FDOT DISTRICT 3
2014 ETAT MEETING

Intersection Analysis

OVERVIEW

Purpose

- Determine the appropriate solution for each unique project
- Ensure the recommended solution safely and efficiently accommodates all road users

Process

- Determine the analysis tool
- Collect existing conditions data
- Analyze the existing conditions
- Future conditions analysis

DATA COLLECTION

Can be robust or minimal depending on the nature of the study. May include :

- Traffic Counts
- Signal timing/phasing
- Free-flow travel speeds
- Travel times
- Queue lengths
- O/D information
- Roadway geometry
- Average delay by movement
- Crash Data

ANALYSIS TOOLS

- Highway Capacity Software (HCS)
- Synchro
- aaSIDRA
- SimTraffic - Microsimulation
- CORSIM - Microsimulation
- VISSIM - Microsimulation

EXISTING CONDITIONS ANALYSIS

- Serves as the baseline and calibration point
- Helps to identify current operational deficiencies
- Determine Level of Service (LOS)

FUTURE CONDITIONS ANALYSIS

Can the current intersection configuration meet the operational needs of the future demand?

What other options are available?

FUTURE CONDITIONS ANALYSIS

General types of intersections:

- Unsignalized Intersections
- Signalized Intersections

FUTURE CONDITIONS ANALYSIS

Unsignalized Intersections

- LOS is measured as seconds of delay per vehicle
- Acceptable LOS is usually D or better
- LOS D equates to 35 sec/veh or less
- Often exhibit failing operations of the side street
- Easy fix is a signal, but will a signal be warranted in the future?
- Based on available right-of-way, surrounding roadway network, traffic volumes other solutions besides signalization should be investigated

FUTURE CONDITIONS ANALYSIS

Unsignalized Options

- Restricted Crossing U-Turn Intersection
- Roundabout

FUTURE CONDITIONS ANALYSIS

Restricted Crossing U-Turn Intersection

- Reduces the need for a traffic signal
- Can be signalized if needed
- Fewer Conflict Points (18 vs. 32)
- Increases throughput
- Reduces travel time
- LOS measured at 3 locations

FUTURE CONDITIONS ANALYSIS

Roundabout

- Reduces the need for a traffic signal
- 75% fewer conflict points than conventional intersection
- Can reduce delay 20% or more
- Increases throughput
- Reduces travel time

FUTURE CONDITIONS ANALYSIS

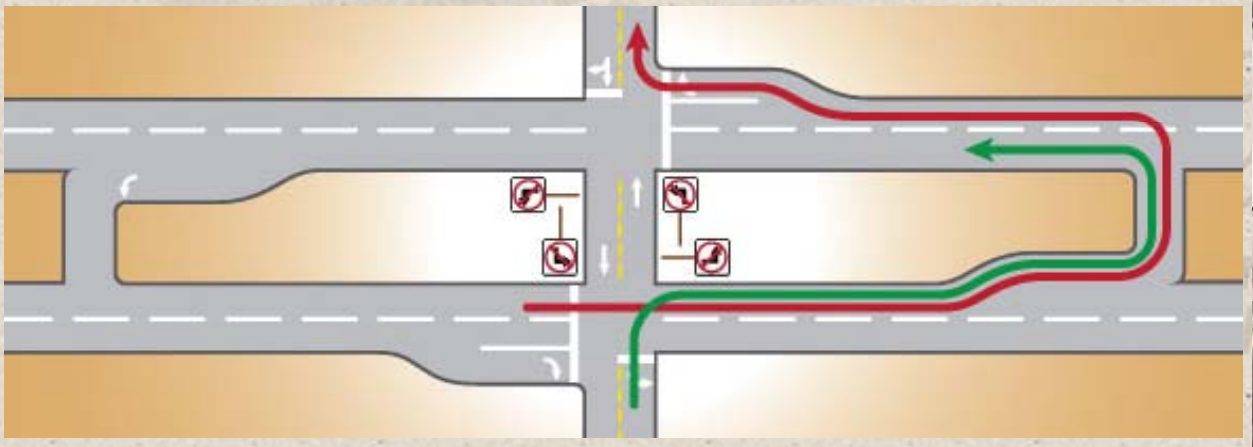
Signalized Intersections

- LOS is measured as seconds of delay per vehicle
- Acceptable LOS is usually D or better
- LOS D equates to 55 sec/veh or less
- Iterative analysis to determine optimal geometric needs in the future
- When reasonable at-grade intersection geometry does not work, what's next?

FUTURE CONDITIONS ANALYSIS

Signalized Options

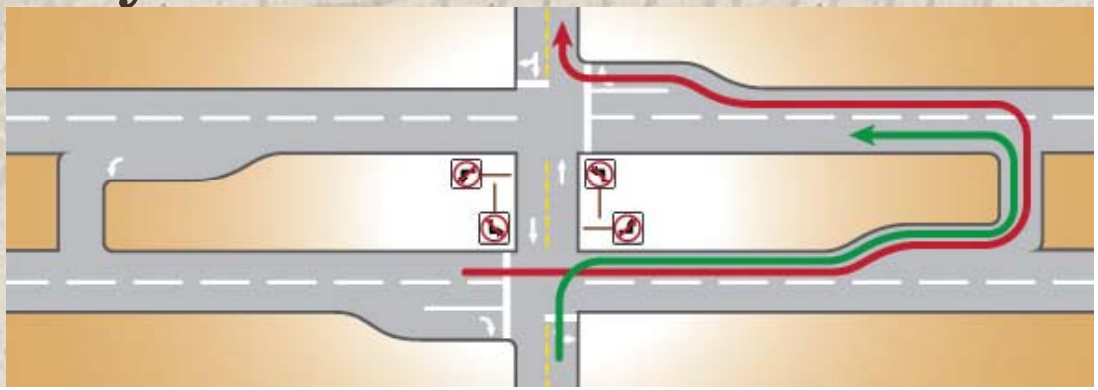
- Median U-Turn Intersection
- Continuous Flow Intersection



FUTURE CONDITIONS ANALYSIS

Median U-Turn Intersection

- Almost always signalized
- Fewer Conflict Points (16 vs. 32)
- Increases throughput
- Reduces travel time
- Can be used on medium to high speed divided highways



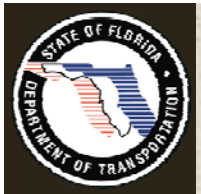
FUTURE CONDITIONS ANALYSIS

Continuous Flow Intersection

- Always signalized
- Fewer Conflict Points (30 vs. 32)
- Increases throughput
- Reduces travel time
- LOS can be measured using standard techniques

TRAFFIC ANALYSIS

- Determine the analysis tool
- Collect existing conditions data
- Analyze the existing conditions
- Future conditions analysis
- Quantifiable results



QUESTIONS?

etdm
Efficient Transportation Decision Making