The Access Management Curriculum

# Overview of Access Management

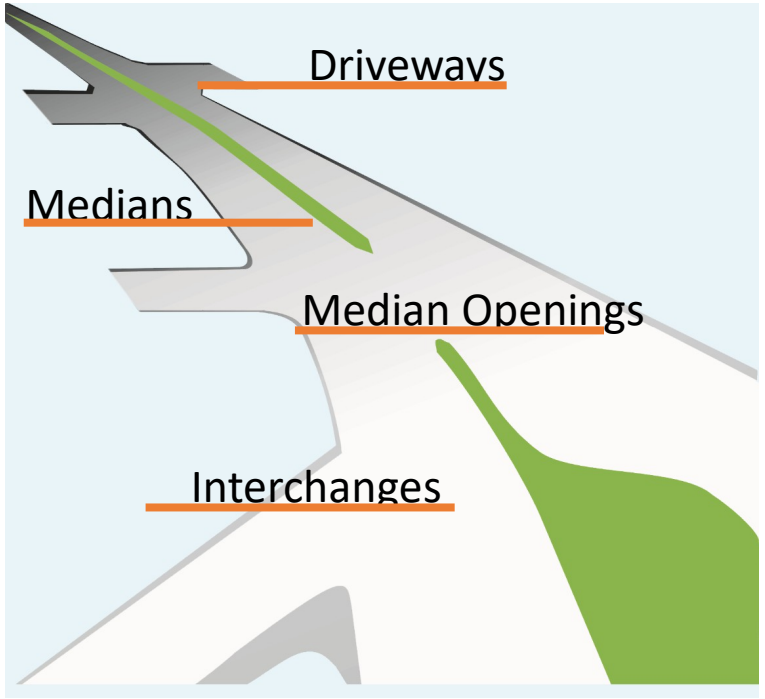
- Module 1

# Learning Objectives

- Define roadway access management and its goals
- Explain the distinction between access, accessibility, and mobility
- Describe the theory behind access management and how the practice has evolved
- Identify methods used to implement access management

# Overview of Access Management

# What elements of the transportation network relate to access?



# Key Concepts

- Access: the physical connection between private property and public way.
- Accessibility: the degree to which several destinations can be reached from a given location.
- Mobility: the number of modal choices a user has available to reach a desired destination.

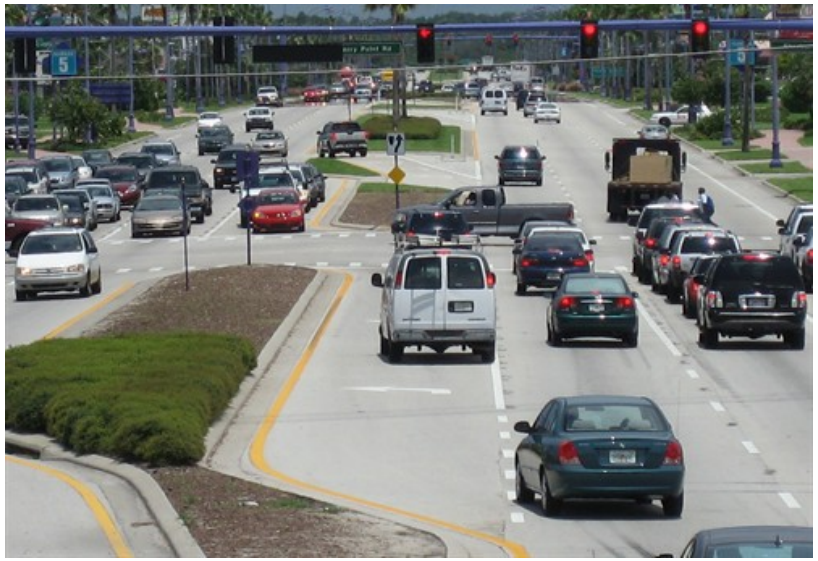
# Typical U.S. Highway Access Problems

- Linear development
- Frequent driveway access
- Lack of supporting networks
- Frequent traffic signals
- Lack of raised medians or frequent median openings
- No consideration of pedestrians or bicyclists
- Crashes, congestion, & poor appearance

"Many, if not most, 6-lane roadways have resulted from widening of existing roadways because of the absence of an effective supporting circulation system…"

- NCHRP 15-43

Access management is the coordinated planning, regulation, and design of access between roadways and land development.

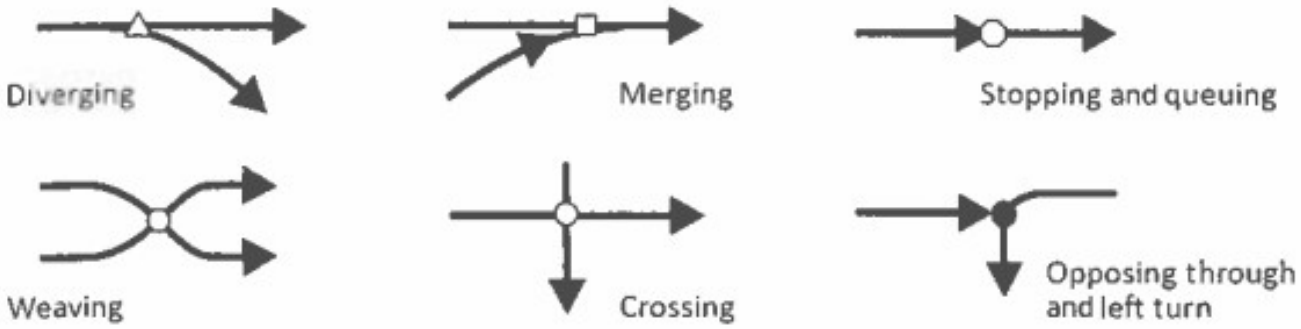



Source: Florida Department of Transportation, Corridor Access Management Training Workshop, Kittelson & Assoc.

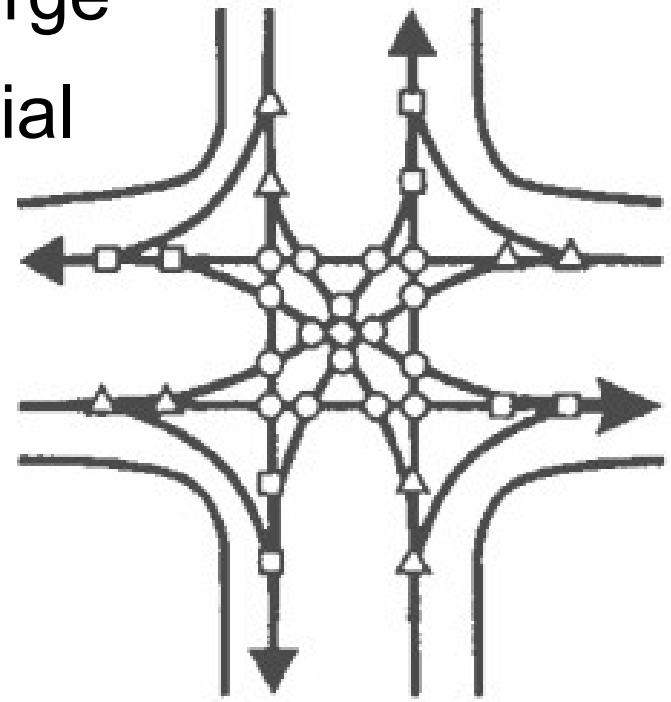
# Goals of Access Management

# Limit Traffic Conflicts and Separate Conflict Areas

- Where traffic movements cross, merge, diverge
- Minimize the number to reduce crash potential
- Separate to provide safe areas




Types of Conflict Points

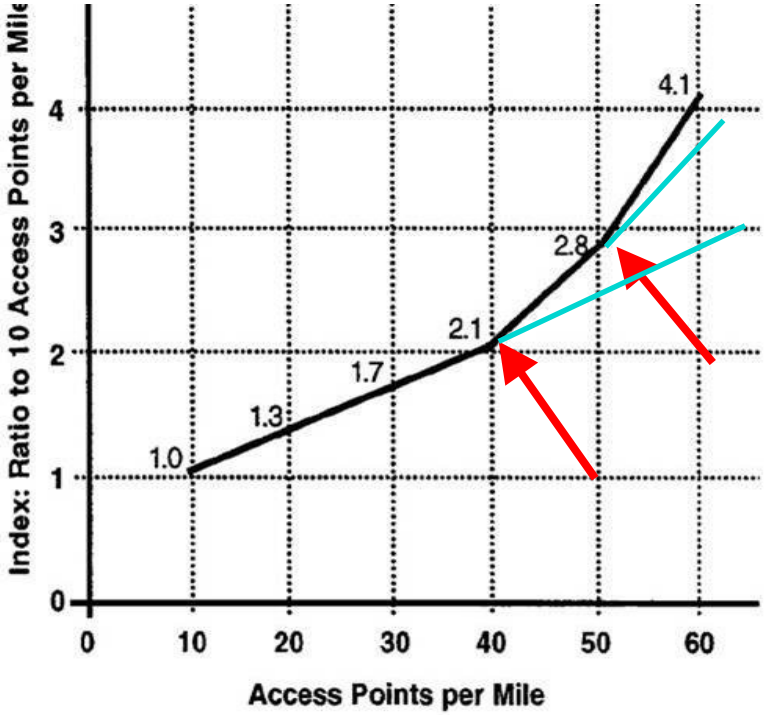


Typical 2-Lane 4-Leg Intersection
(32 conflict points)

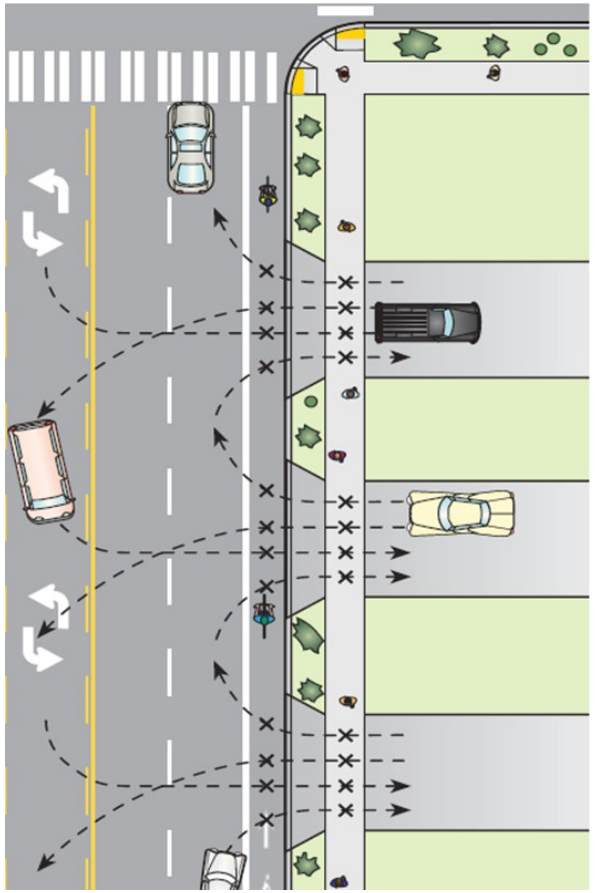
Source: TRB *Access Management Manual*, 2nd Edition, 2014

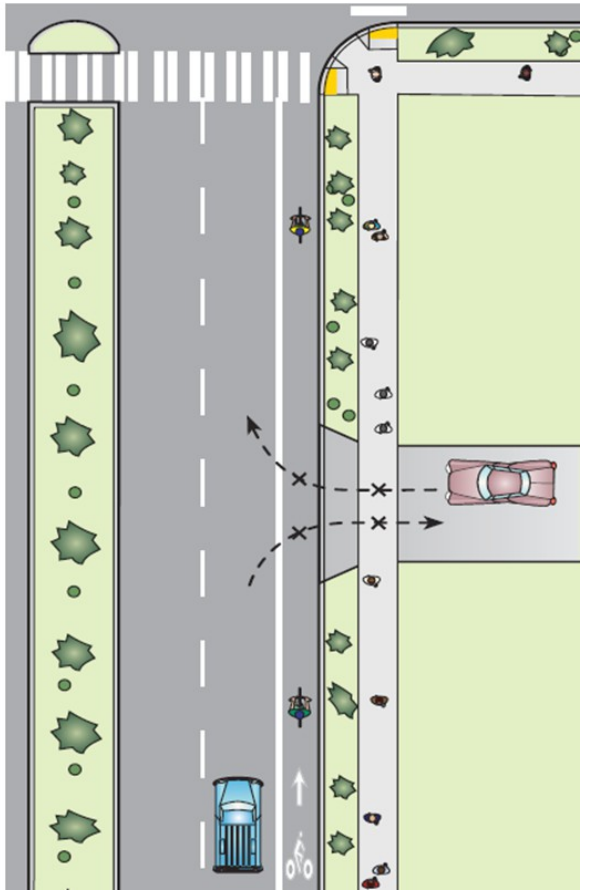
# Goal: Limit traffic conflicts and separate conflict areas

Crashes and Access Density



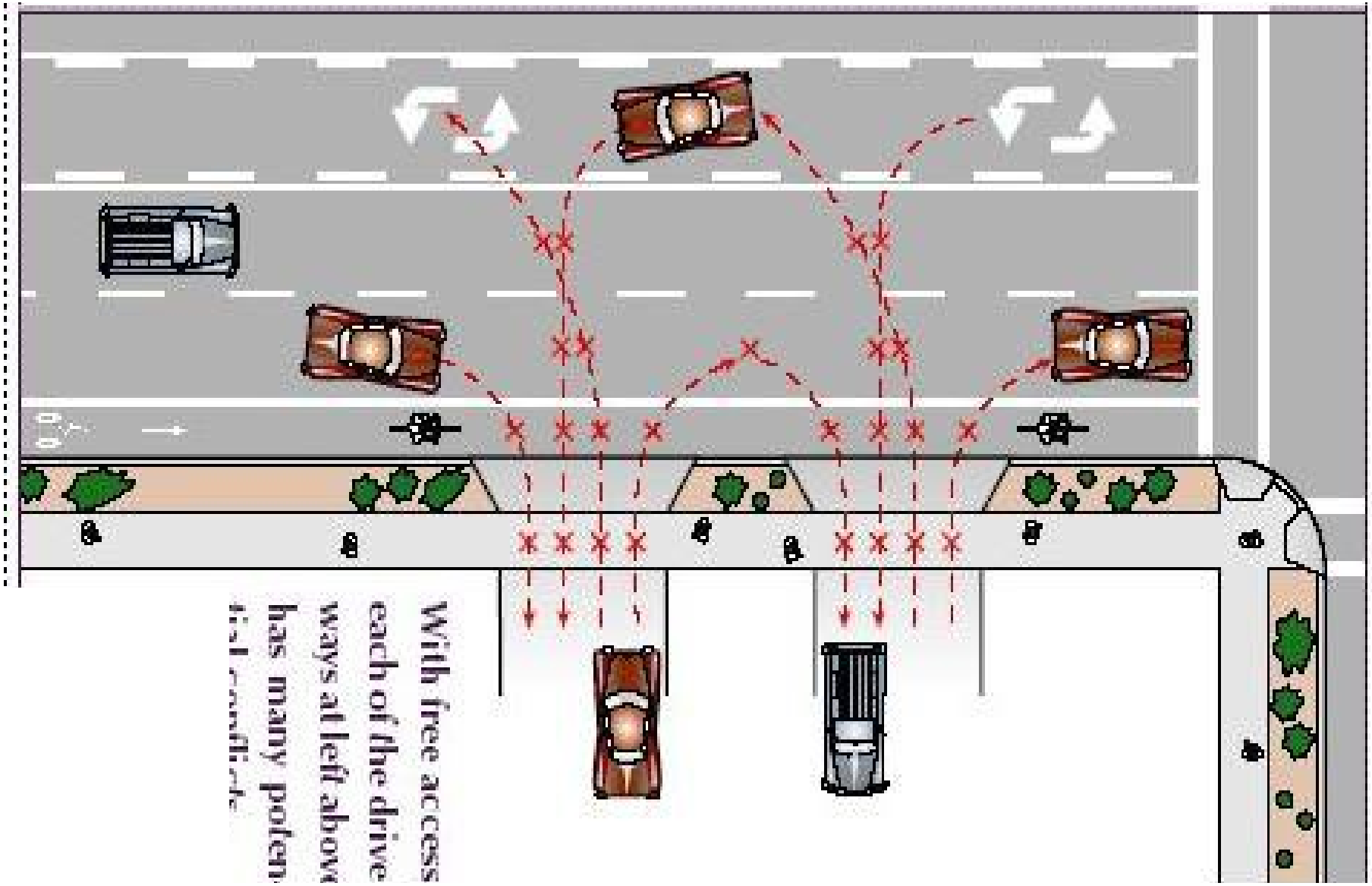

Source: NCHRP Report 420, 1999





Source: Oregon Department of Transportation

# Driveway Conflicts and Left Turns Endanger Pedestrians and Cyclists Too

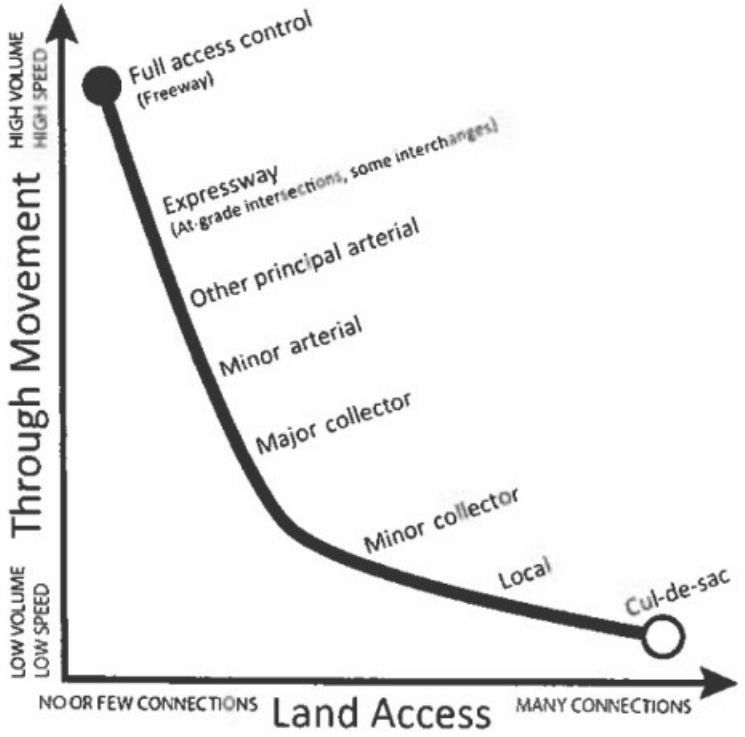





Source: Oregon DOT

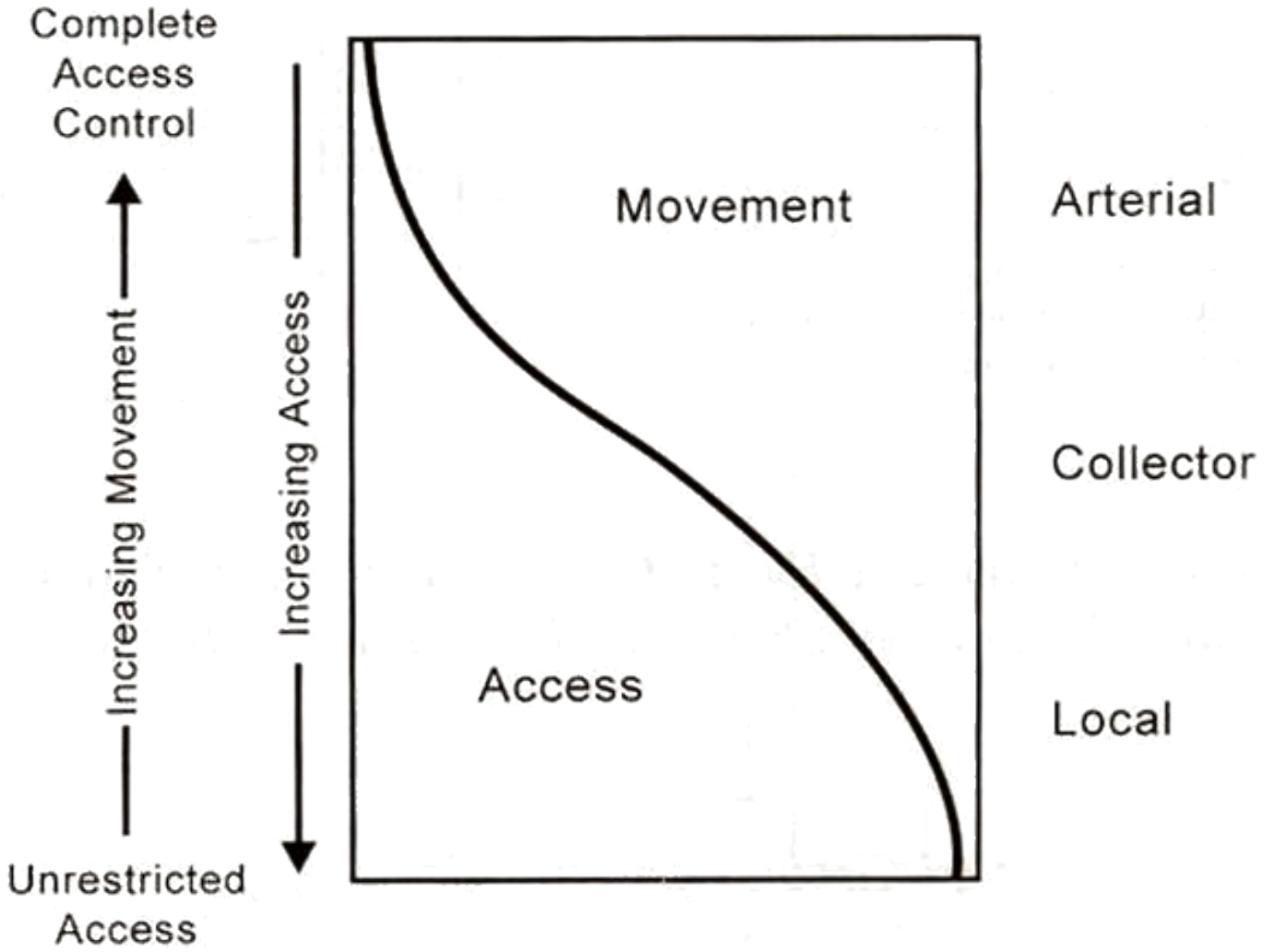
# Roadway Hierarchy and Classification

- Functional Classification
  - Access management techniques vary by classification of roadway
  - Classification describes the purpose of the road (land access versus through movement)

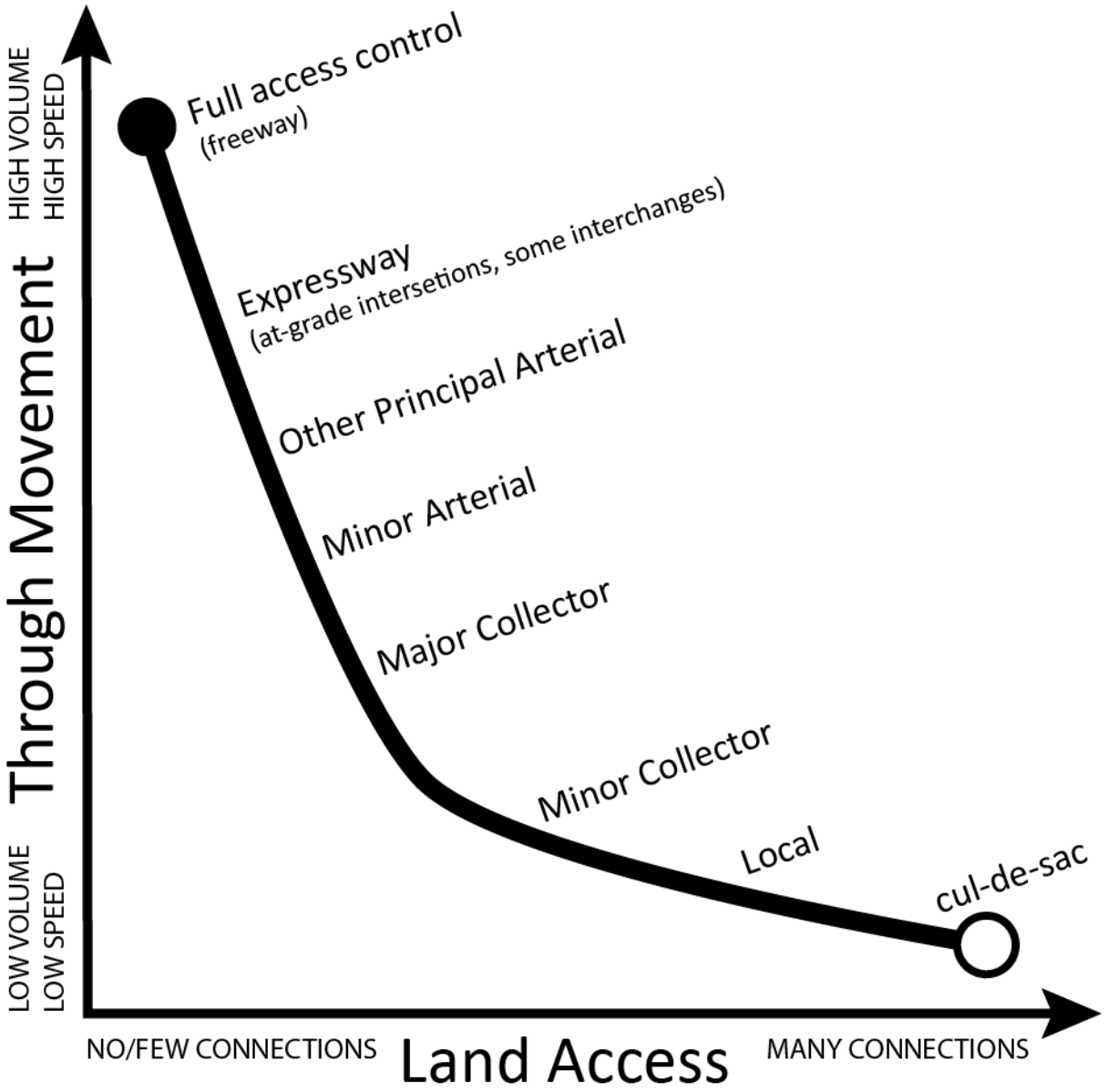



Source: TRB *Access Management Manual*, 2nd Edition, 2014

# Basic Functional Classes

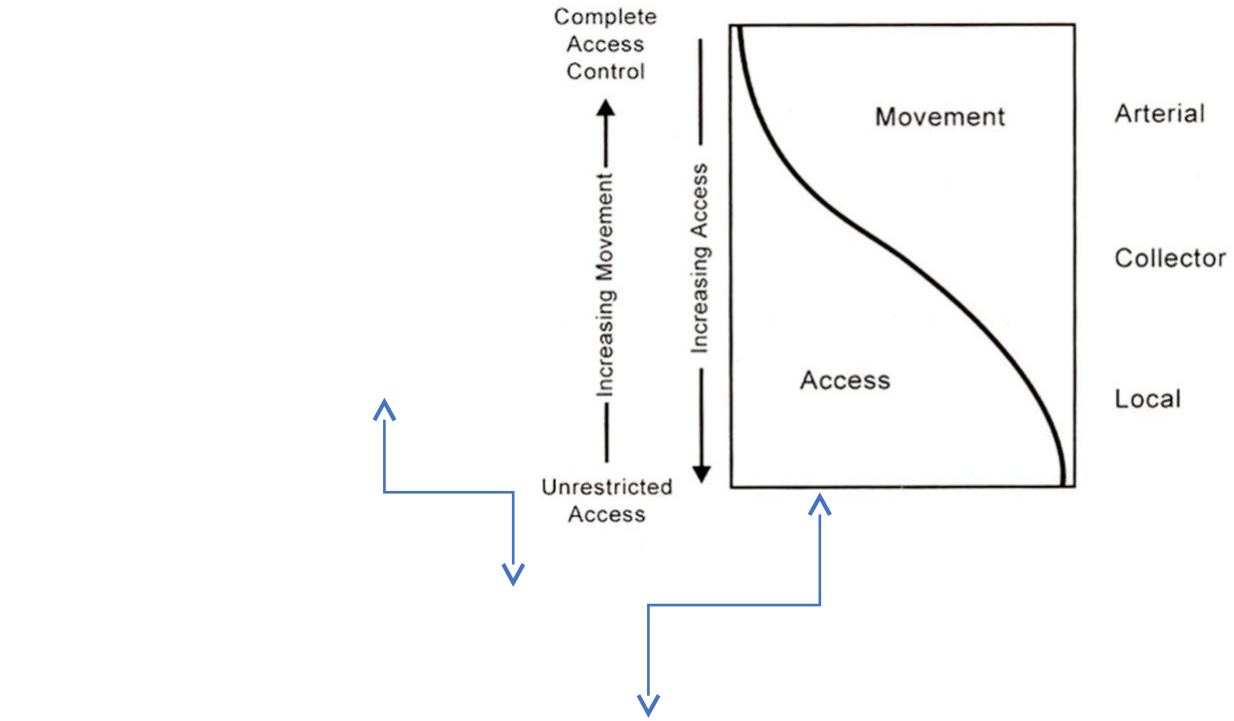



Source: T*ransportation and Land Development,* ITE, 2002



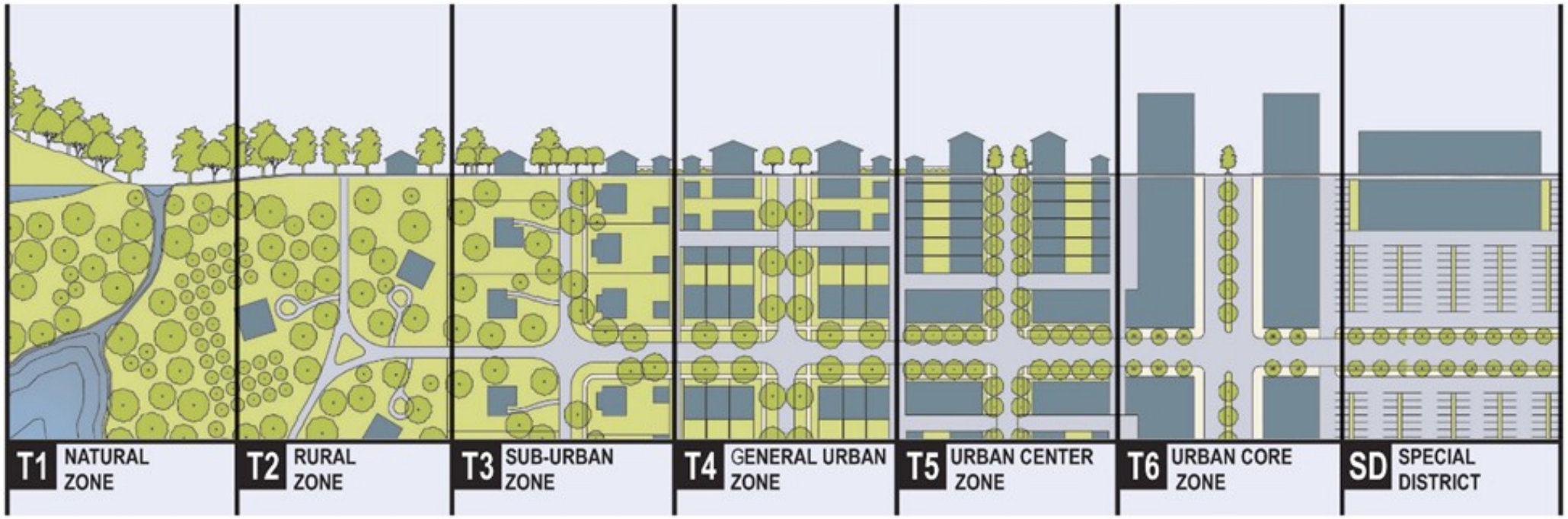

Source: TRB *Access Management Manual*, 2nd Edition, 2014

# Roadway Type and Function



# Considering Land Use Context

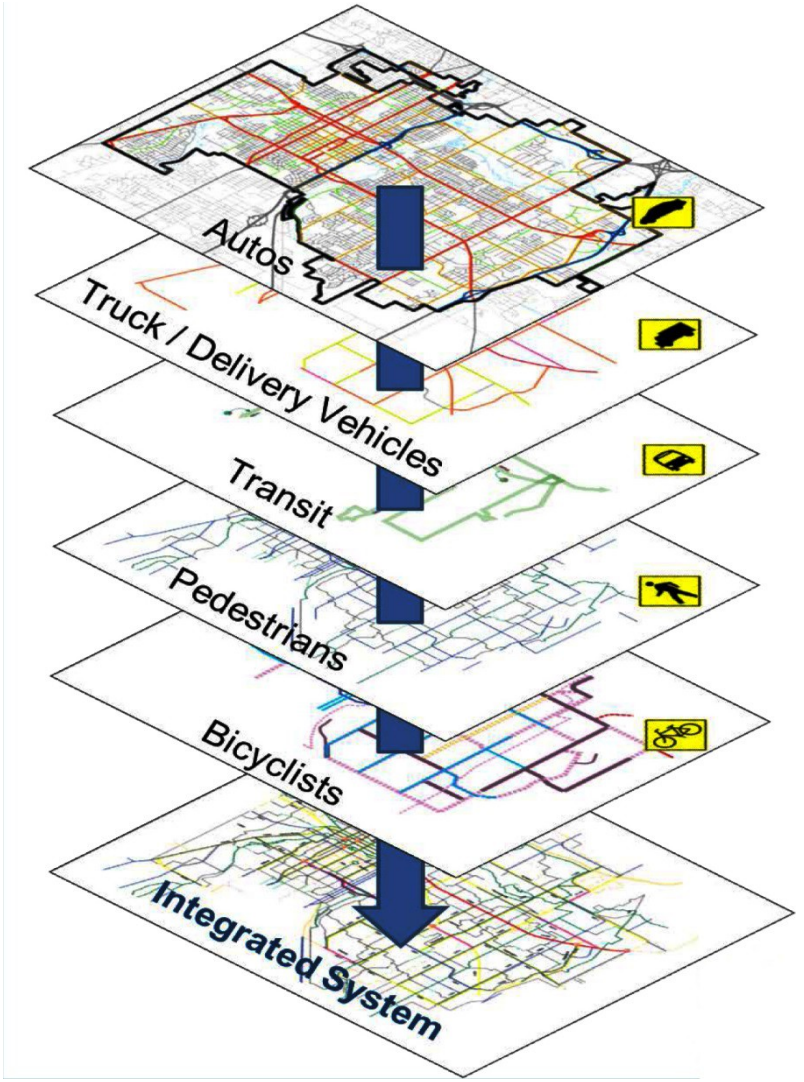
Transect



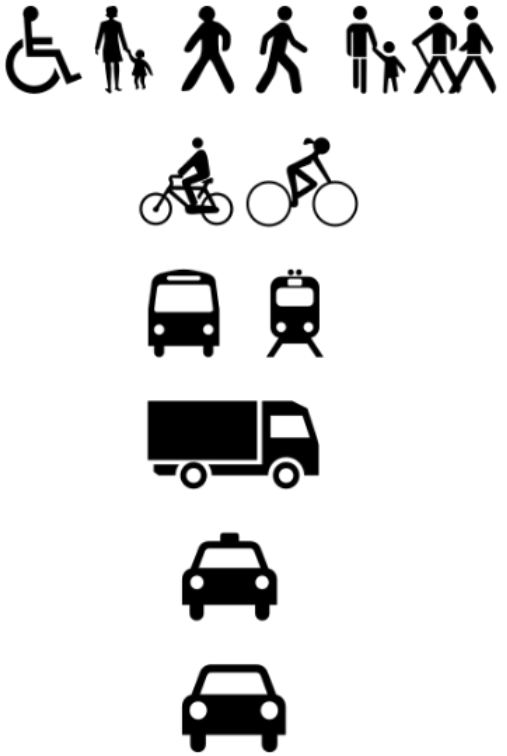

Source: Duany Plater-Zyberk & Company

# Priority Routes by Mode





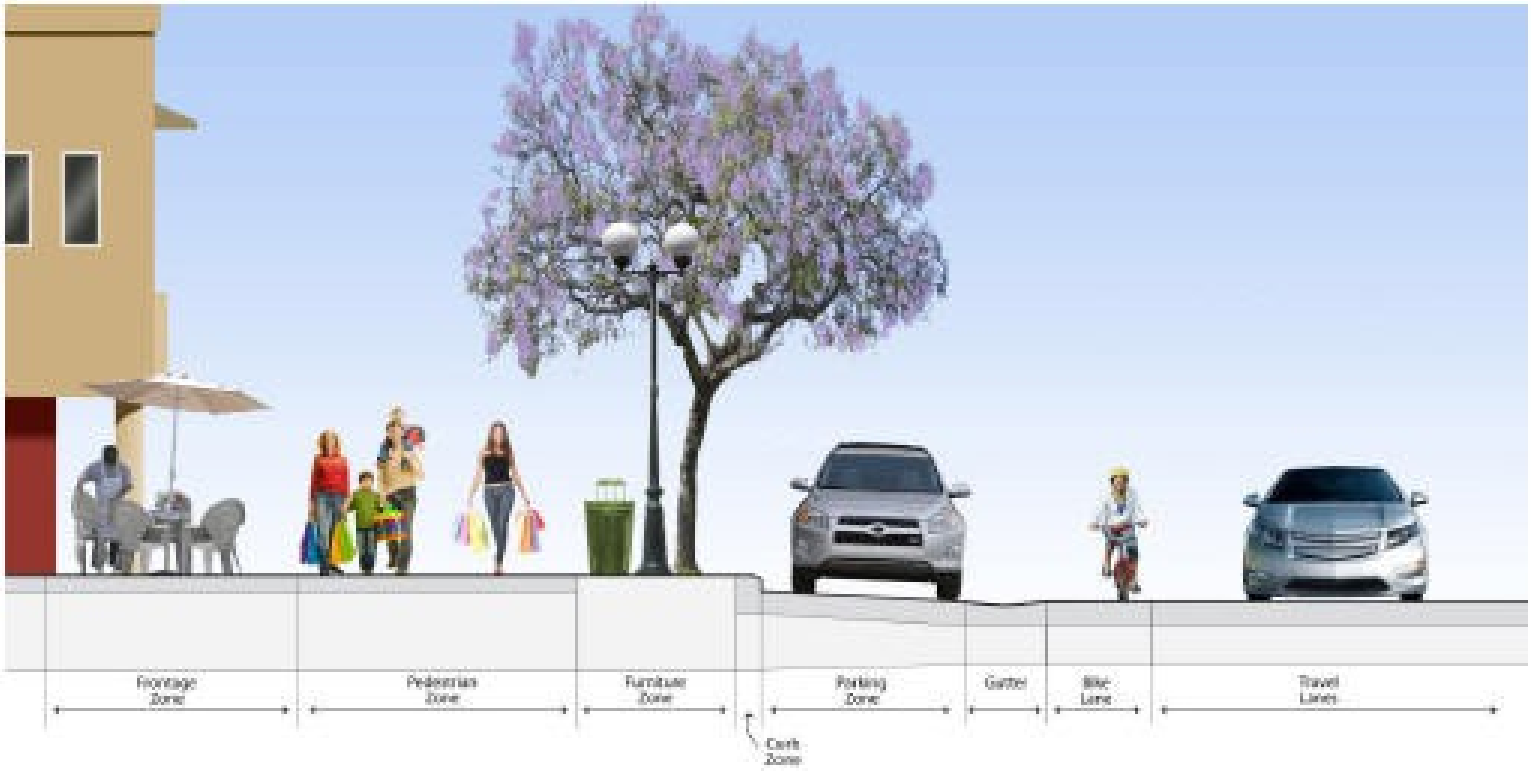

Credit: ITE, Planning Urban Roadway Systems



Credit: commons.Wikimedia.org

# Complete Streets Policies & Guidelines

**Complete Streets**
Bicycle
Pedestrian
Vehicle
Transit
Appropriate Land Use mix




Source: Broward County Complete Streets Guidelines
Credit: Michele Weisbart

# Defining Street Types

| Common Street Types | Description | Comment |
|---|---|---|
| Boulevard | Walkable, moderate speed divided arterial in urban environments that traverses and connects districts and cities. Primarily a longer distance route for all vehicles including transit, goods movement, and emergency response. Design speeds should be 35 mph or less. | Serves as primary transit routes. Should have bike lanes and sidewalks standard. May have shared-use paths. Often has a planted median. May have on-street parking when passing through urban centers and urban cores. |
| Avenue | Walkable, low speed collector or minor arterial that serves as a short-distance connector between districts or urban centers and provides access to abutting land. Links streets with boulevards. For all vehicles including transit. Design speeds should be 30 mph or less; strong consideration should be given for 25 mph or less when onstreet parking is provided. | Serves as primary pedestrian and bicycle routes. Should have local transit routes. May or may not have a median. May or may not have onstreet parking depending on context. |

**Broward County, FL "Complete Streets" Typologies**

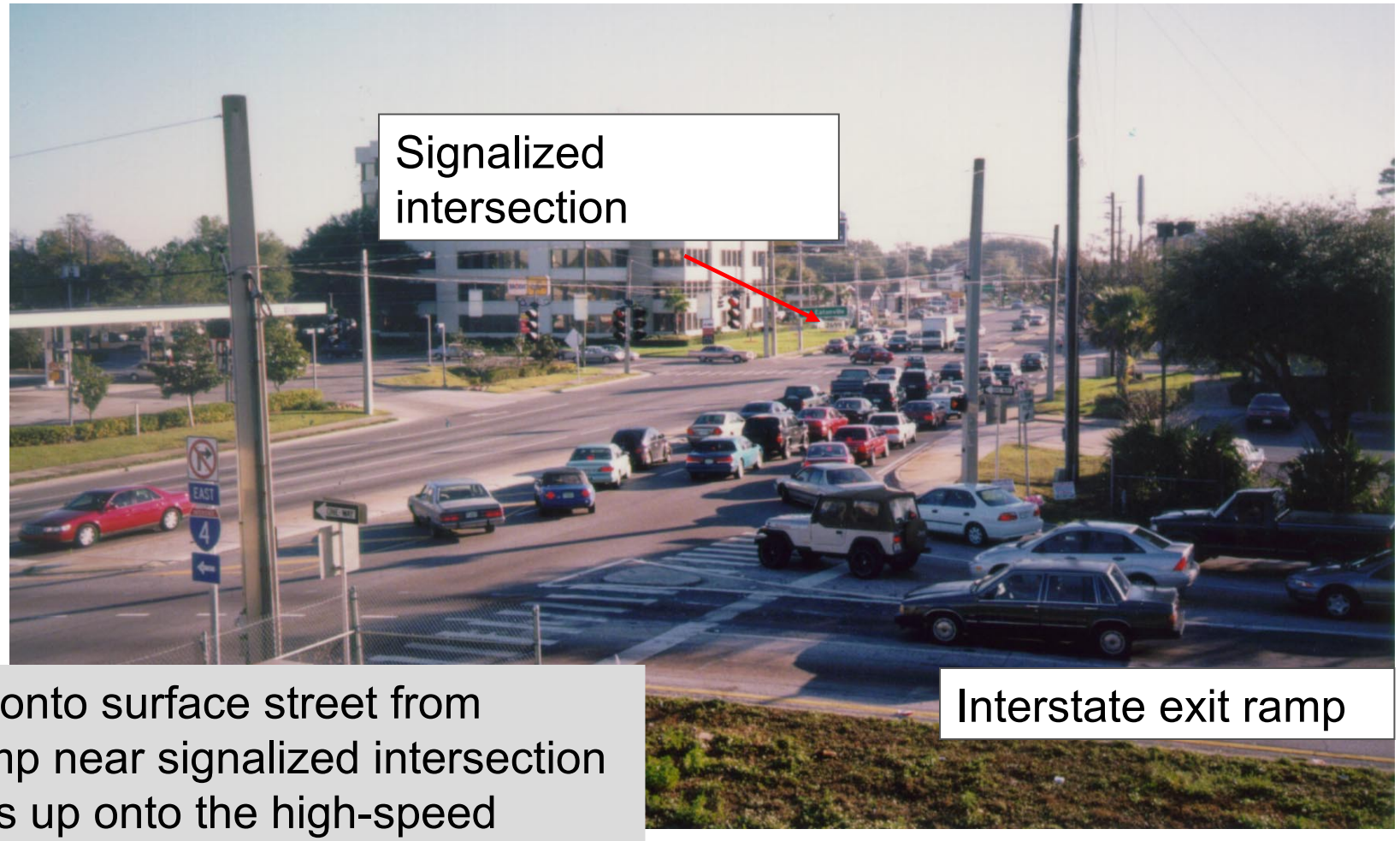
# Access Management Techniques

Corner Clearance: Locate access connections away from signalized intersections

# Access near intersections is particularly unsafe


Photo credits: James Gattis

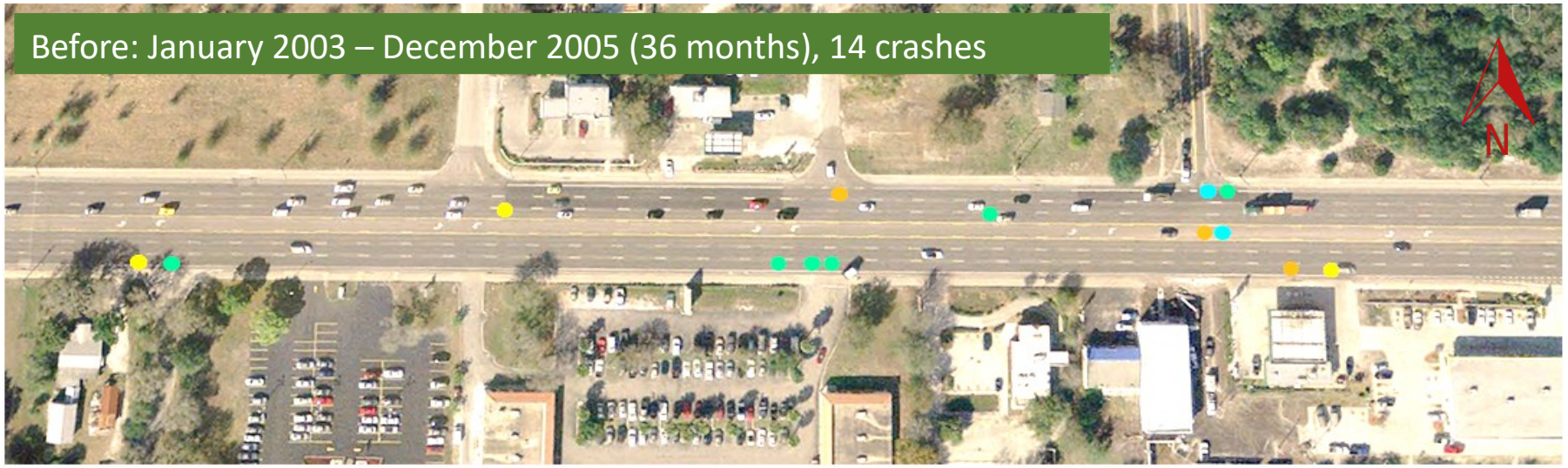
# Access near interchange ramps is also unsafe




Traffic merging onto surface street from interchange ramp near signalized intersection frequently backs up onto the high-speed freeway.

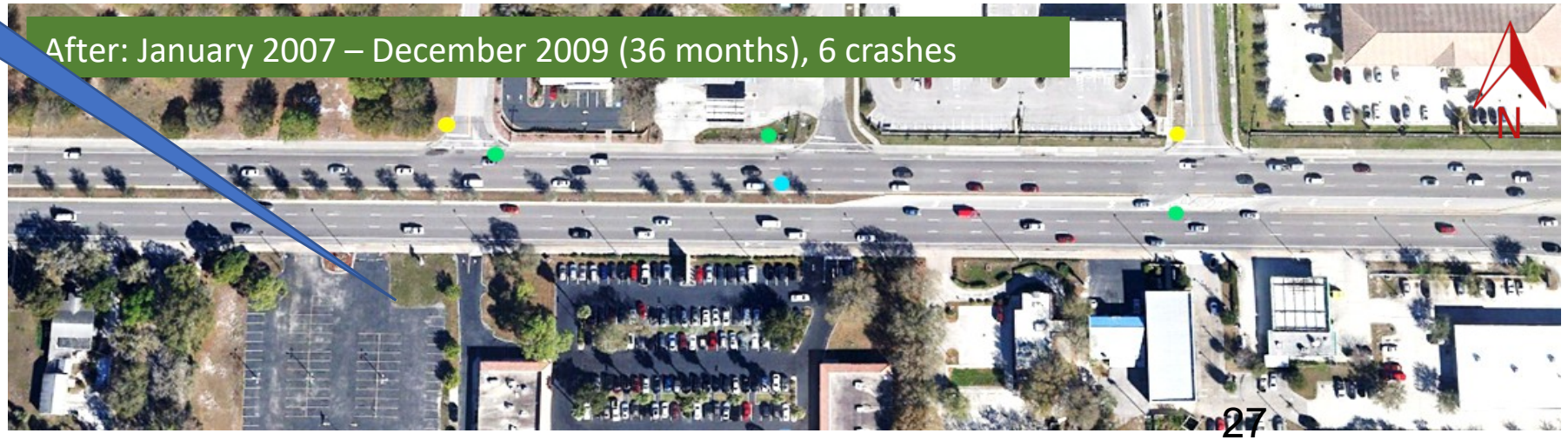
# Well Planned Interchange Network

# Replace TWLTLs with Medians

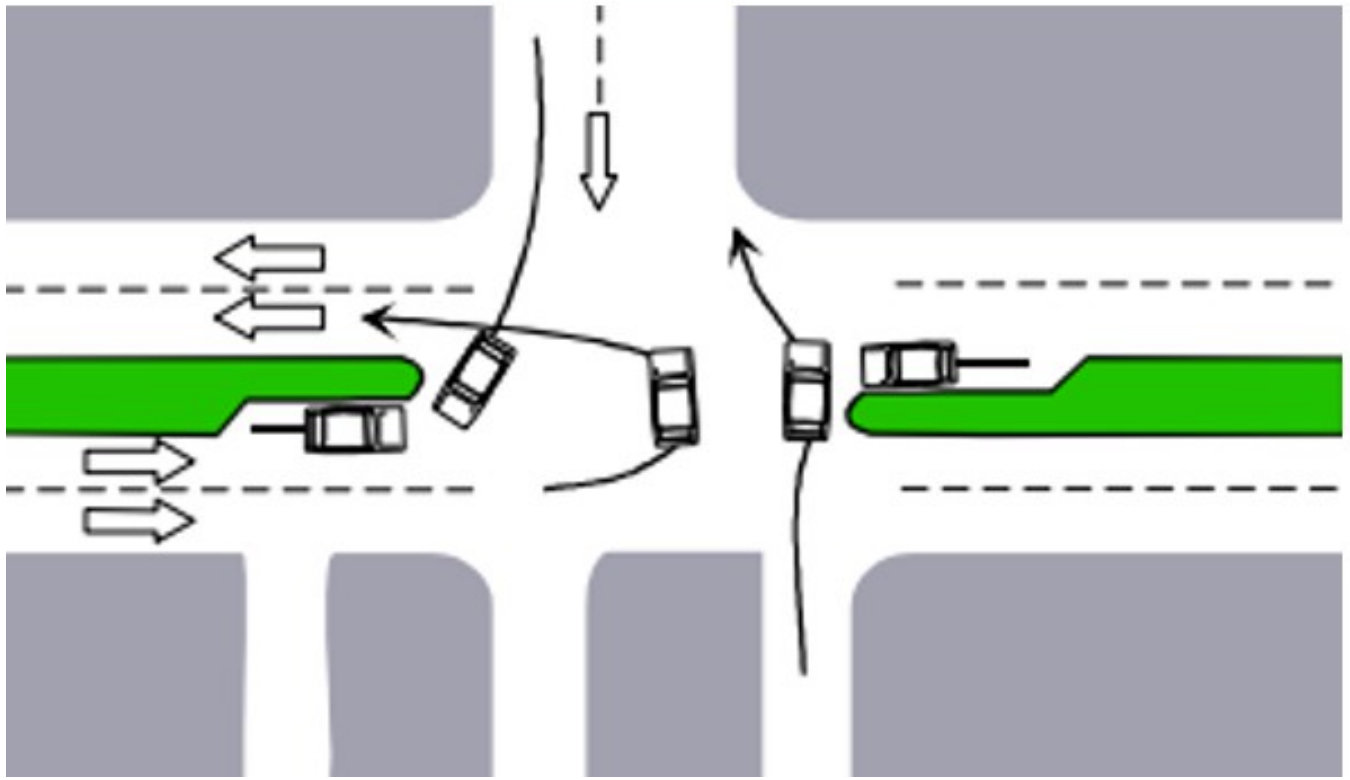



Fruitville Rd, Sarasota County

57% decrease in crashes



# Close or redesign unsafe median openings



Conflicts as vehicles congregate in excessively wide median openings on high volume roadways

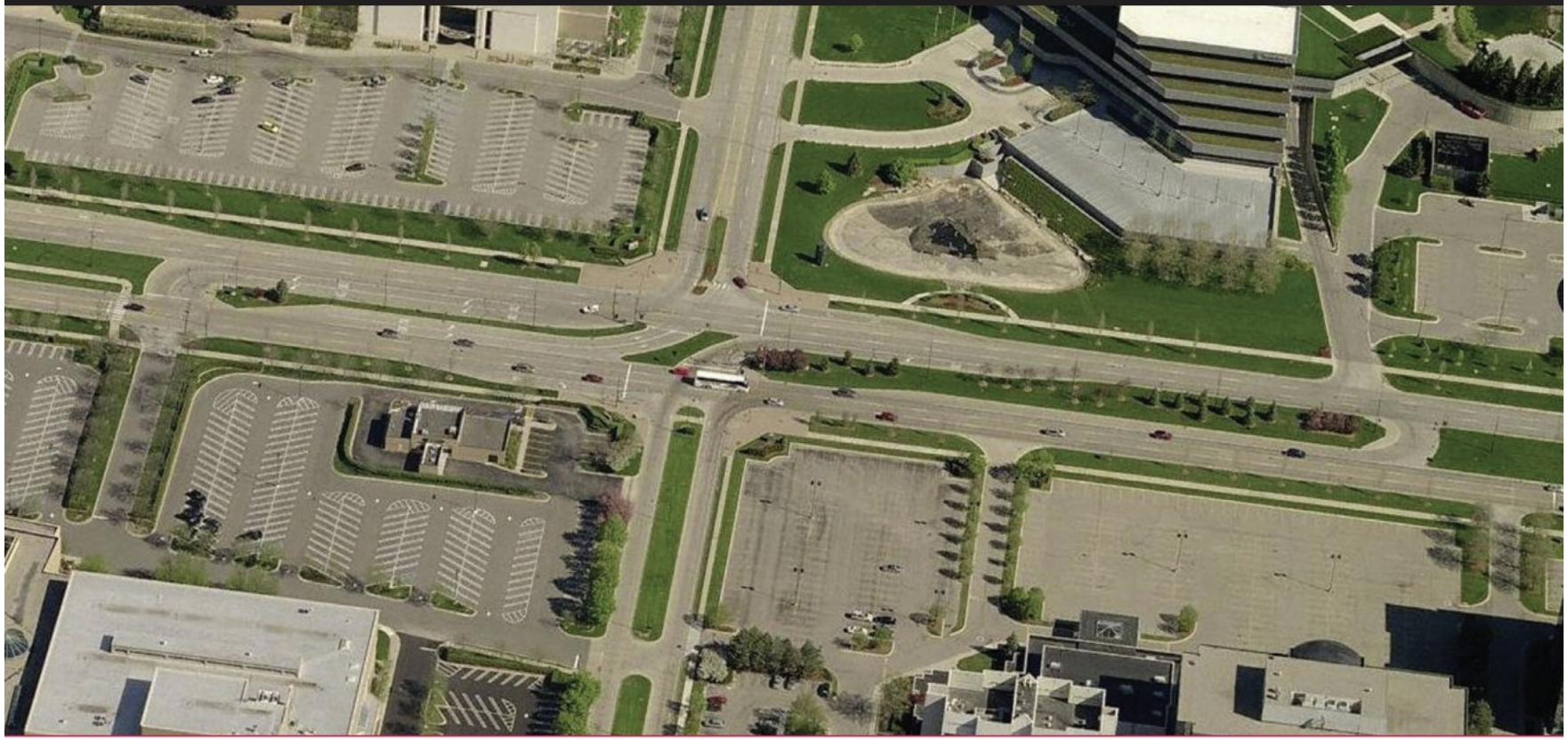
Source: Florida DOT Median Handbook

Manage left turns with **medians** and directional openings.


HIDDEN
DRIVEWAY
25

# Restricted Crossing U-Turn Design

Figure 1. RCUT intersection in Troy, MI.



U.S. Department of Transportation
Federal Highway Administration

www.tfhrc.gov

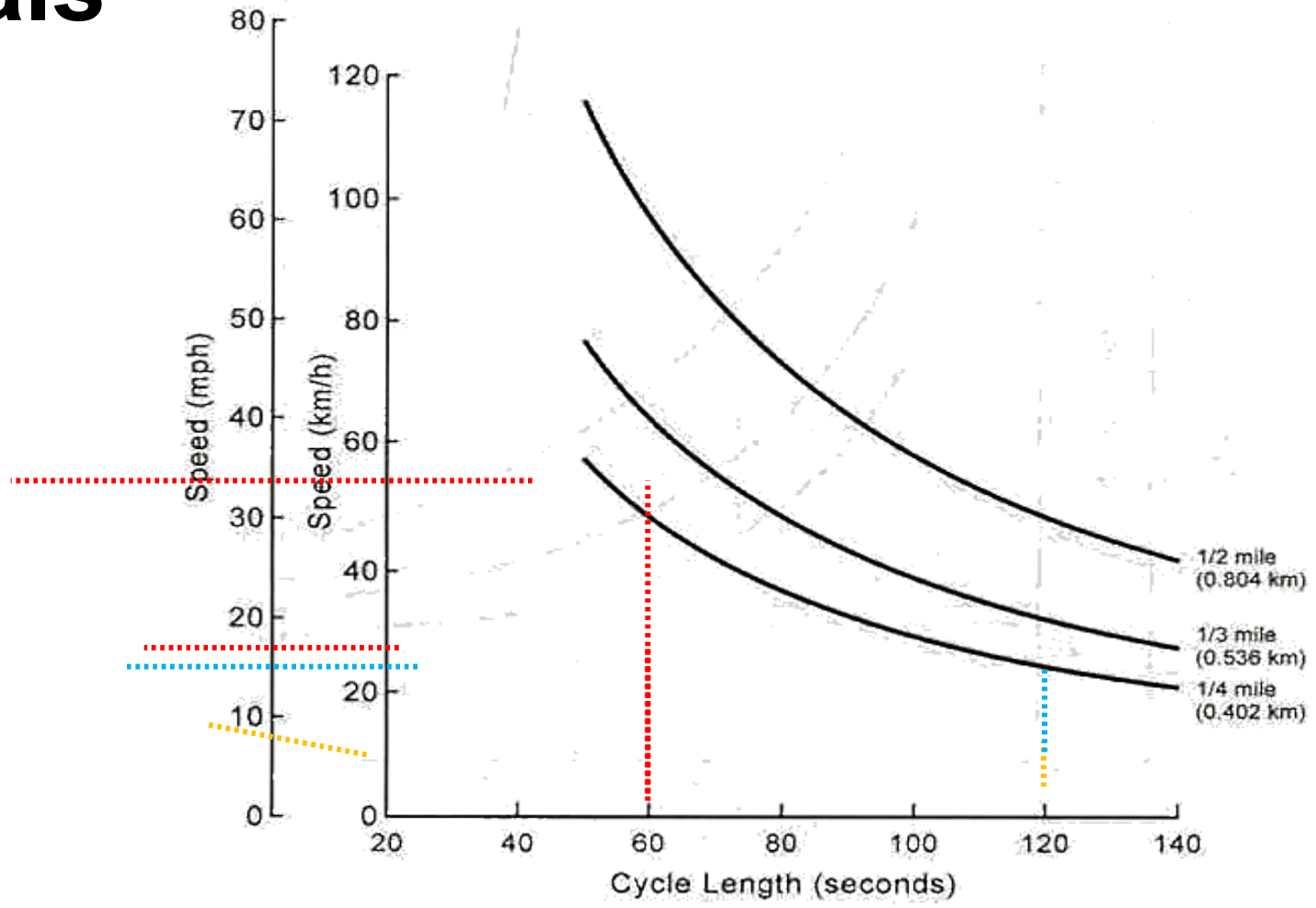
Research, Development, and Technology Turner-Fairbank Highway Research Center 300 Georgetown Pike, McLean, VA 22101-2296



Source: FHWA

# Provide safe midblock crossings for pedestrians

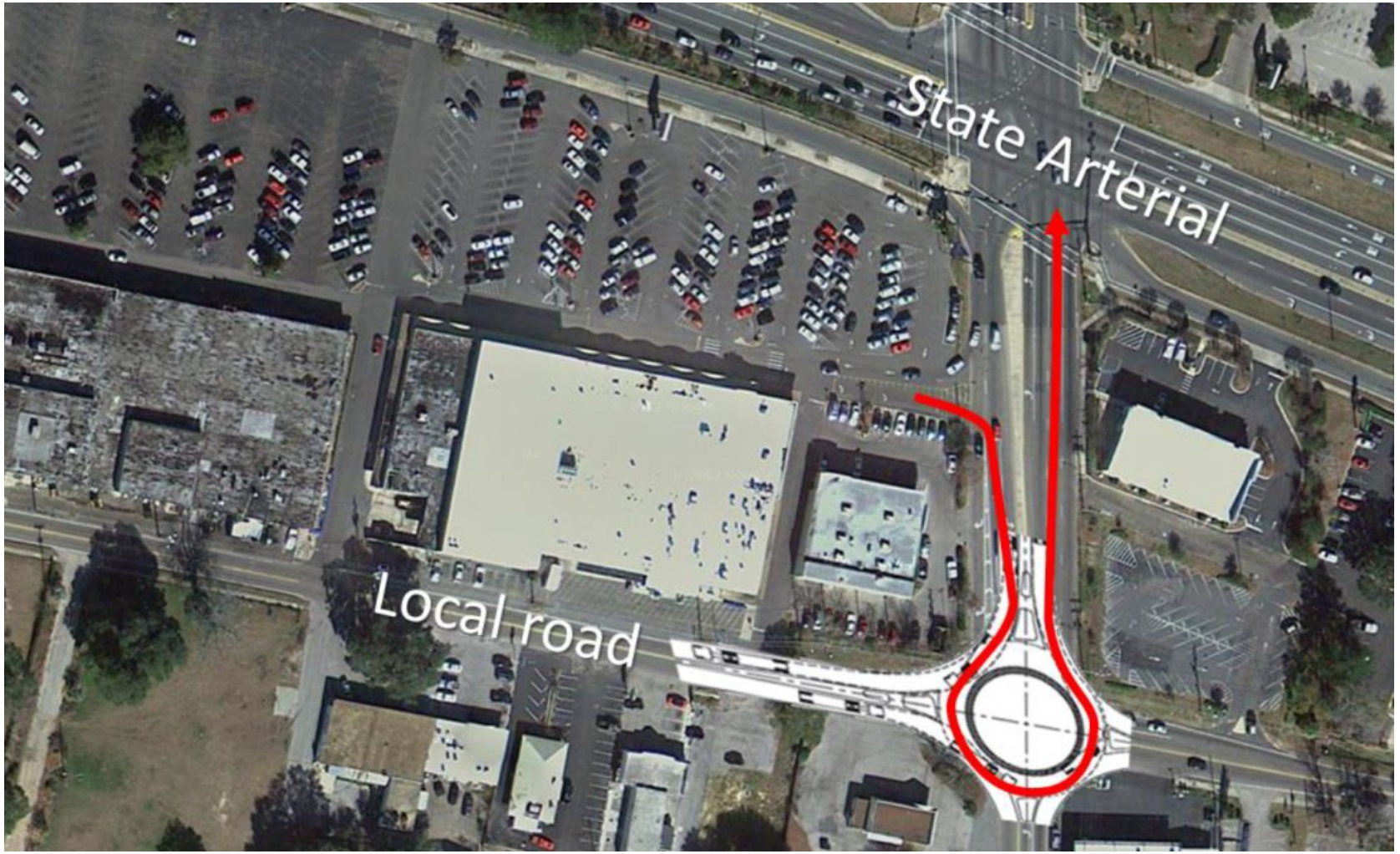

# Avoid Closely or Irregularly Spaced Signals




Source: *Transportation and Land Development,* ITE, 2002

# Install Roundabouts

# Example: Roundabout to accommodate U-turns



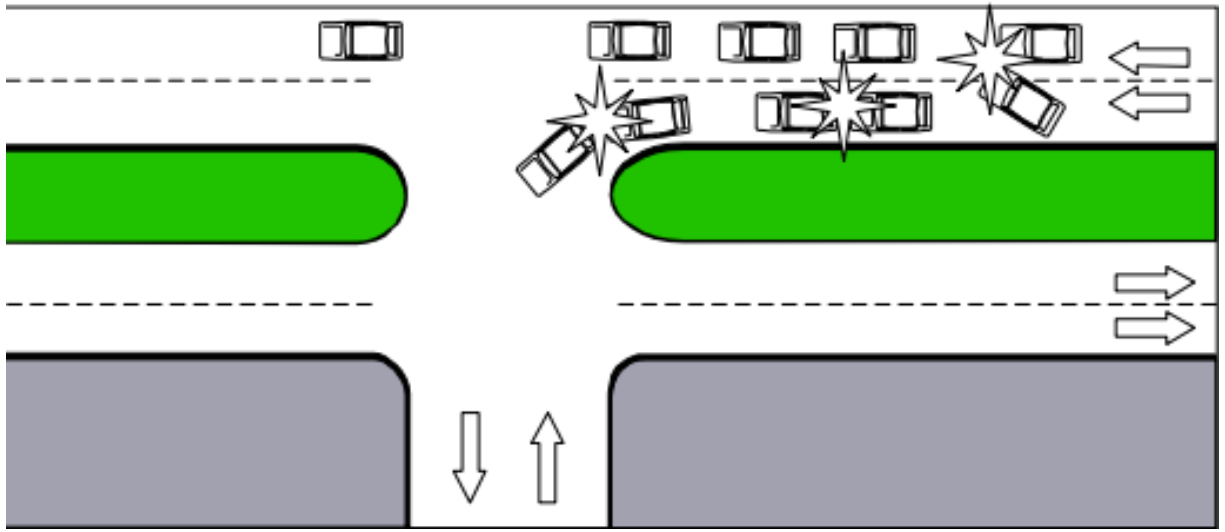

Source: FDOT

# Turn Lanes

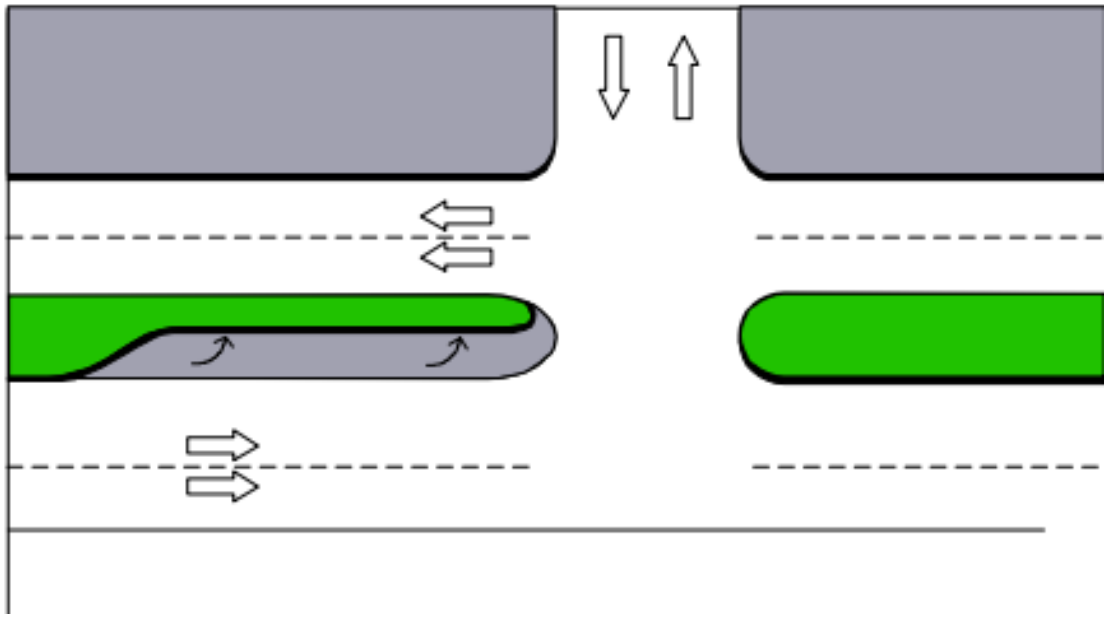
- Provide right- and left-turn lanes to remove turning vehicles from through traffic lanes for safety and reduced delay.


# Add Turn Lanes to Bullet Nosed Openings

**Potential crash problems when left-turn is made from the through traffic lane**



**Provision of left-turn bay to remove left-turn vehicles from the through traffic lanes**



Source: Florida DOT Median Handbook

# Reduce Driveways Through Access Spacing Standards

Assign access standards and design criteria based on roadway type

– Statewide mobility roads

B – Urban/regional mobility roads

C – Lower speed mobility roads

**Table 5: Example Access Category System**

| Access Category | Connection Spacing (feet) | | Median Opening Spacing[1] (feet) |
|---|---|---|---|
| | >45 mph | ≤45mph | Full Movement |
| A | 1320 | 660 | 1320[2]/2640 |
| B | 660 | 440[3] | 1320[2]/2640 |
| C | NA | 245[3] | 660[3] |

[1] Applies to full movement median openings where a "restrictive" (nontraversable) median is present that physically prevents vehicle crossing. Full openings could potentially be signalized in the future and spacing should be maintained for progression and signal coordination. Greater distances may be required to provide for sufficient turn lane storage. Directional median openings may be allowed at any location on the roadway where the (*city/county*) engineer determines that U-turns or left-turn movements can be safely accommodated.

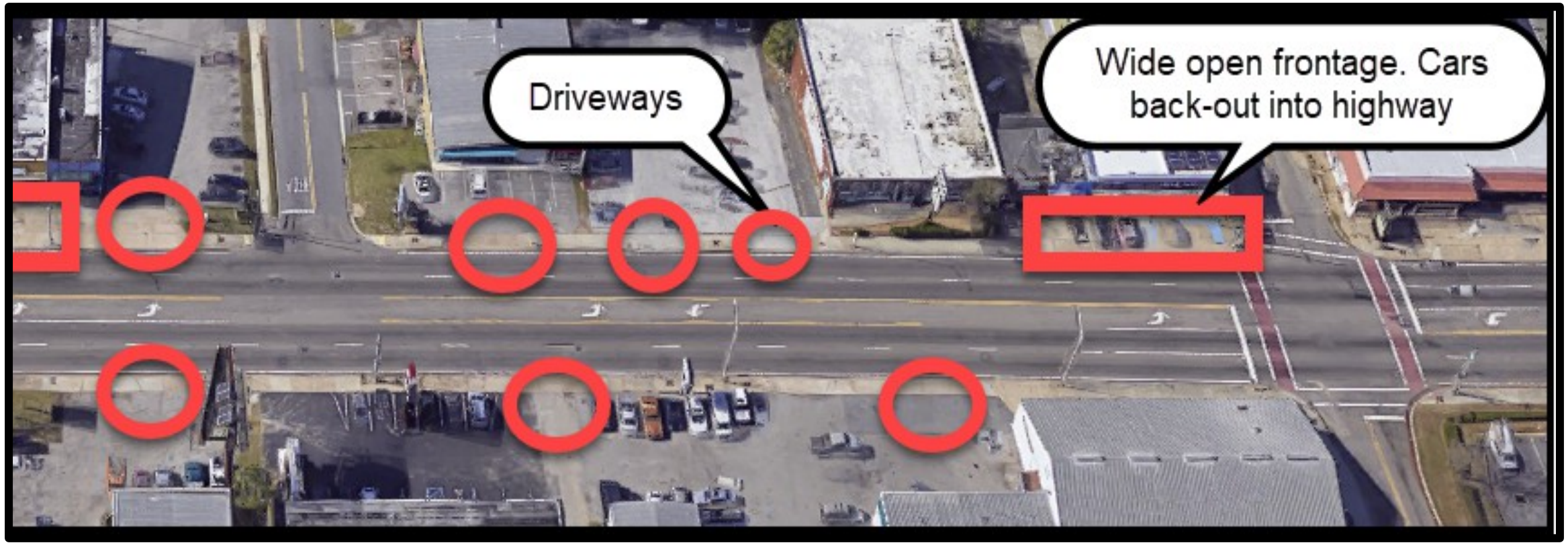
[2] For roads with posted speed limits ≤45mph.

[3] Or per existing block spacing or block spacing as identified in the local comprehensive plan or an approved development plan. Densely developed areas with a block pattern that accommodates community activities, bicyclists, and pedestrians should not have posted speeds higher than 35 mph.

Important Footnote

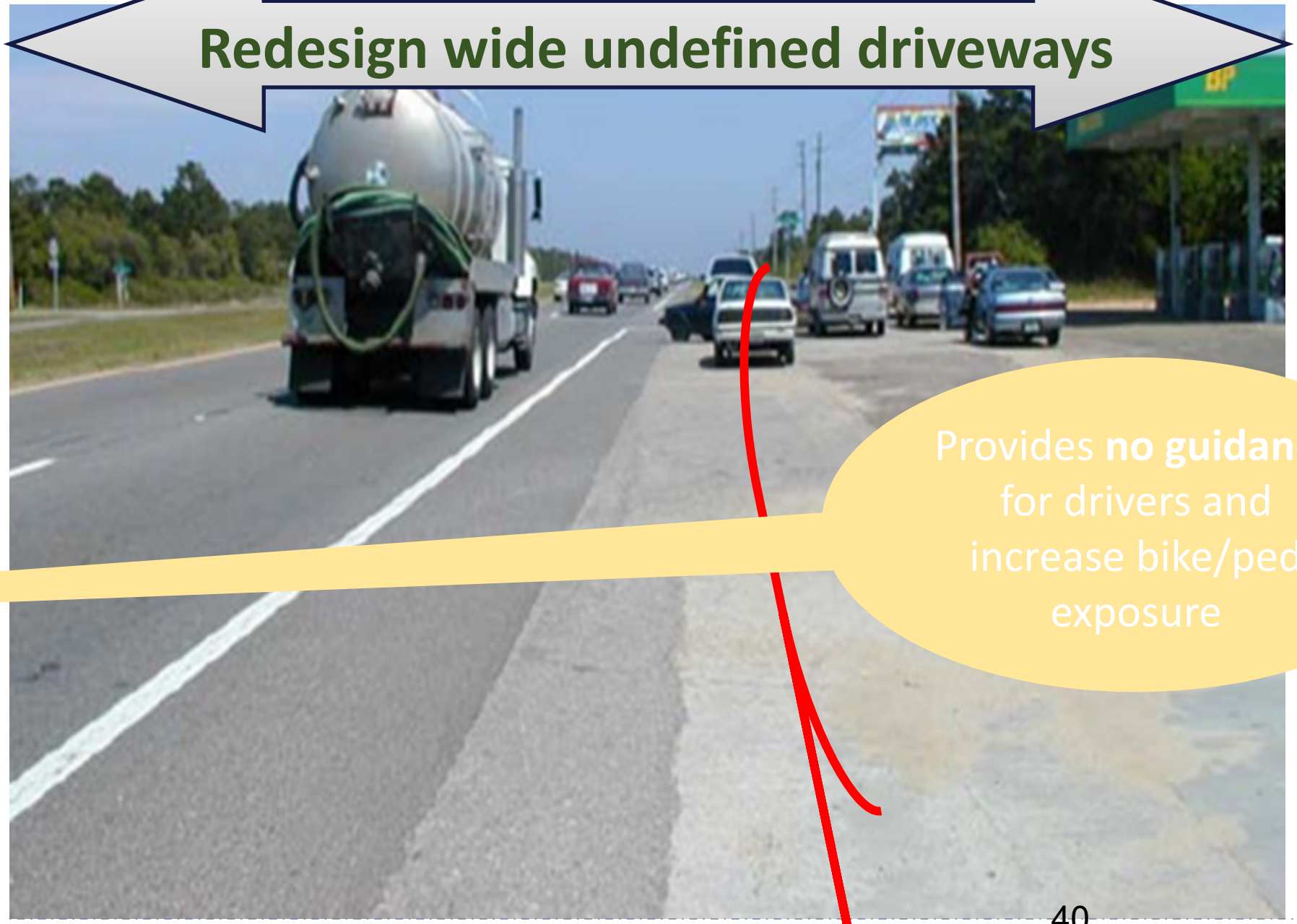
Source: Florida Model Access Management Regulations, 2019

# Fewer Driveways = More Space for People and Landscaping




Better access management = More pedestrian friendly corridors

# Redesign wide undefined driveways

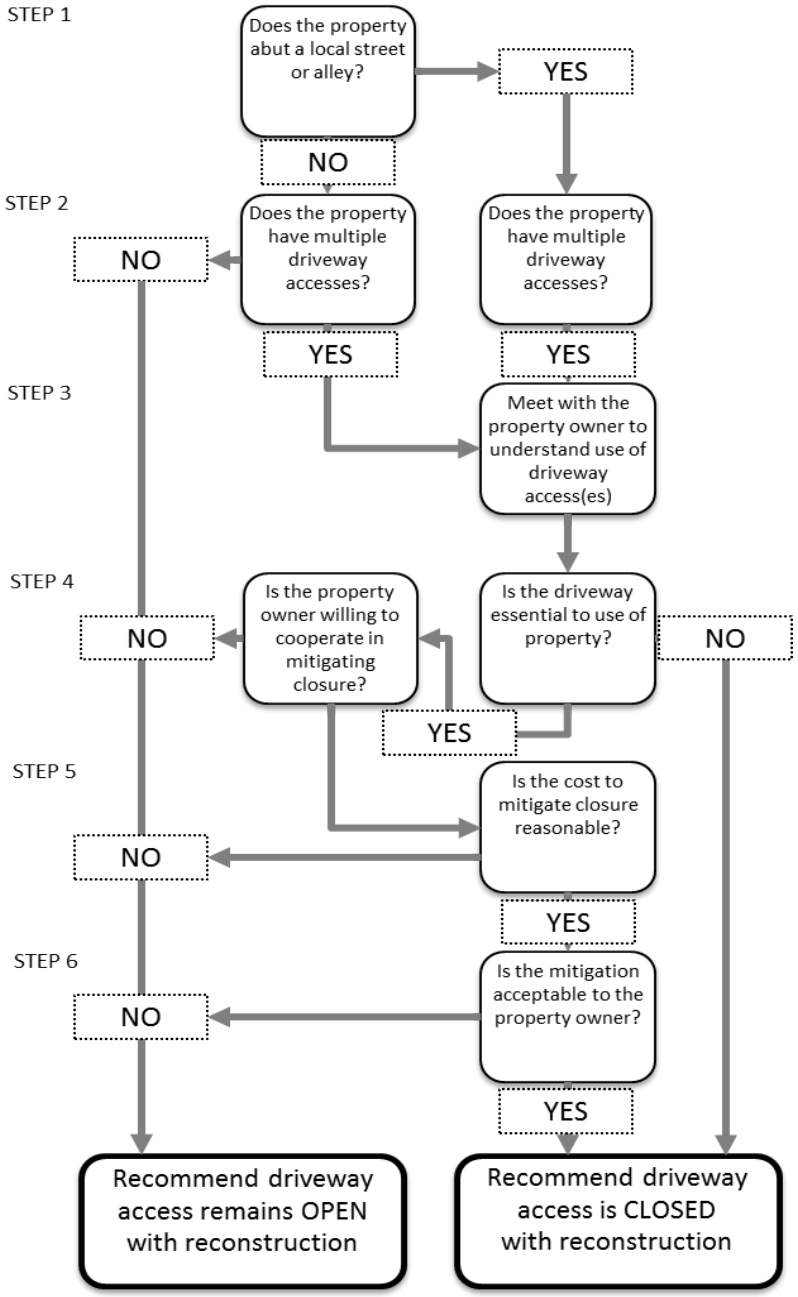


Provides **no guidance** for drivers and increase bike/ped exposure

# Negotiate Driveway Closures or Redesign During Road Reconstruction

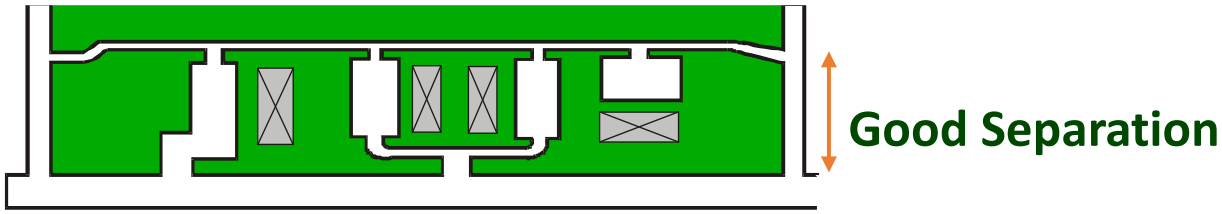
Example: County Hwy 101, Scott County, MN

- 41 entrances
- 26 identified for closure
- voluntary agreements to close 20

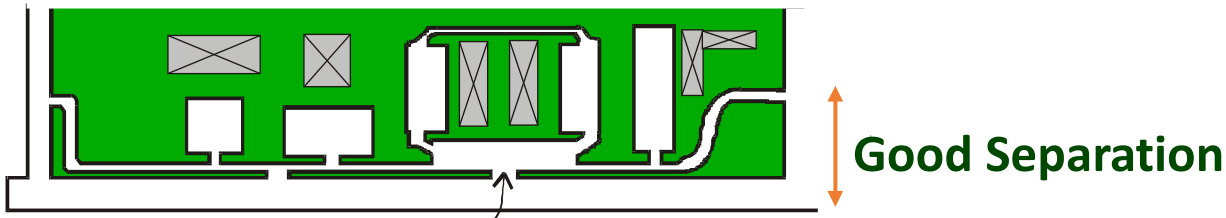

Credits: Chris Chromy and M. Rasmussen

# Connect Adjacent Sites and Consolidate Driveways



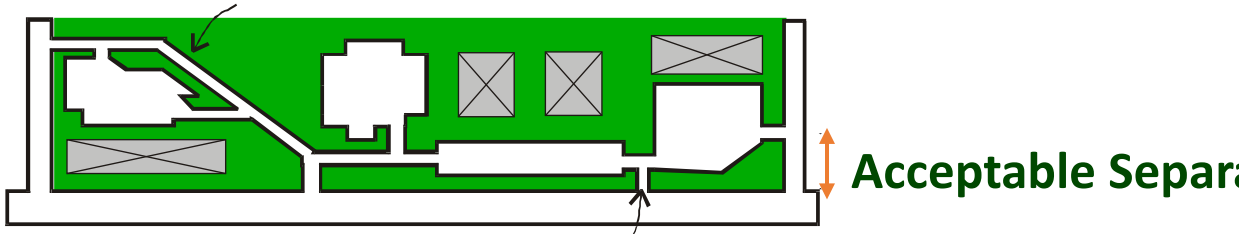
Good Separation

Rear Cross Access Drive



Good Separation

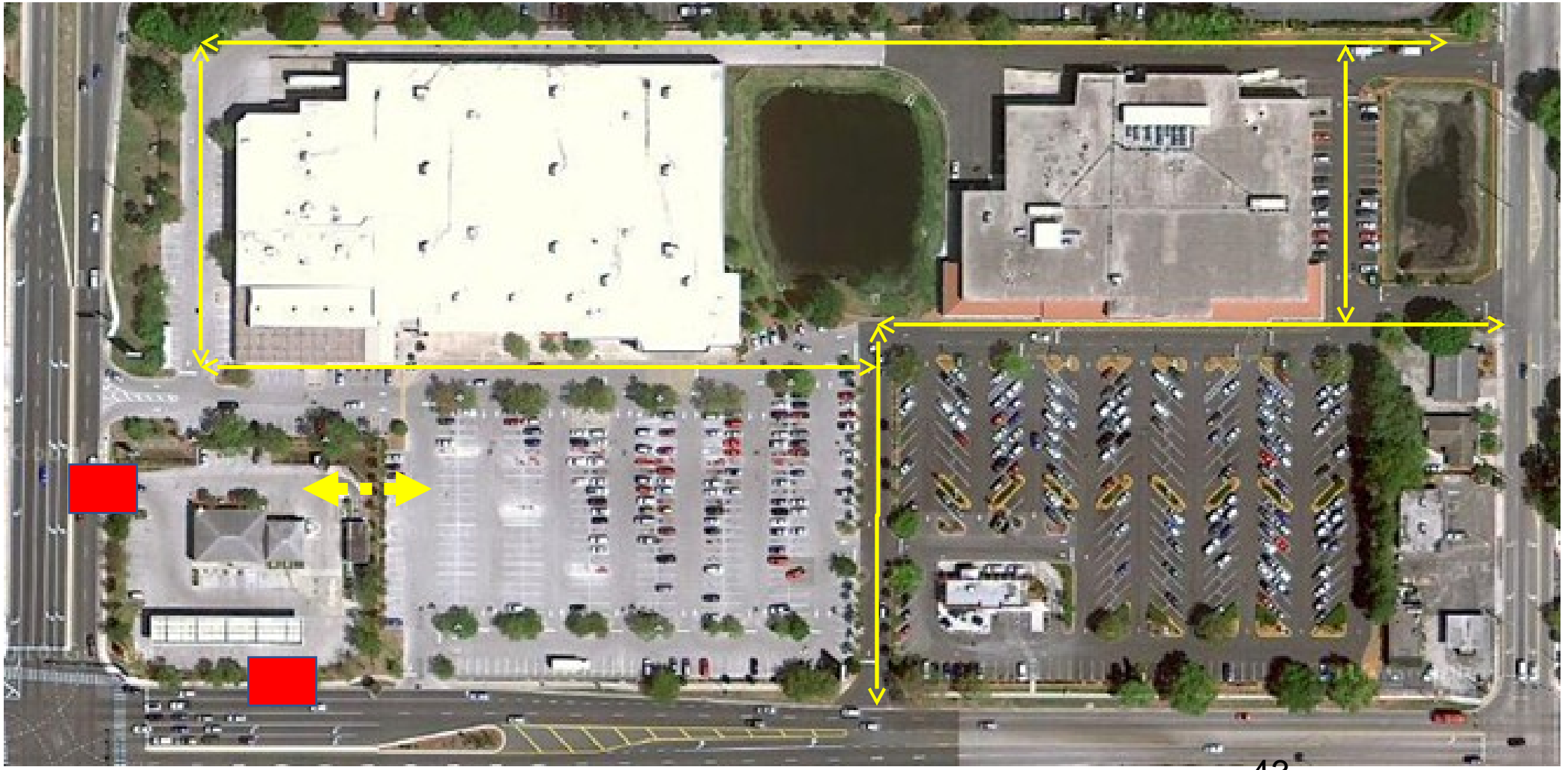
Front Cross Access Drive



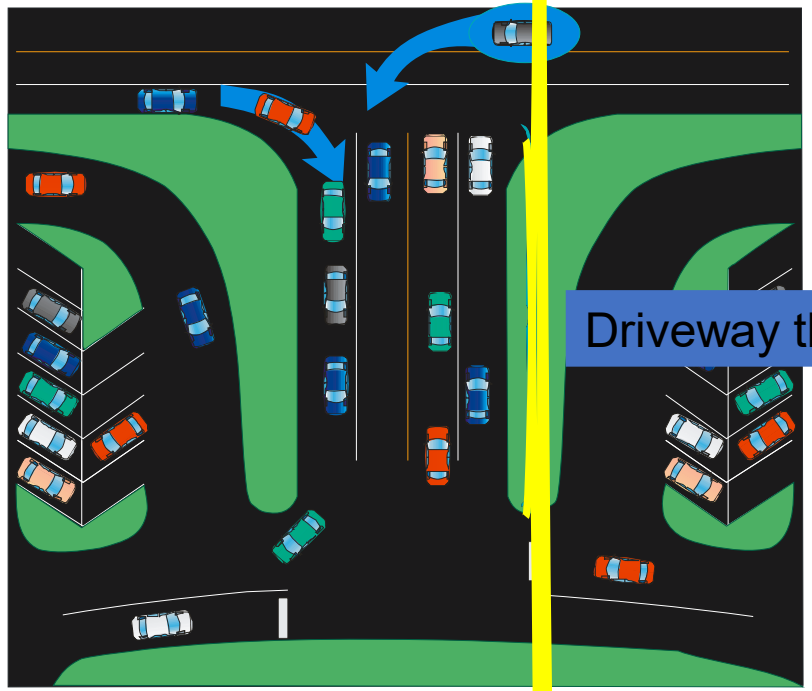
Acceptable Separation

Zig-Zag Cross Access Drive

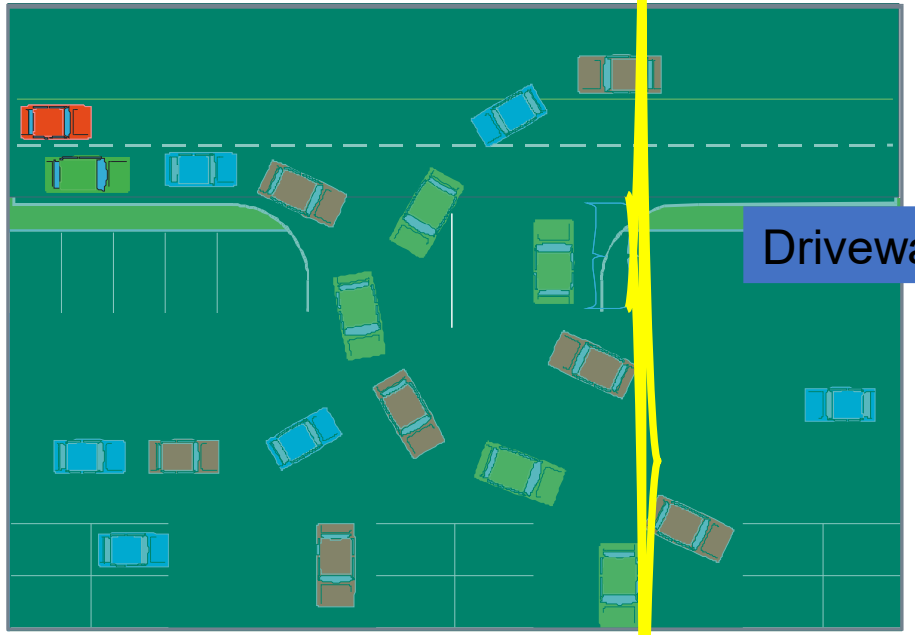
# Require Unified Access and Circulation



# Design Access Points to Minimize Conflicts at the Entrance



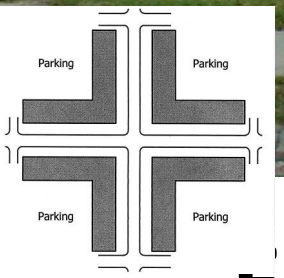
Driveway throat length

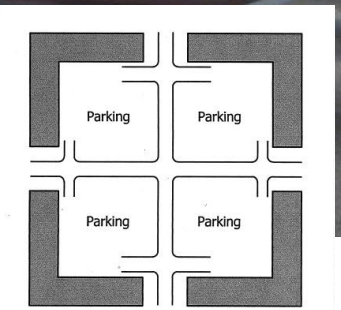


Driveway throat length

Insufficient throat length can result in conflicts at the site entrance






# Front Buildings on the Street for Improved Pedestrian and Transit Access

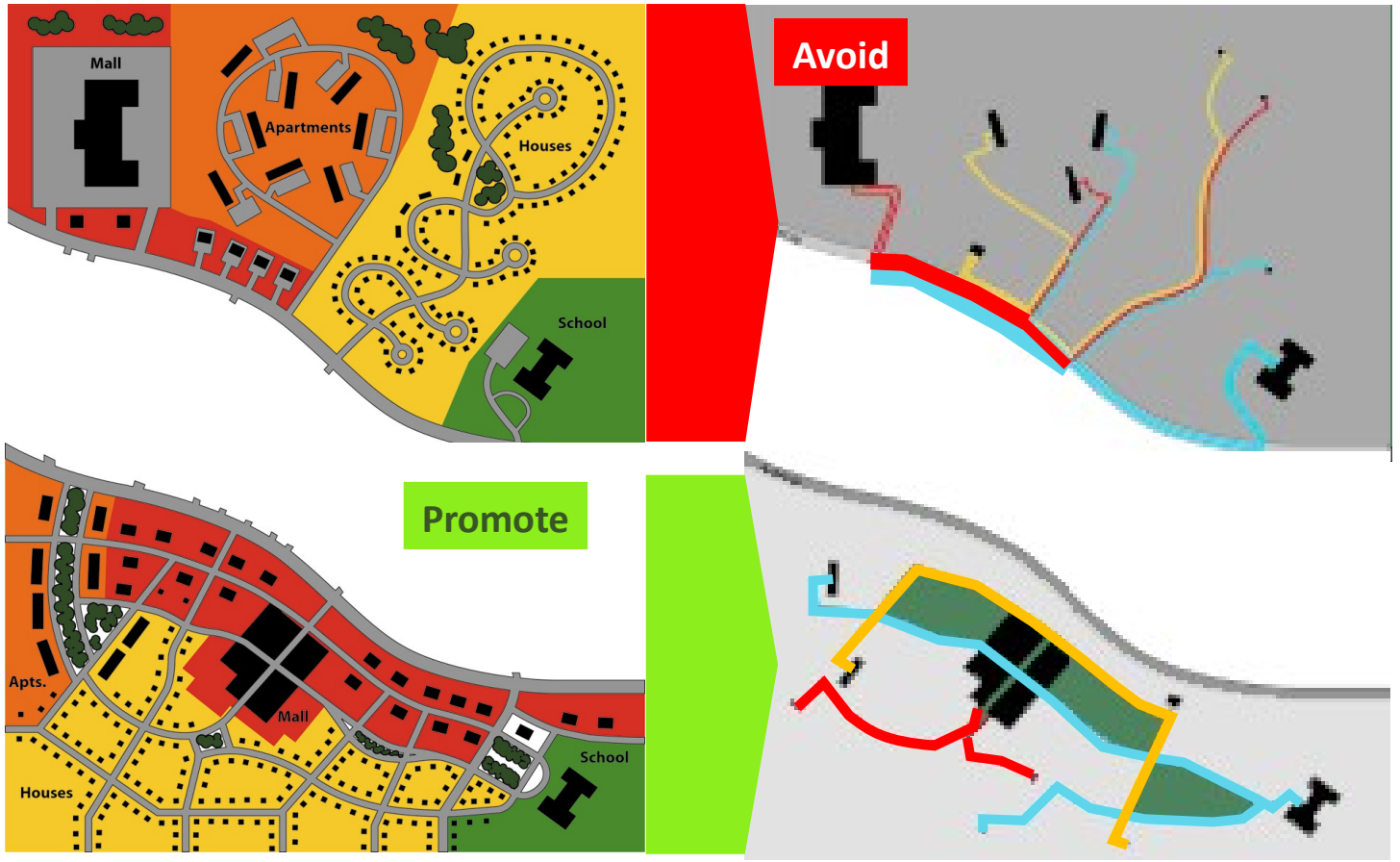
# Redesigned Drive-Through

Separate drive-through and driveway from pedestrian access

# Provide Pedestrian Connections

# Promote a Connected Street System

Vehicles use **major roadway** to circulate




Local traffic uses **internal circulation** network

Subdivision regulations

Street network standards

Service roads and alleys

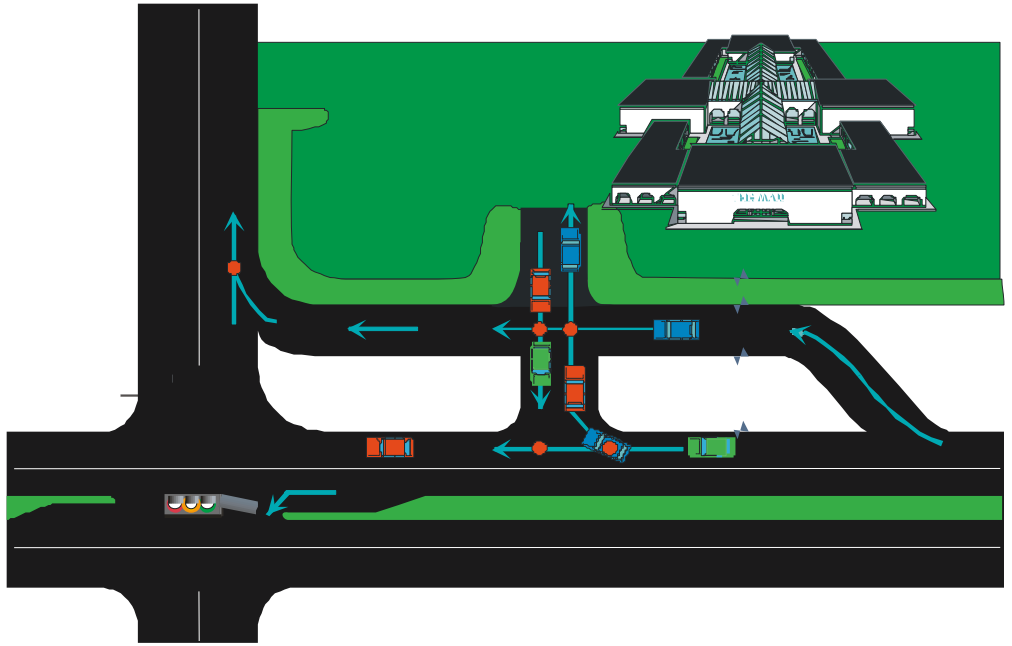
Activity centers/TOD districts

…and more

# Establish parallel relievers and access roads

# Problems with Frontage Roads


- Full of unfamiliar movements
- Even one-way frontage roads (the safest) create conflicts and confusion near signalized intersections



# Problems with Frontage Roads


Confusing intersection as frontage road intersects with a major side street.

# Problems with Frontage Roads

# Rear Access Road


Source: Vergil Stover

# Curb Management

- Curbside management involves “creating an organization scheme that improves mobility and safety for all via prioritized and optimized curb space use.” - ITE Curbside Management Practitioners Guide
- Curbs are another source of access in urban areas.
  - Who uses the curb?
  - Why are cities beginning to manage curb use?
  - What are some curb management strategies?

# Curb Management

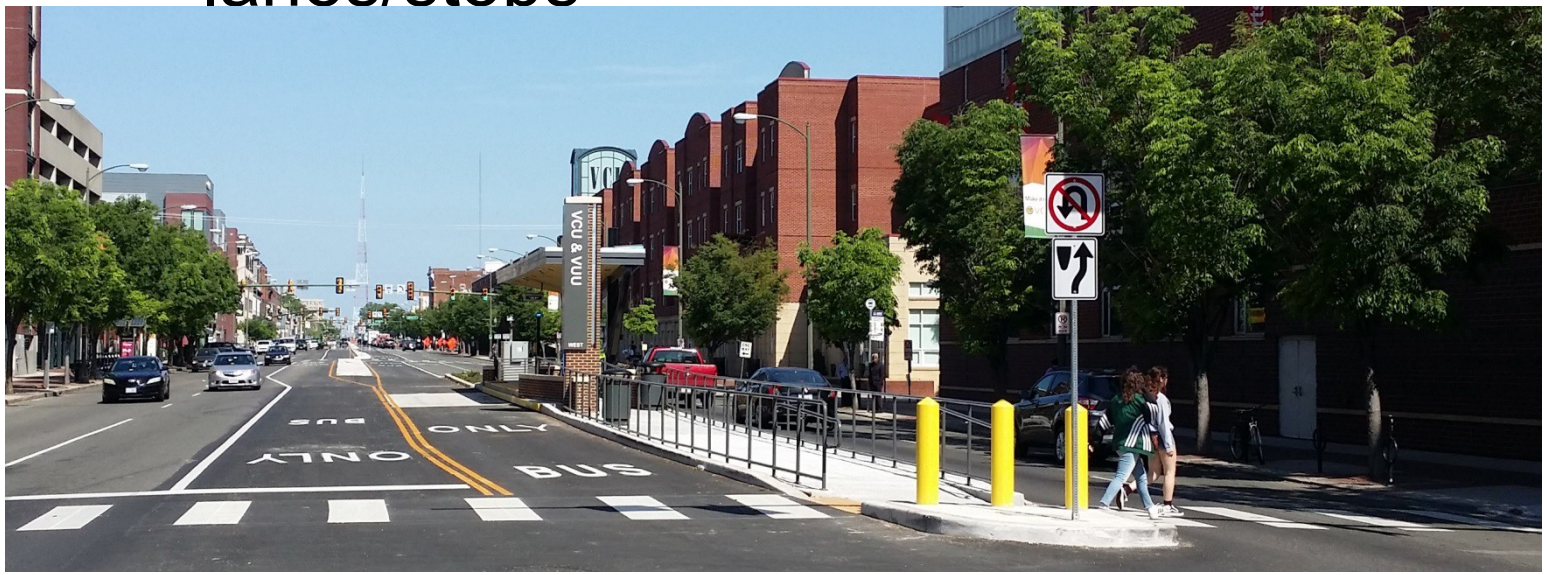
## Curbside Management Strategies to Improve Transit Reliability

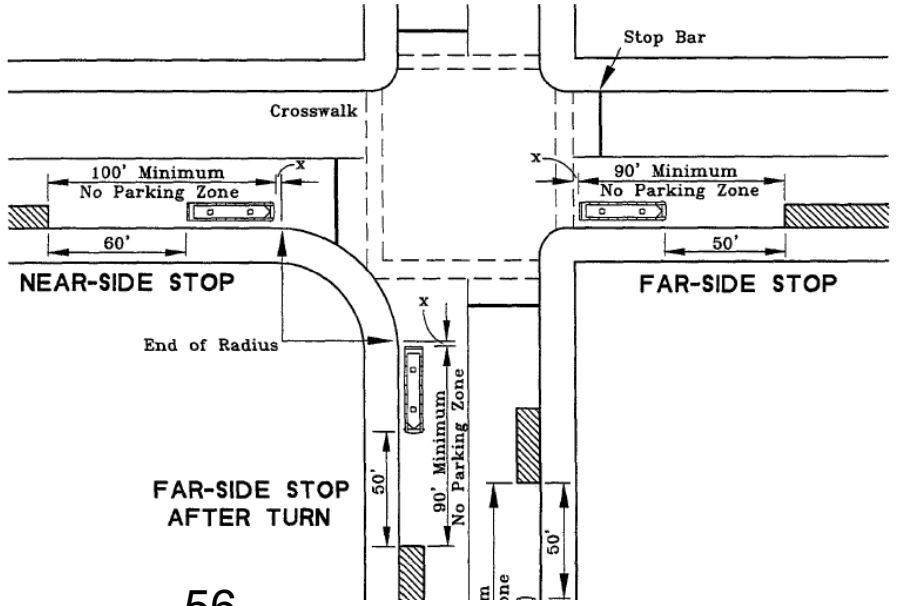
| | |
|---|---|
| Shifting from Parking Lane to Flex Zone | Flex zones can be designated to serve multiple functions simultaneously, different functions at specific times, or multiple functions in different spaces. |
| Clearing the Way for Transit | Reduce curbside parking, make room for transit at peak periods, and accommodate transit priority features, such as queue jump lanes, turn pockets or approach lanes that clear cars from the transit lane. |
| Moving Loading and Access Nearby | Reduce blockage of bus lanes by reserving main streets for short term uses and assigning longer times at the curb a feasible distance from destinations. Strategies include time limits, demand-based pricing, occupancy targets, fines and automated enforcement. |
| Looking Beyond the Corridor | Manage curbside use at a neighborhood scale to provide space to reassign parking locations as well as curbside access. Examples include replacing on-street parking with shared parking nearby. |

Source: Curb Appeal, NACTO, 2017

# Transit and Access Management

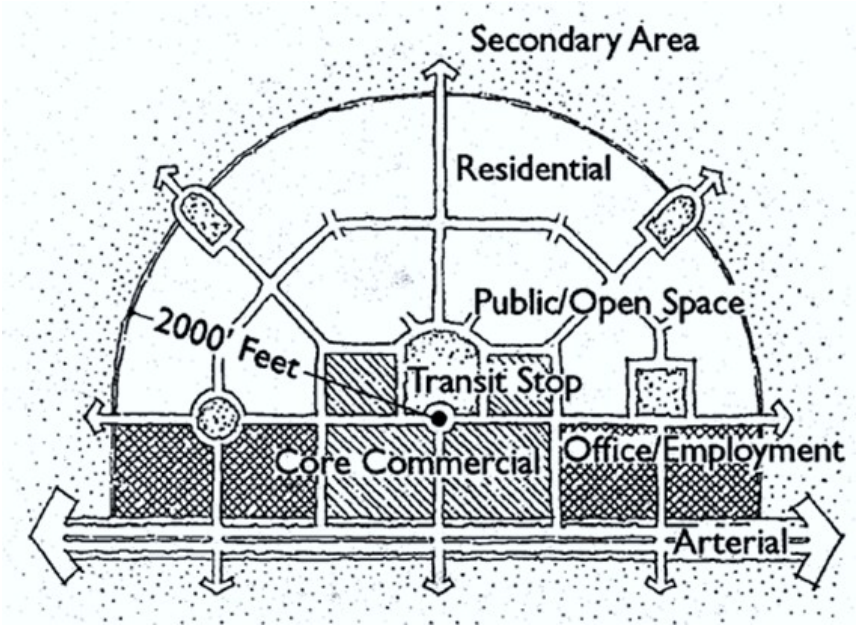
- Buses generally deal with the same issues as autos and trucks
- Managed streets can provide more reliable service
- Medians can provide space for light rail or bus rapid transit lanes/stops




Source: TCRP Report 19, 1996

# TOD and Access Management




Source: P. Calthorpe

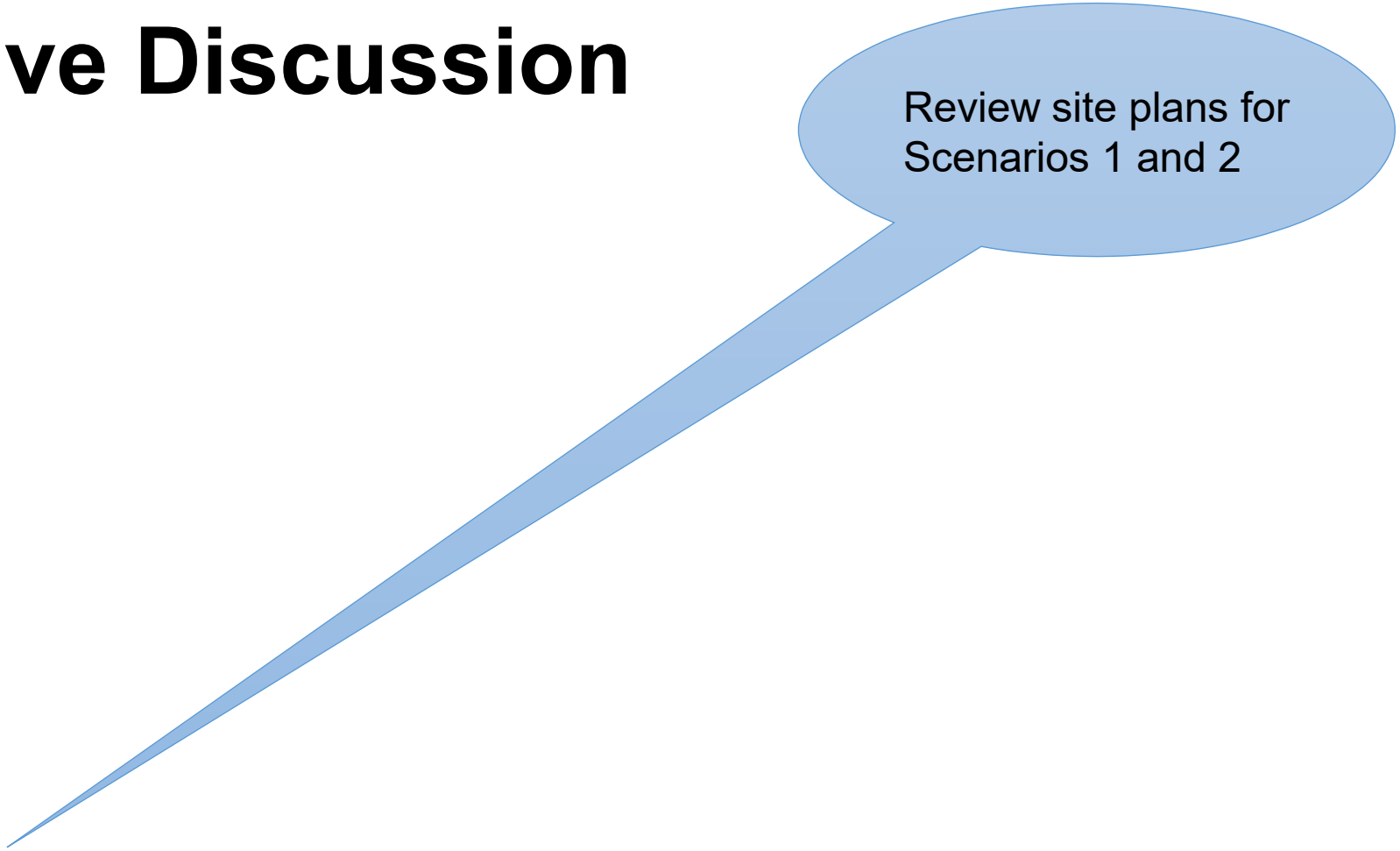
# Examples of Access Management Techniques (Summary)

- Limiting and separating driveways along major roadways through access spacing standards.
- Use of median treatments to limit left turns to planned locations and provide mid-block pedestrian crossings on busy roads.
- Locating traffic signals to support signal coordination and efficient traffic progression.
- Providing right- and left-turn deceleration and storage lanes to remove turning vehicles from through lanes.
- Restricting driveways in the vicinity of signalized intersections and interchanges to reduce the potential for conflicts and crashes.
- Providing internal bus transit access to certain developments and the careful location and design of transit access to minimize modal conflicts.
- Providing direct sidewalk connections to transit and safe midblock

# Examples of Access Management Techniques (Summary)

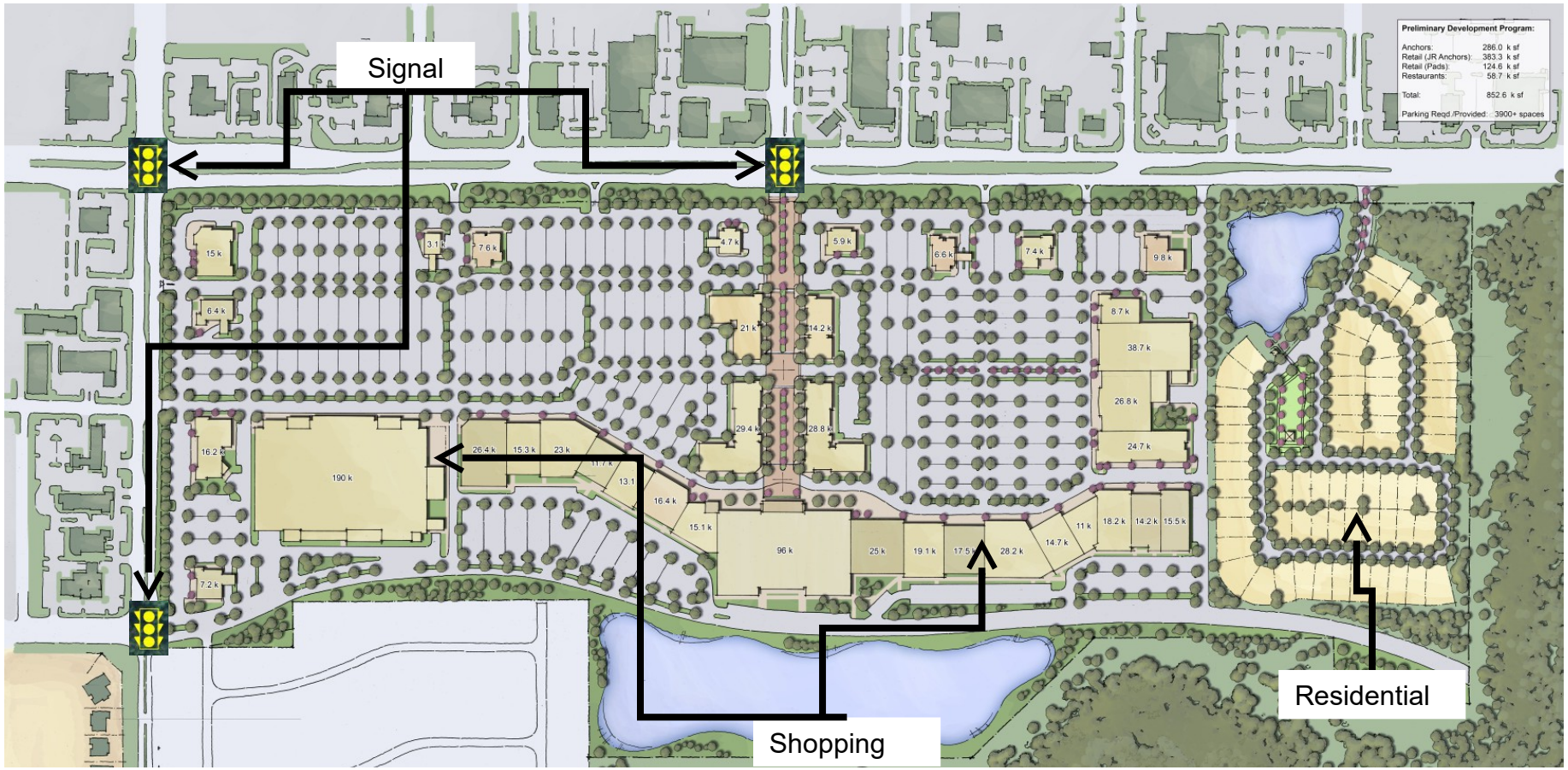
- Measures to reduce on-site circulation conflicts between pedestrians and motor vehicles, such as striped walkways, crosswalks, and other treatments.
- Requiring pedestrian and vehicular connections between adjacent businesses to allow circulation between sites without reentering busy roads.
- Providing direct paths between commercial centers and abutting residential developments.
- Promoting mixed-use activity centers with unified on-site circulation and access and discouraging commercial strip development with closely spaced driveways.
- Requiring land uses to be organized on city blocks or densely connected networks and restricting driveways and off-site parking along curb

# Interactive Discussion



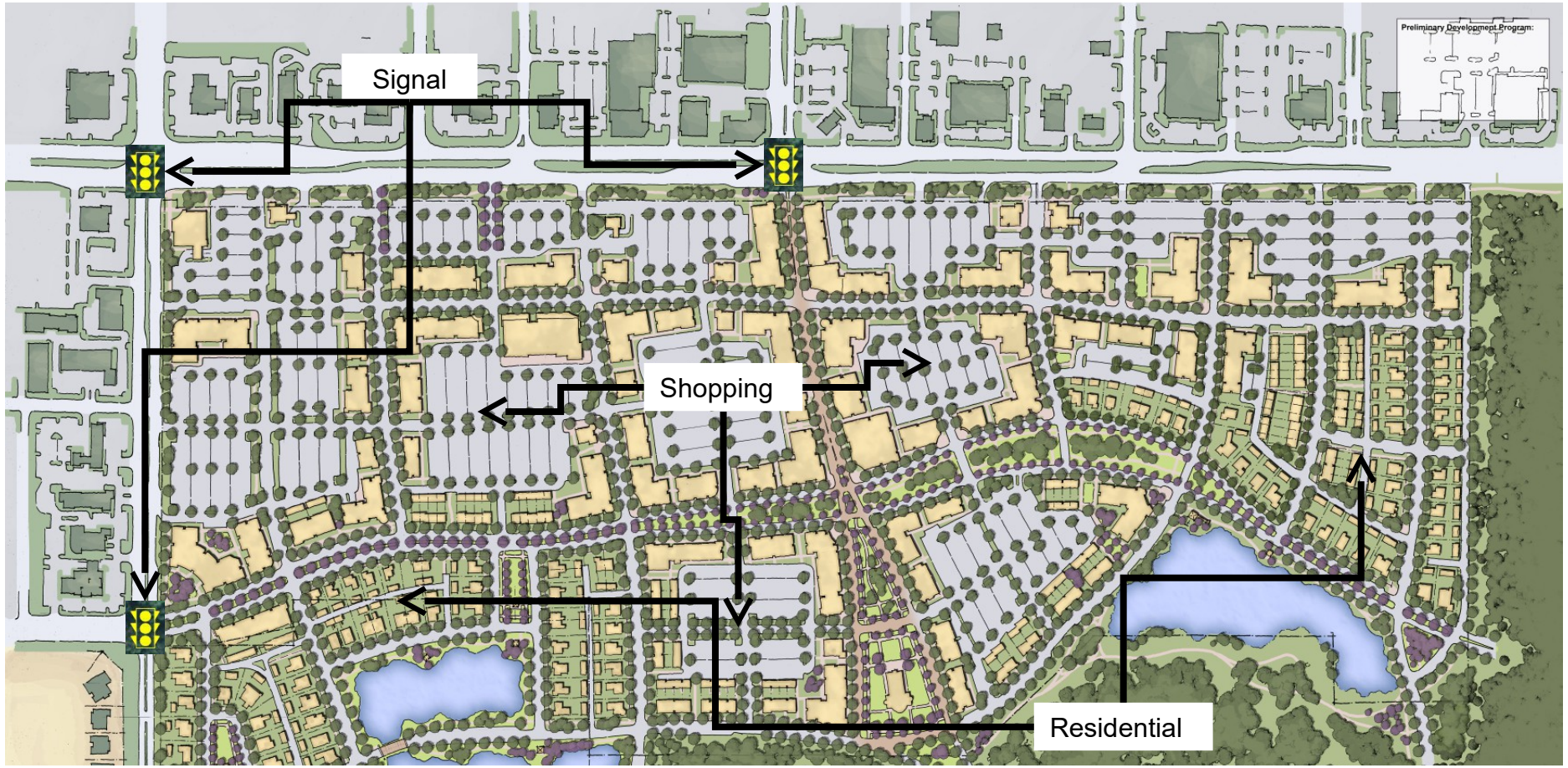

Source: Florida DOT Corridor Management Training Materials

# Interactive Discussion




## Scenario 1

# Interactive Discussion




## Scenario 2