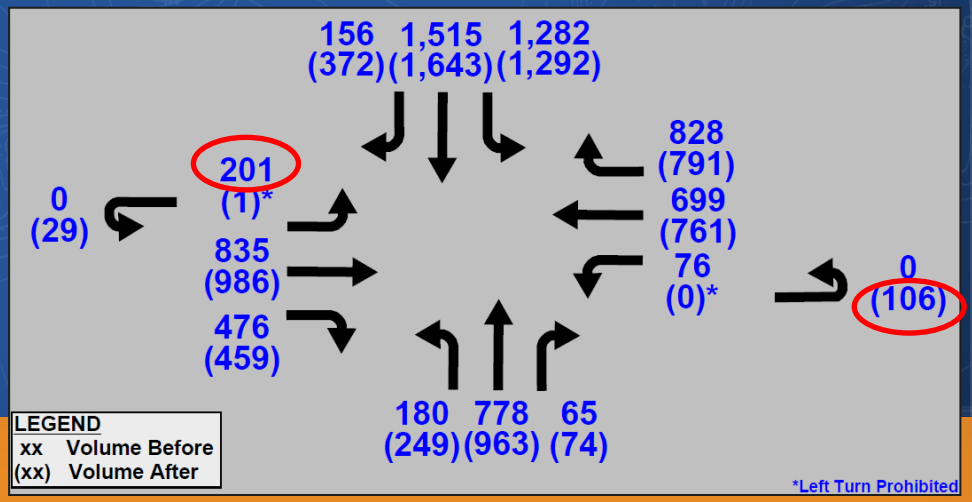
INDIRECT LEFT TURNS (ILT)
Access / Economic Considerations

- Where possible avoid outbound access at bulbs
  - Adds signal phases
  - Challenging two-way signal coordination
  - Potential conflicts with minor street right



INDIRECT LEFT TURNS (ILT)
Tucson Experience

- 2 ILT intersections completed, 4 more in design
- Lessons learned:
  - ILTs add capacity, not always reduce delay
  - Signal timing is critical to realize benefits (side streets, left turn phasing, coordination)
  - Provide sufficient intersection spacing to avoid queue spillback
  - Observed reduction in left turn volumes (up to 50%)



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INDIRECT LEFT TURNS (ILT)
Tucson Experience

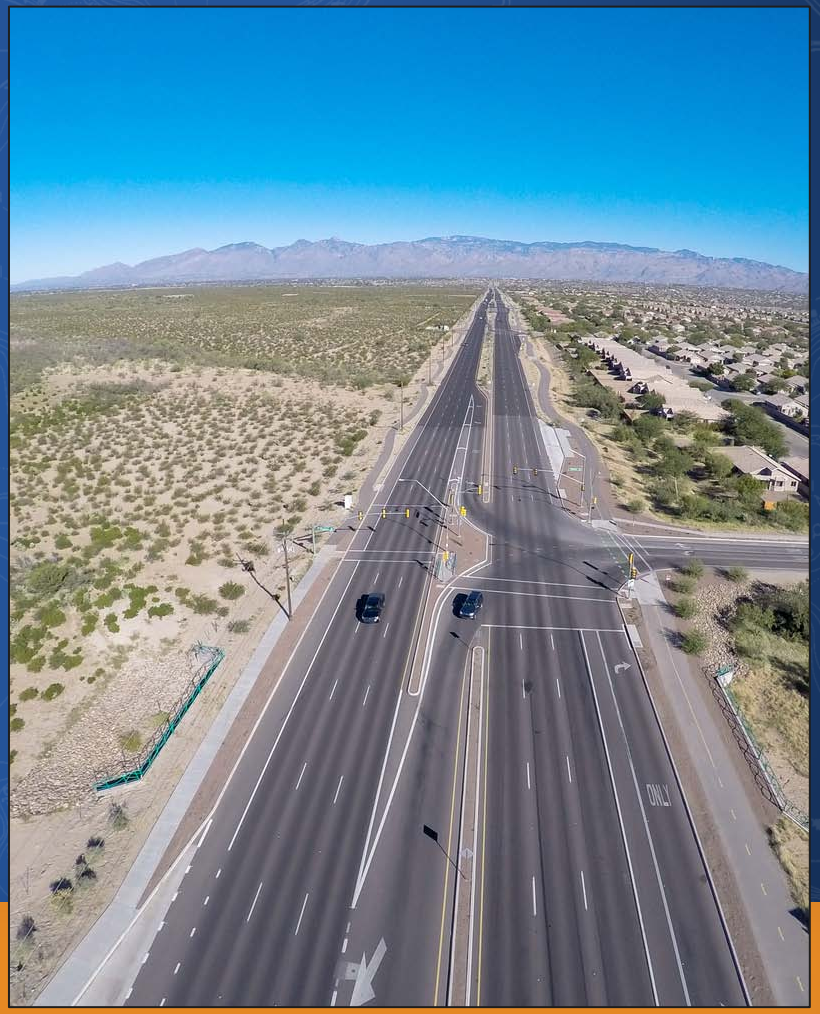
- Lessons learned:
  - Positive safety experience
  - Compliance gets better over time, but it's a challenge
    - Develop Education program prior to opening
    - Enforcement is critical to discourage intentional violations

Source: Regional Transportation Authority

FLORIDA T
Overview

Basic Principle: Provide acceleration lane for left turns from "stem" leg

- Safety - Reduced conflict points (left turn crashes)
- Operations – One direction of traffic on major street is always free-flowing



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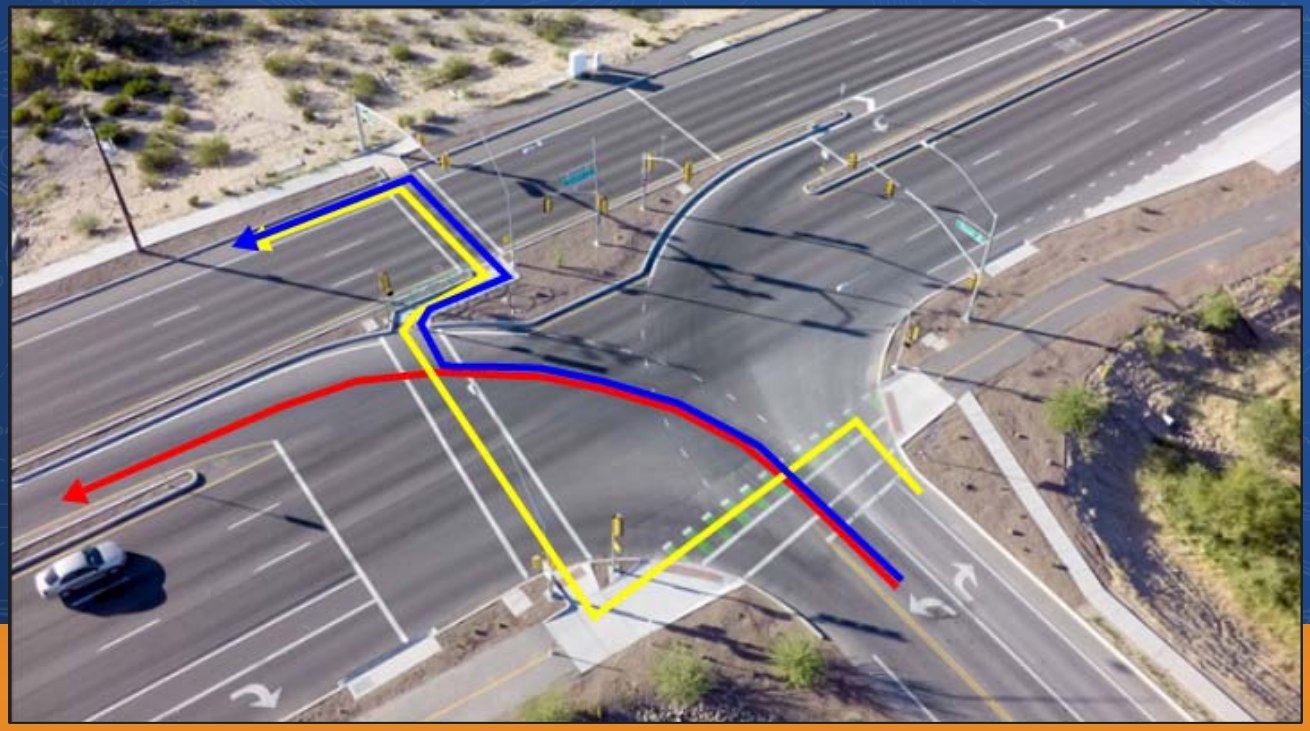
FLORIDA T
Design Considerations

- Requires significant intersection spacing – at 45 mph the acceleration lane and taper are >1,500 ft
- Limited to single left from “stem” – not appropriate for high left turn volume

FLORIDA T
Alternative Modes

- Allows two-stage pedestrian crossing
- Challenging for bicyclists making lefts from “stem” – end up on inside of travel lanes. Alternatives:
  - Use one or both crosswalks



Potential bike left turn paths at Florida T intersection

QUESTIONS?

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