



Land Development
Regulations
That Support

Access
Management



WELCOME

Access Management Workshop



Florida Department of Transportation
Systems Planning Office

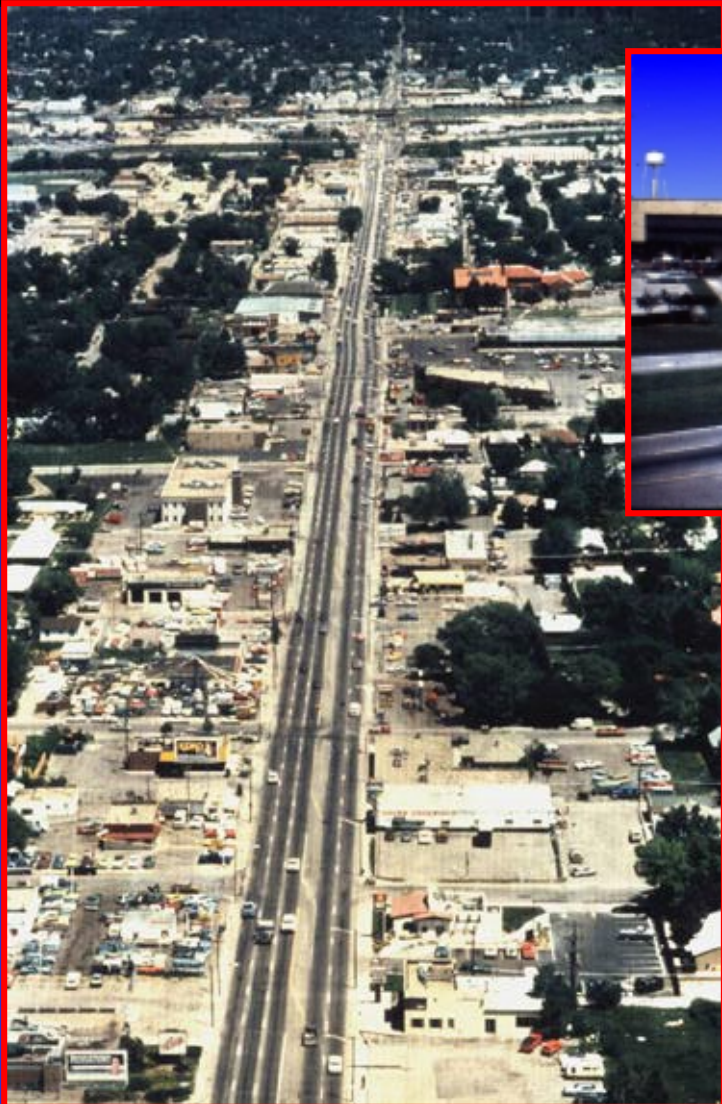


Center for Urban Transportation
Research, Univ. of South Florida



Introductions





Local land use decisions
affect regional & local
transportation



Does your community have?



Ugly and accident prone commercial strips



Bypass routes as congested as the roads they were built to relieve



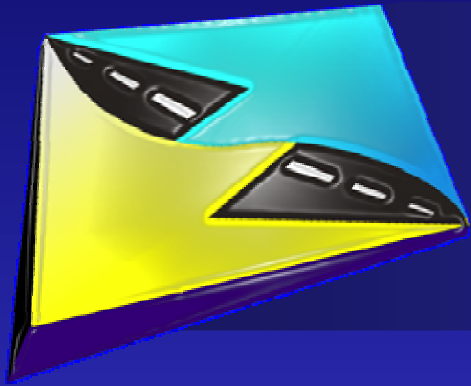
Neighborhoods disrupted by “1-way pairs” parallel to overburdened arterials



Homes and businesses damaged by widening roads

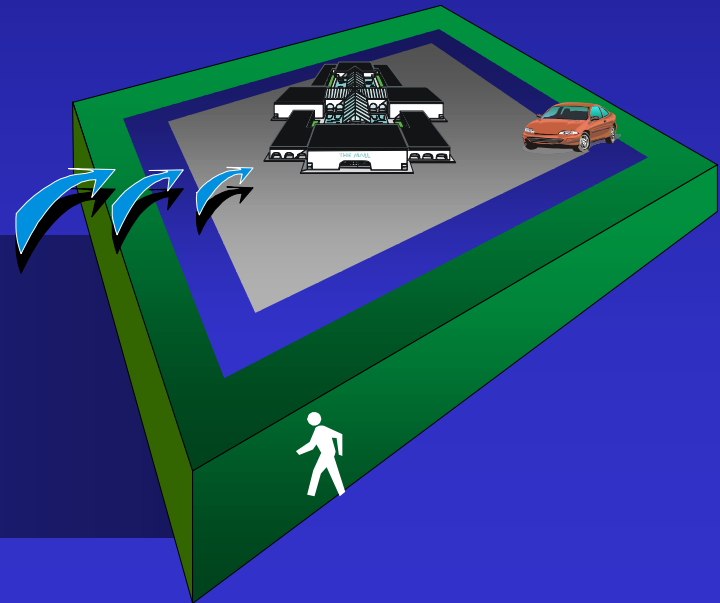


You will learn



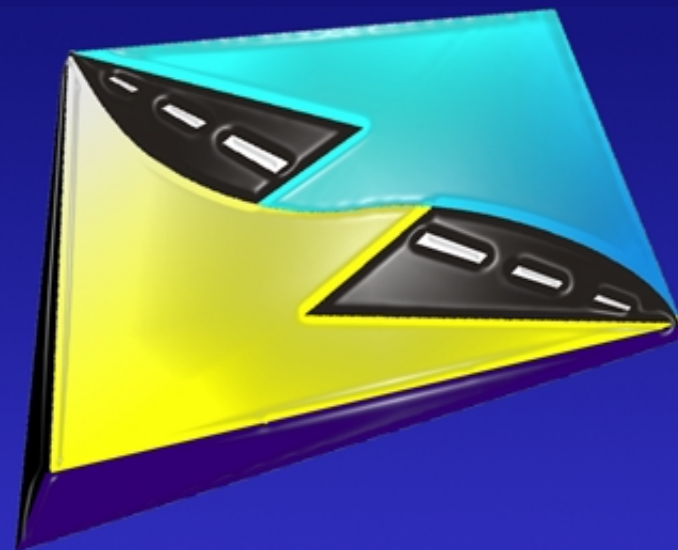
Access Management Principles

Strategies
you can use





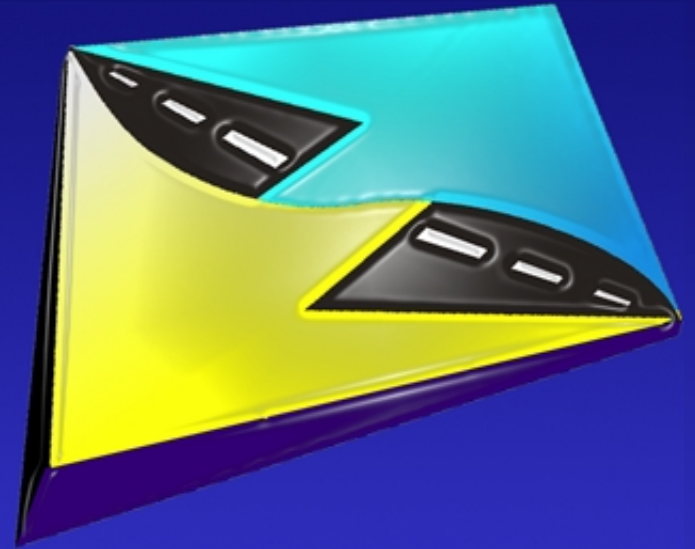
Introduction to Access Management





What is **MA**ccess Management?

Access Management
is the process of managing
access to land development
while preserving capacity
and improving safety

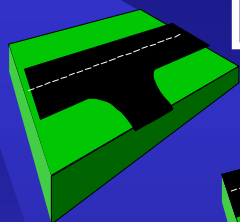




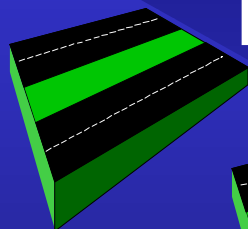
What is **MA**ccess **Management**?

The control and regulation of the spacing, location, and design of:

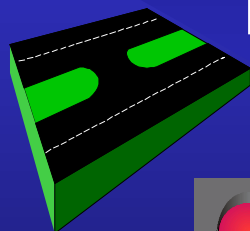
Driveways



Medians



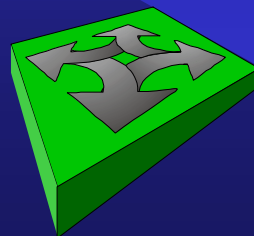
Median Openings



Traffic Signals

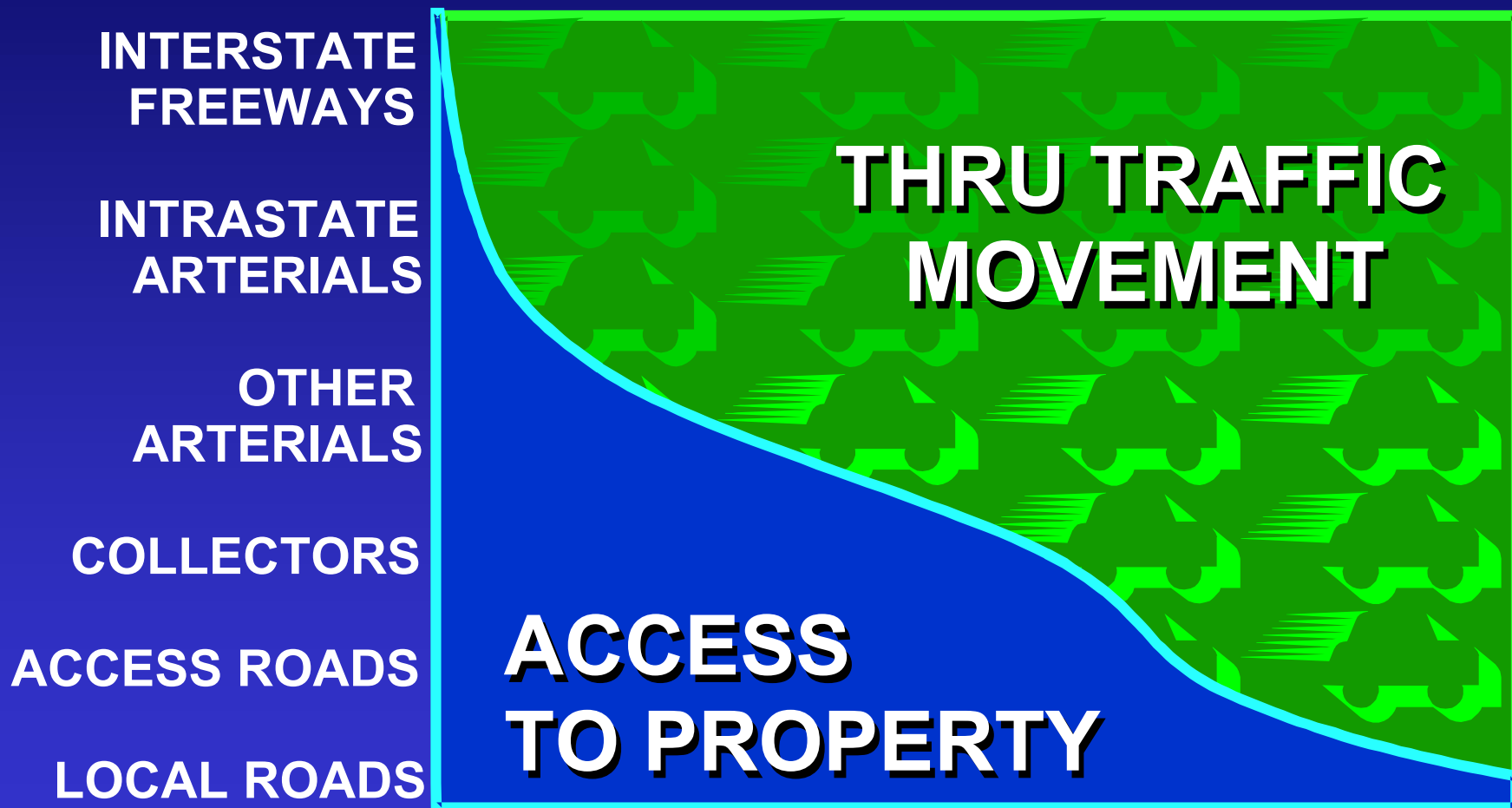


Freeway Interchanges





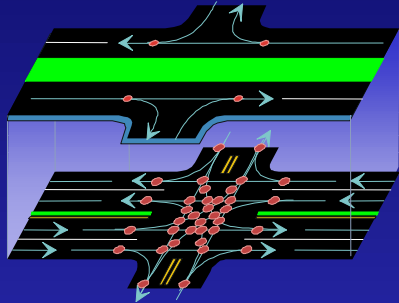
Roadway Functional Classification



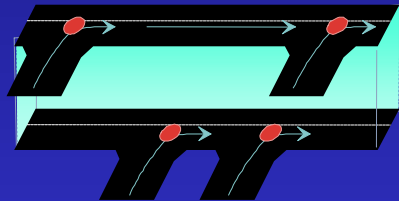


What are
the goals of

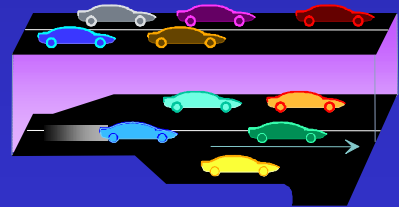
Access Management?



Limit the number of conflict points



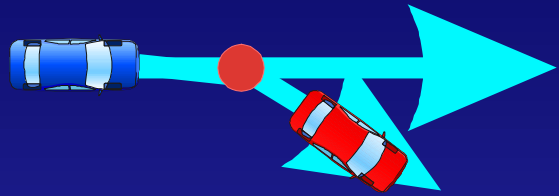
Separate the conflict points



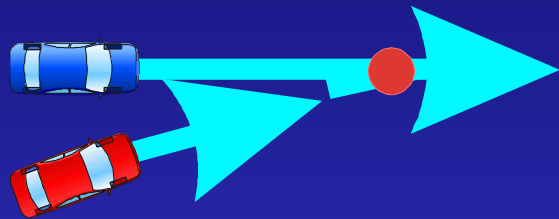
Remove turning vehicles and queues from through movements



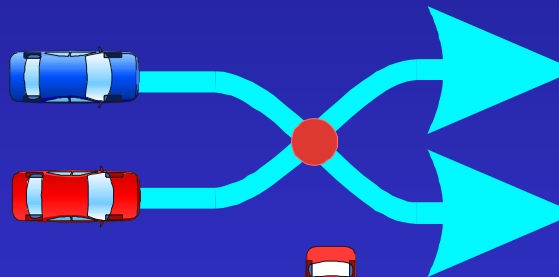
What is a Traffic Conflict?



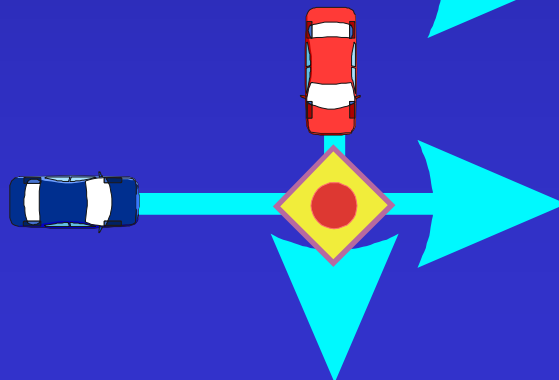
Diverge



Merge



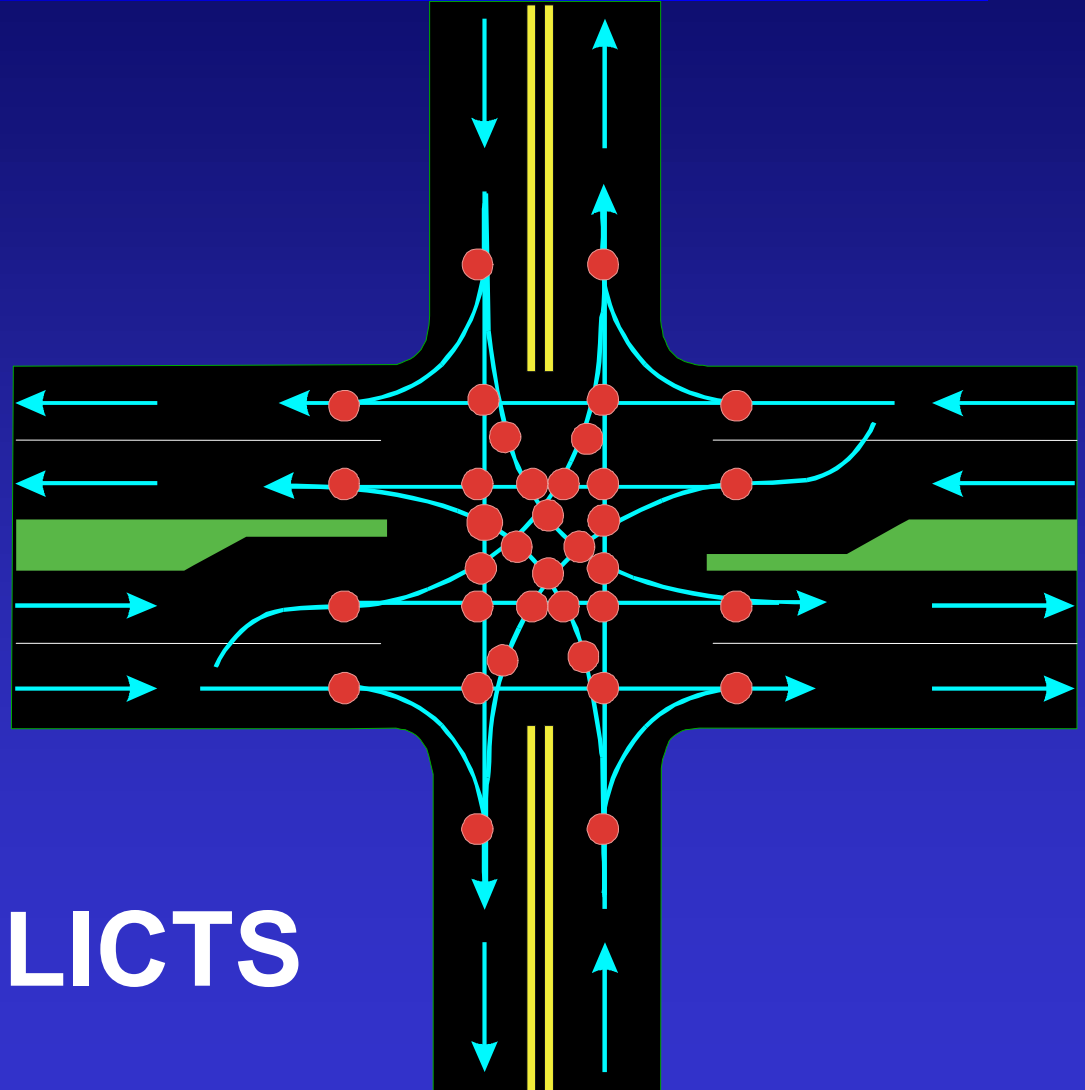
Weave



Cross



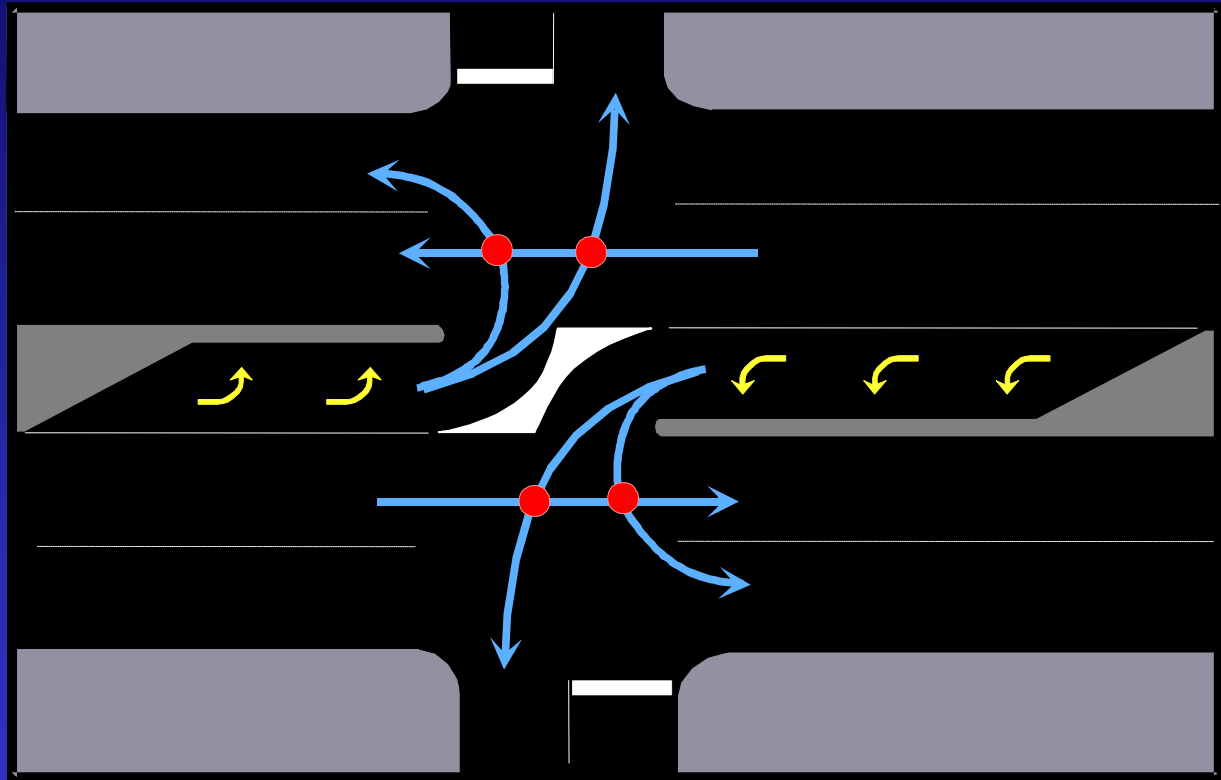
Four-way Intersection



32 CONFLICTS



Directional Median Opening



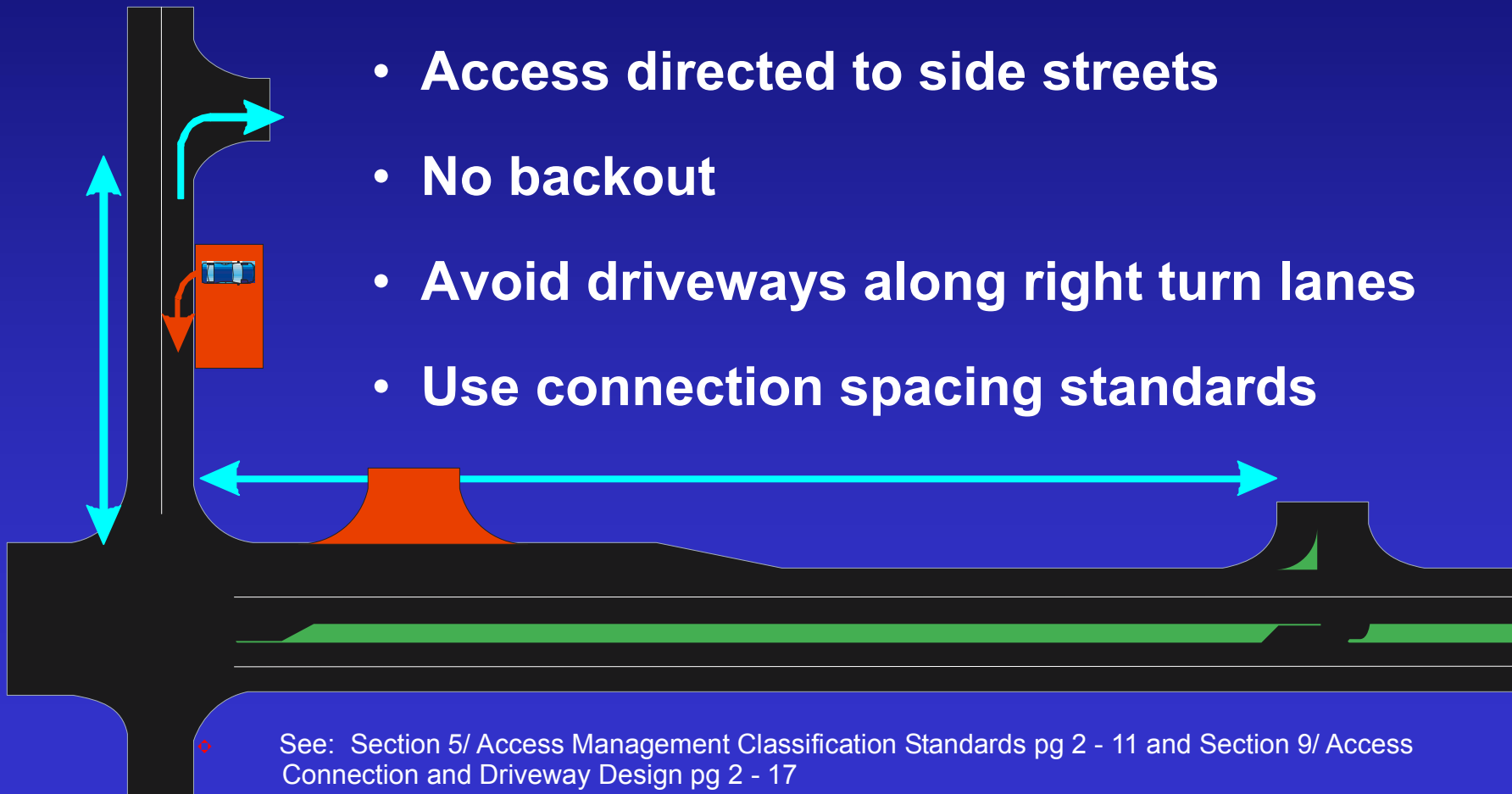
4

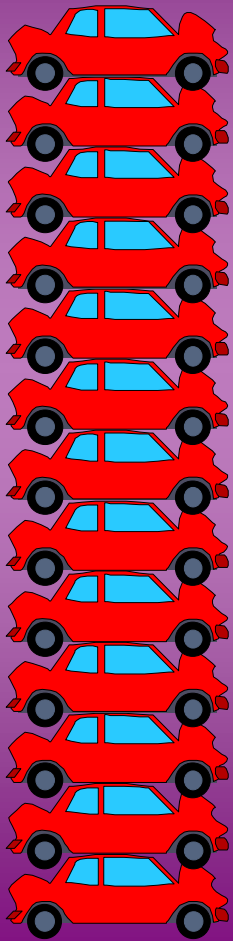
CONFLICTS



Driveway Location Principles

- **Away from intersections**
- **Access directed to side streets**
- **No backout**
- **Avoid driveways along right turn lanes**
- **Use connection spacing standards**



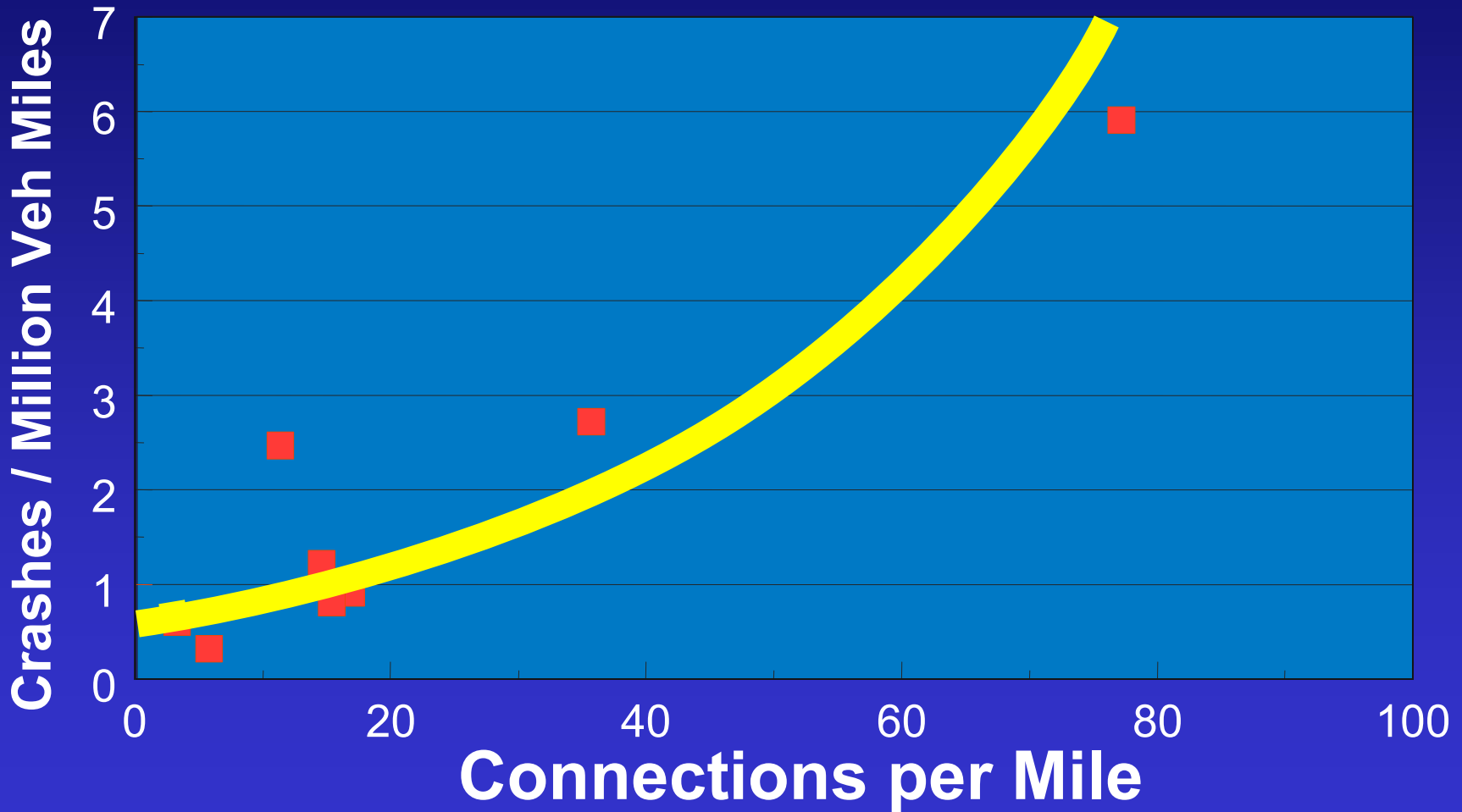


Access Management & Safety



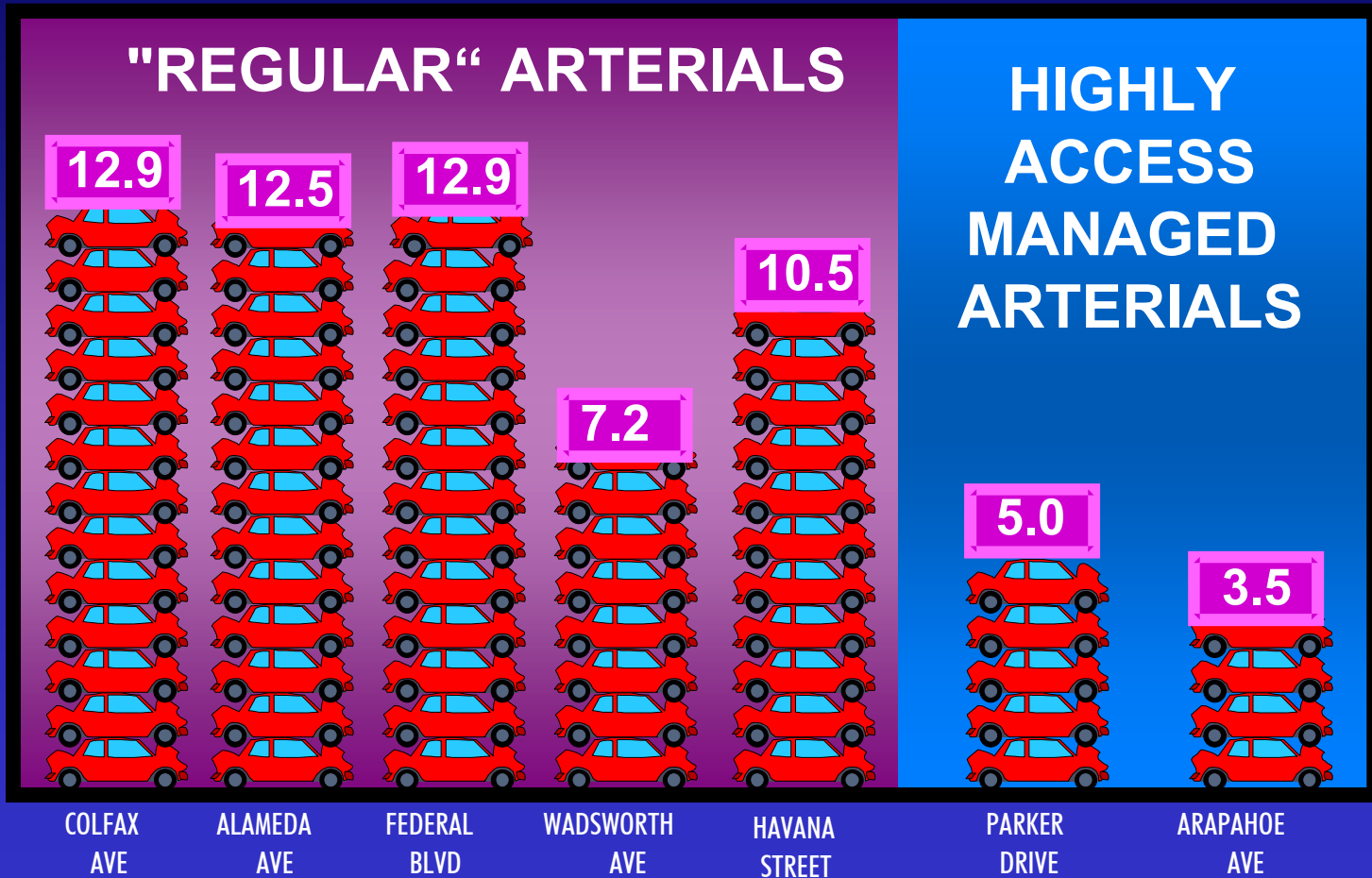
Connections and Crashes

US41 Lee County



US 41 (Lee Co) Study - W. Millard PE 1993

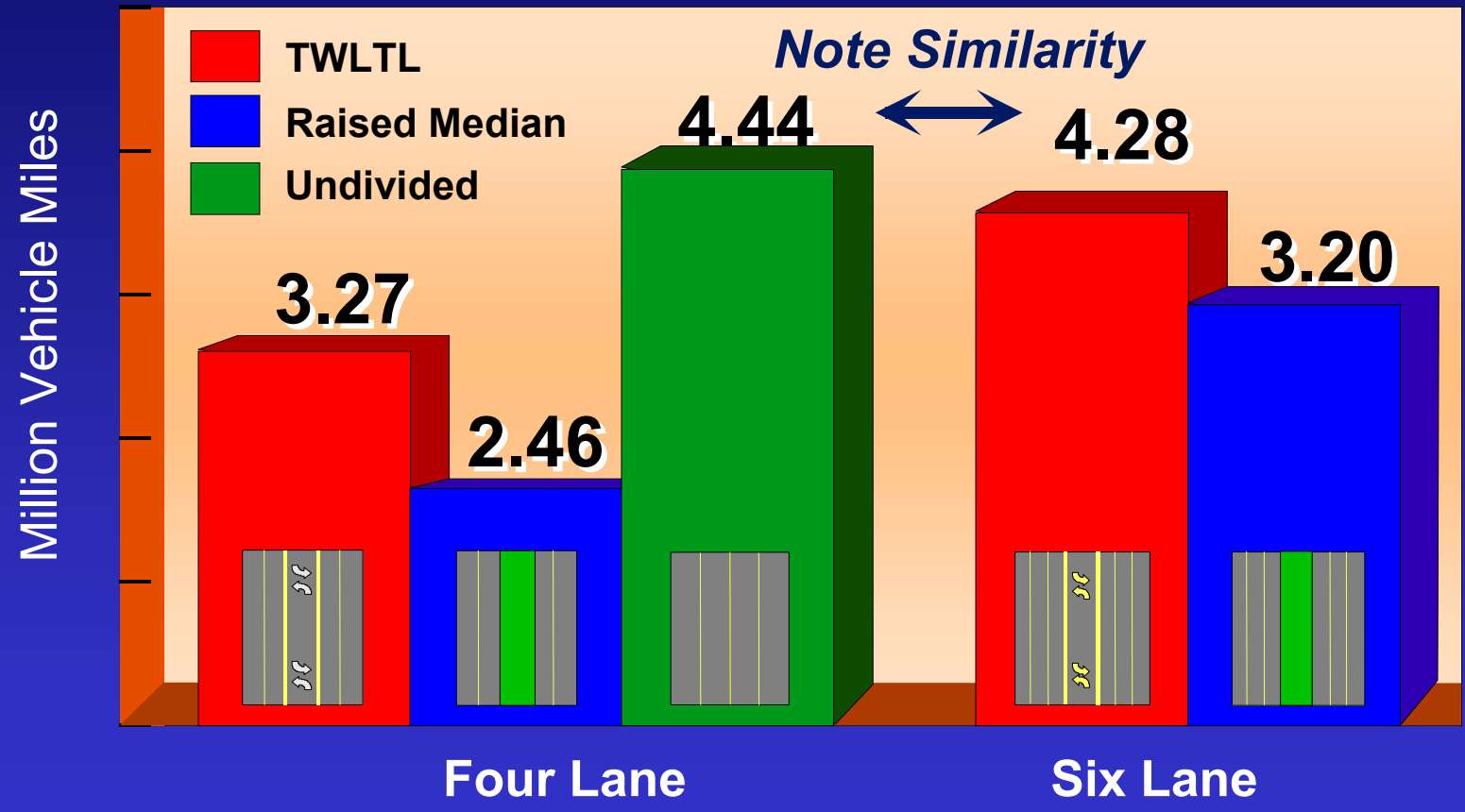
Accidents per million miles



SOURCE: "Colorado Access Control Demonstration Project" 1985

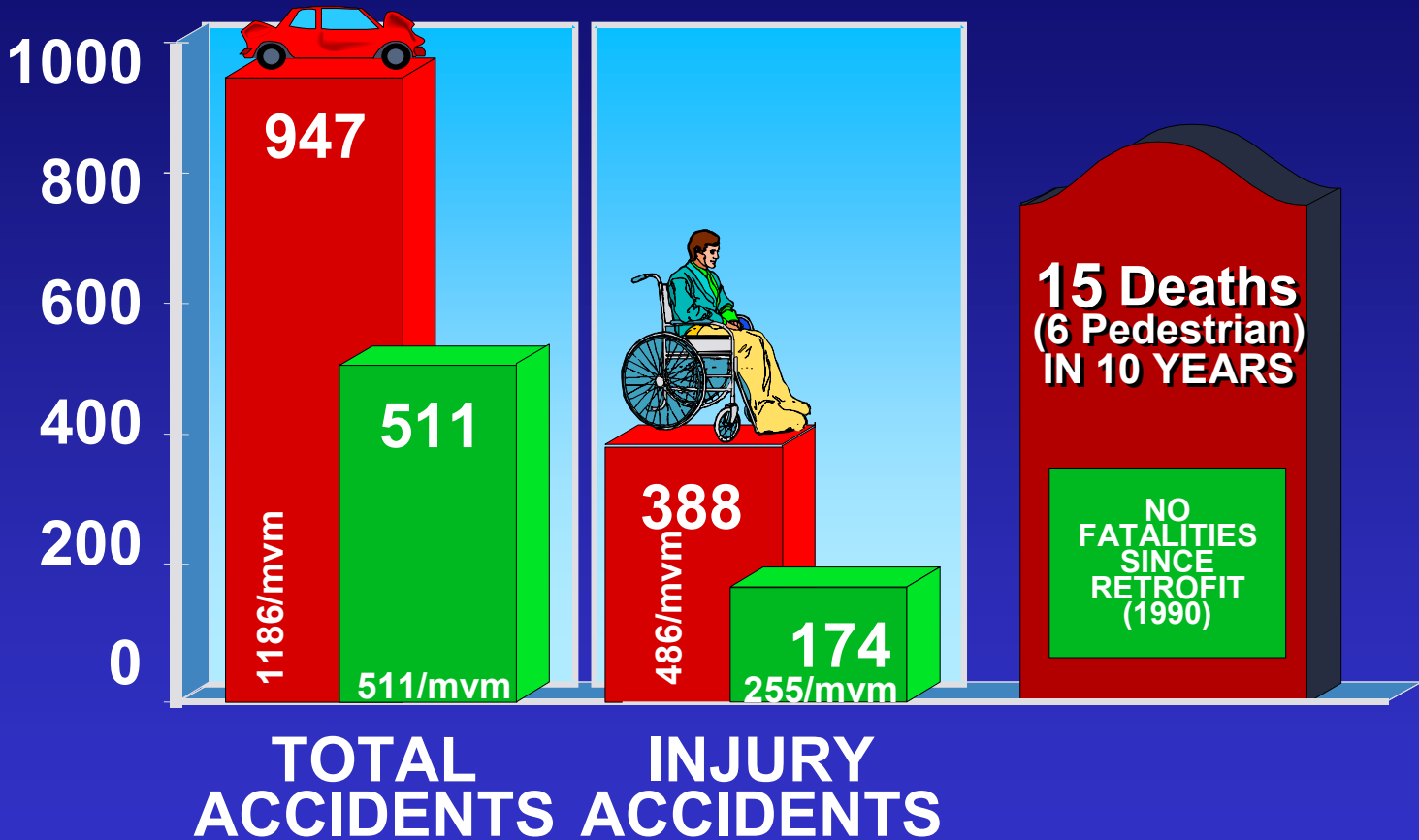


Crash Rates for Median Treatments



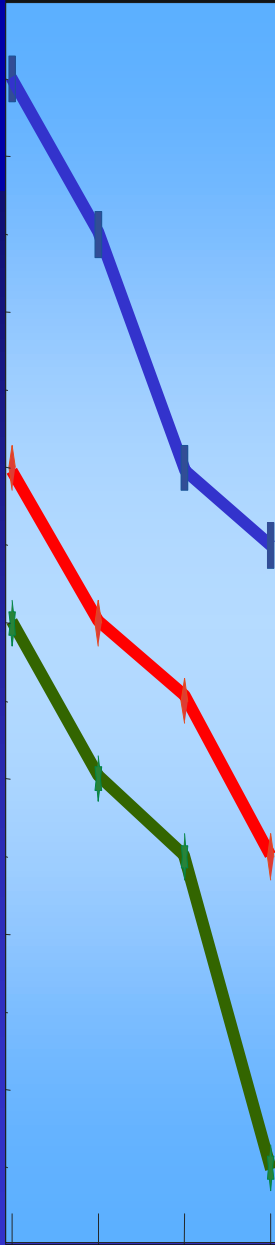
Memorial Drive Study/ Atlanta, Georgia

ACCIDENTS PER MILLION VEHICLE MILES
or MILLION ENTERING VEHICLES



TWLTL (BEFORE)

Raised Median (AFTER)



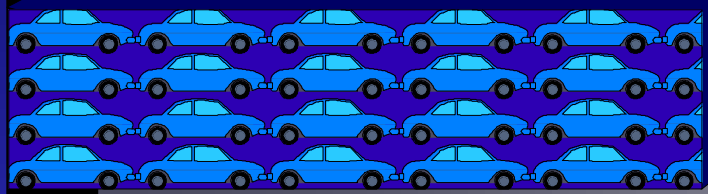
Efficiency



Level of Service Benefits

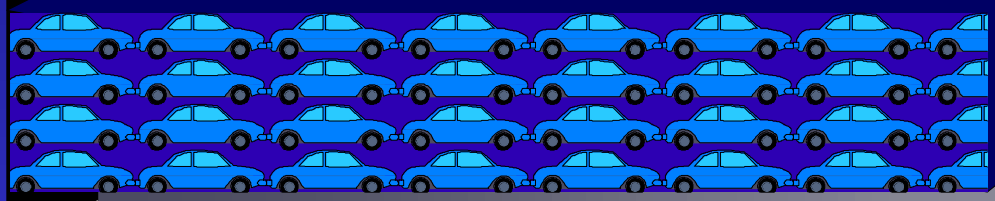
LOS "D" Threshold

LOW
ACCESS
MANAGEMENT



23,592

HIGH
ACCESS
MANAGEMENT

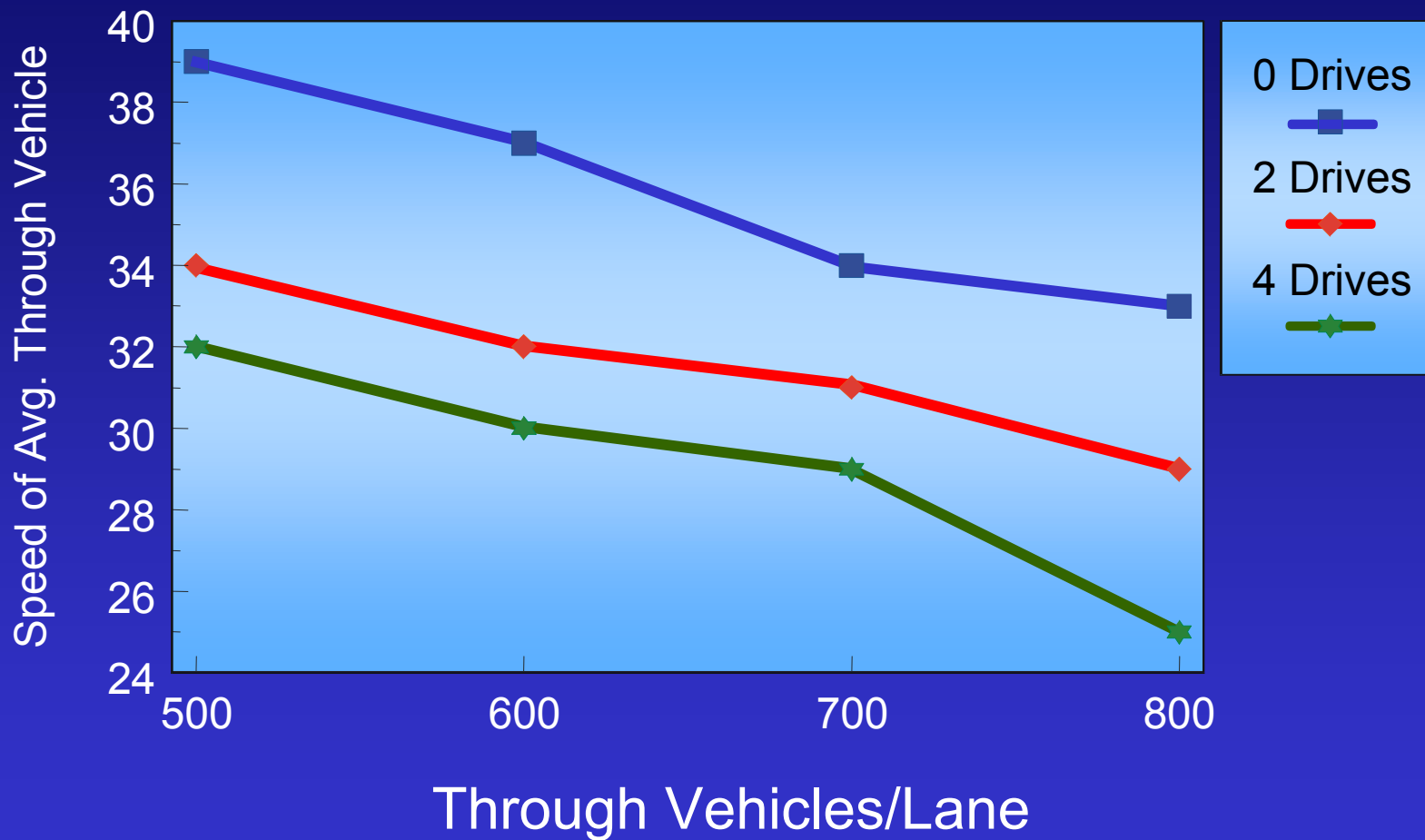


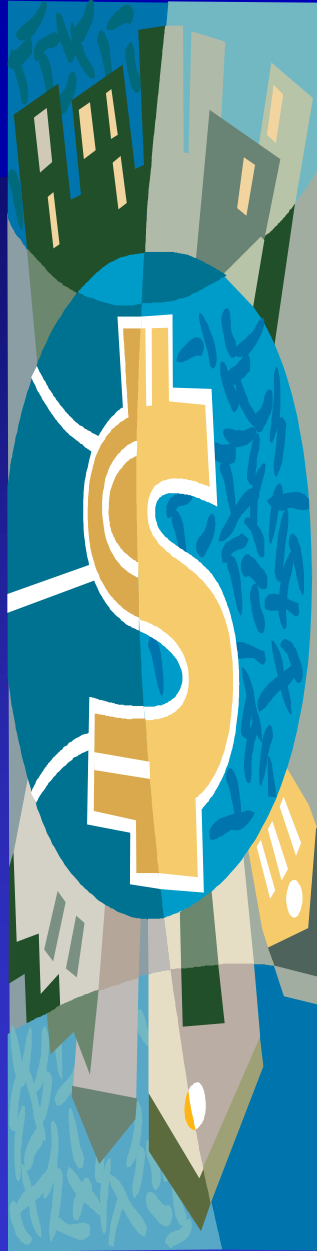
33,500

Maximum Daily Traffic at
Level of Service "D" on 4-Lane Road



Effect of Number of Driveways



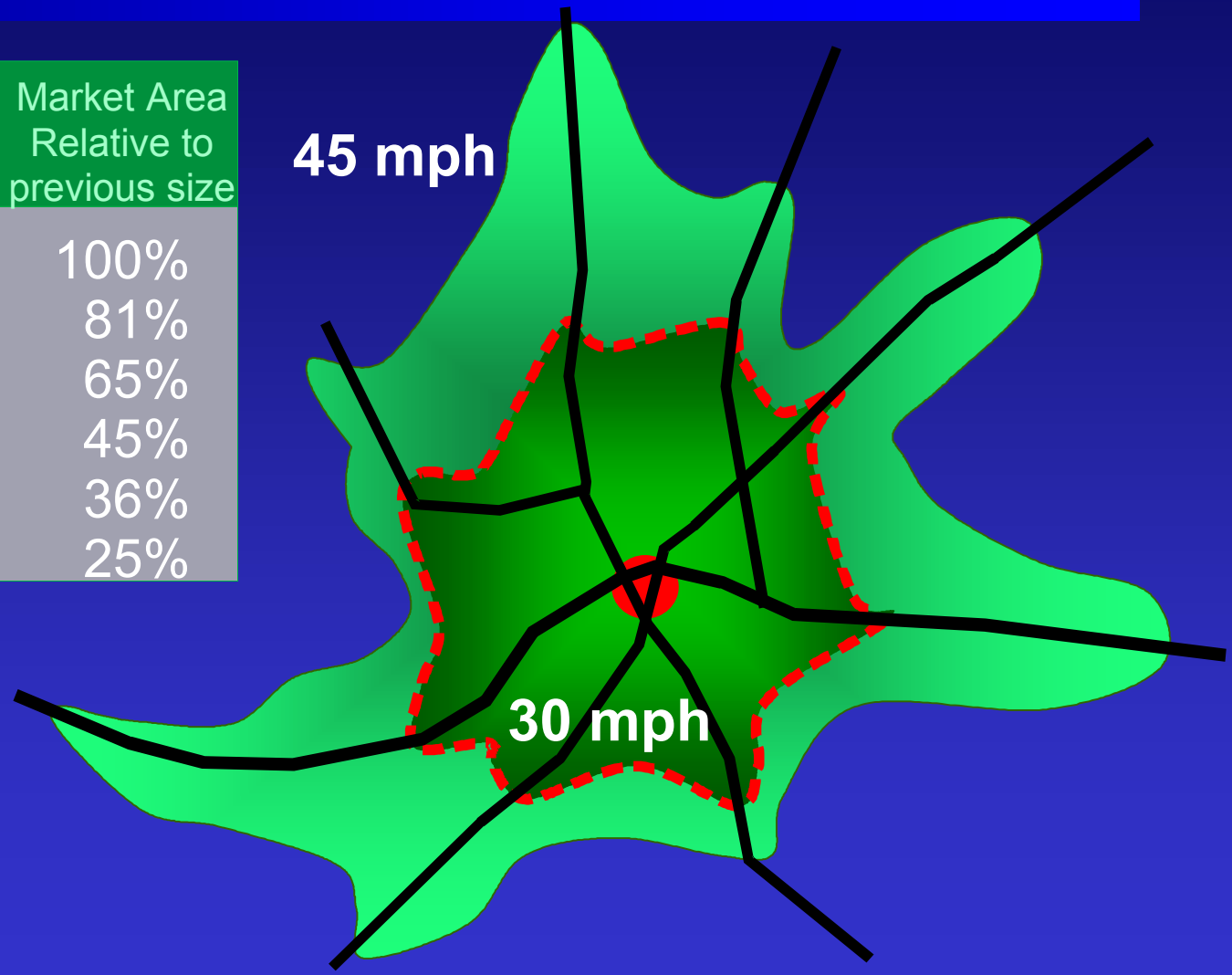


Economic Effects



Increased Market Area

Reduction in Avg. System Speed	Market Area Relative to previous size
0%	100%
10%	81%
20%	65%
30%	45%
40%	36%
50%	25%





Aesthetics



With Access Management





Without Access Management





Access Management



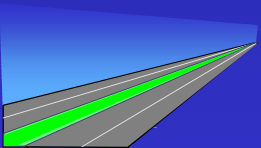
Increases safety and efficiency of travel



Enhances community character



Advances economic development goals



Protects public investment in roads and highways



Class	Medians
	GENERALLY
2	Restrictive w/ Service Roads
3	Restrictive
4	Non-Restrictive
	GENERALLY
5	Restrictive
6	Non-Restrictive
7	Both Median Types

FDOT's Access Management Program

Classification System & Standards

Class 1 is freeway

Well planned
with system
of service
roads

Essentially
the same
except for
medians

Essentially
the same
except for
medians

The Urban/
Suburban
Strip

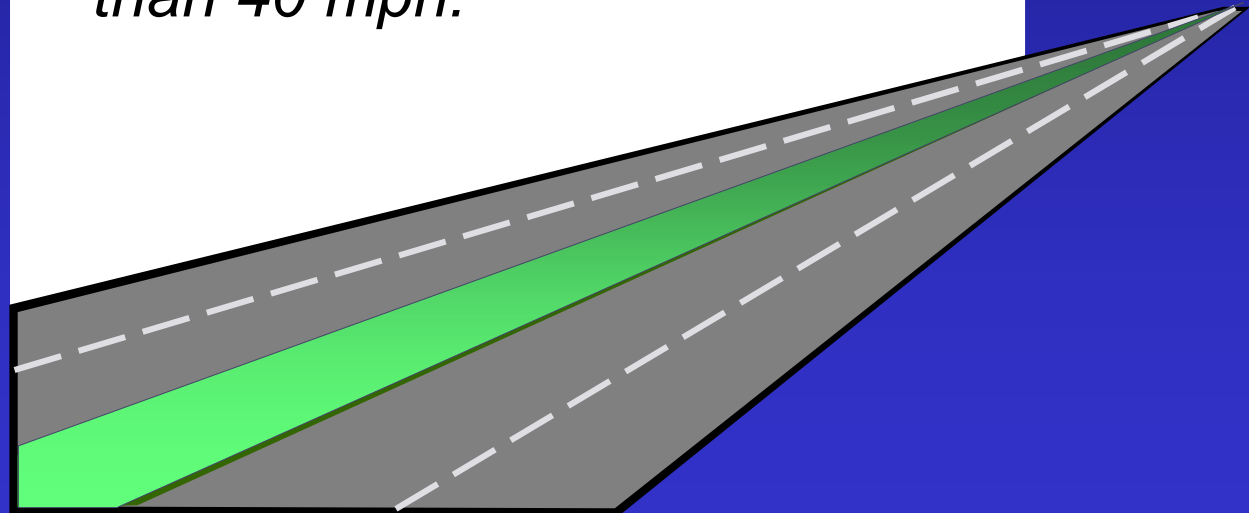
Class	Medians	Connection		Median Opening		Signal
		>45mph	≤45mph	Directional	Full	
GENERALLY DEVELOPING OR UNDEVELOPED						
2	Restrictive w/ Service Roads	1320	660	1320	2640	2640
3	Restrictive	660	440	1320	2640	2640
4	Non-Restrictive	660	440			2640
GENERALLY DEVELOPED						
5	Restrictive	440	245	660	2640/ 1320	2640/ 1320
6	Non-Restrictive	440	245			1320
7	Both Median Types	125		330	660	1320



FDOT Median Policy (1993)

All multilane facilities shall be designed with a raised or restrictive median except multi-lane sections with design speeds of less than 40 mph.

If less than 40 MPH:
Include sections of raised or restrictive median for enhancing vehicular and pedestrian safety.

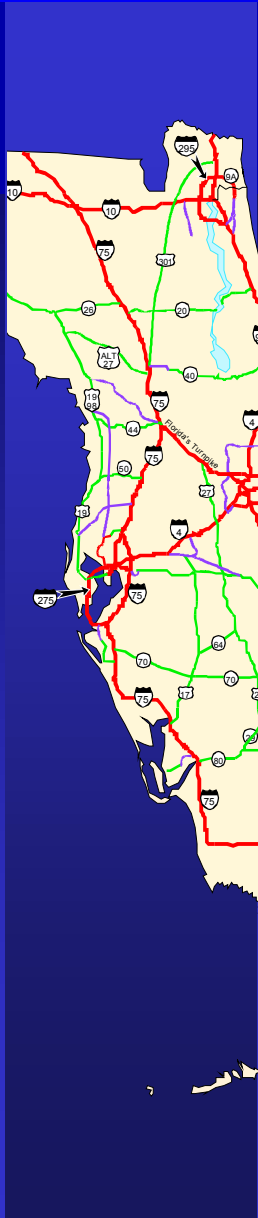




FDOT Median Opening Procedure



- Addresses deviation from median opening spacing standards
 - Access Management Team in each District
- Major deviation = 10% for “Full” median openings, more restrictive
- Directional openings – “case-by-case”
- All access issues



Access Management and the Florida Intrastate Highway System (FIHS)



About the FIHS

- Comprises 3% of Florida's roads
- Carries 32% of the traffic and 70% of truck traffic
- Essential to Florida's economy





FIHS Issues

- Demand is outpacing supply
 - By 2001, FIHS will carry the majority of vehicle miles traveled
 - 30% of routes will be heavily congested
 - About \$30 billion shortfall over next 20 years

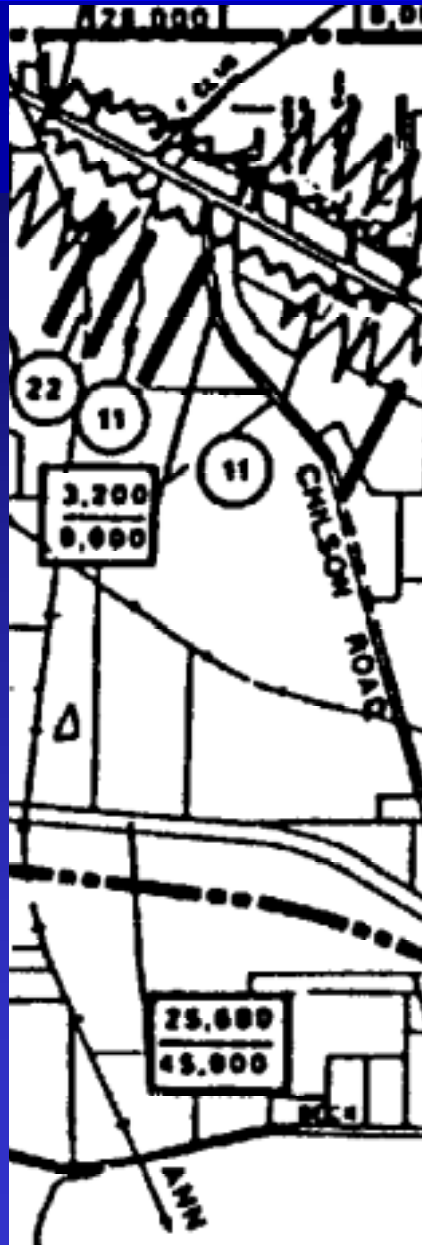




Access Management on FIHS

- FIHS roadways that are not limited access are required to meet Class 2 or 3 standards.

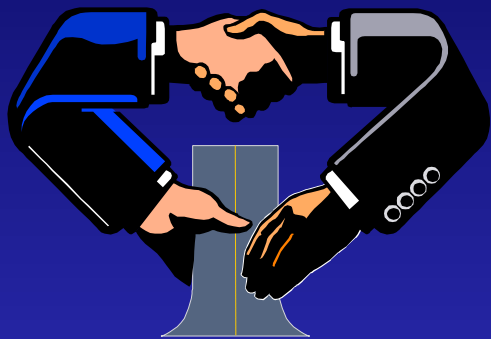
Class	Medians	Connection		Median Opening		Signal	
		>45mph	≤45mph	Directional	Full		
		GENERALLY DEVELOPING OR UNDEVELOPED					
2	Restrictive w/ Service Roads	1320	660	1320	2640	2640	
3	Restrictive	660	440	1320	2640	2640	



Local Role in Access Management



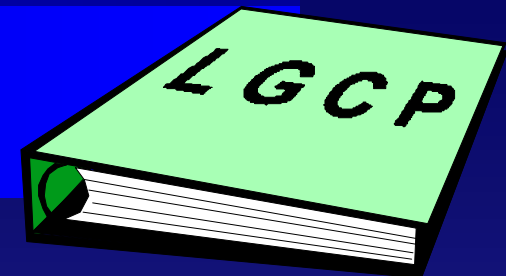
How Can Local Governments Institute Access Management?



- Local comprehensive plan
- Land development and subdivision regulations
- Roadway design
- Site plan review
- Corridor management plans
- Coordination with FDOT



Local Comprehensive Plans

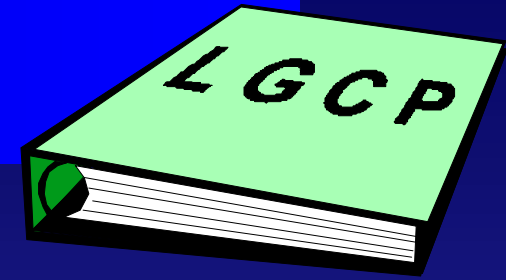


- Explain the principles and purpose of access management
- Establish goals, objectives, and policies for access management

See Sample Plan Policies handout



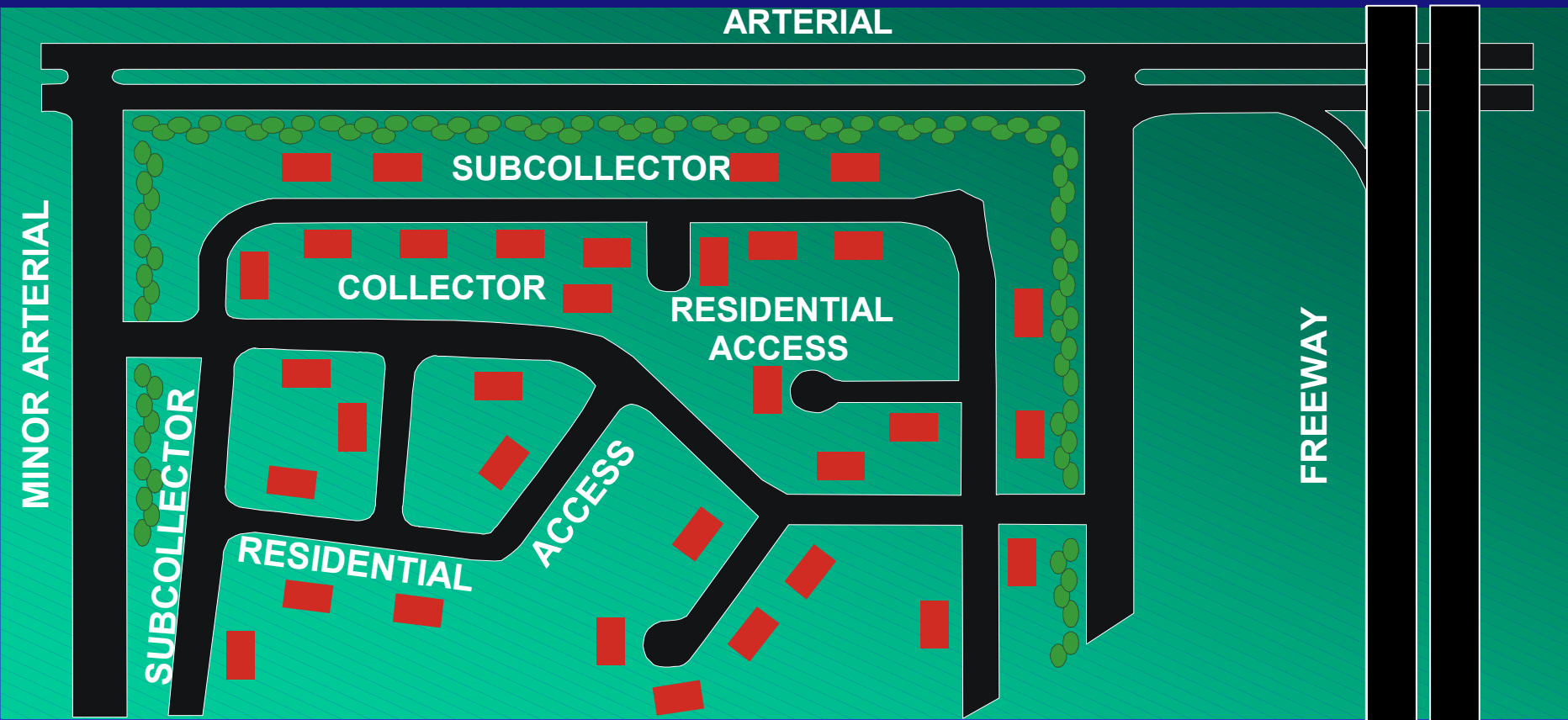
Local Comprehensive Plans



- Classify roadways according to function and access level
 - Designate corridors for special treatment
- Set forth land use and activity center concepts that support access management



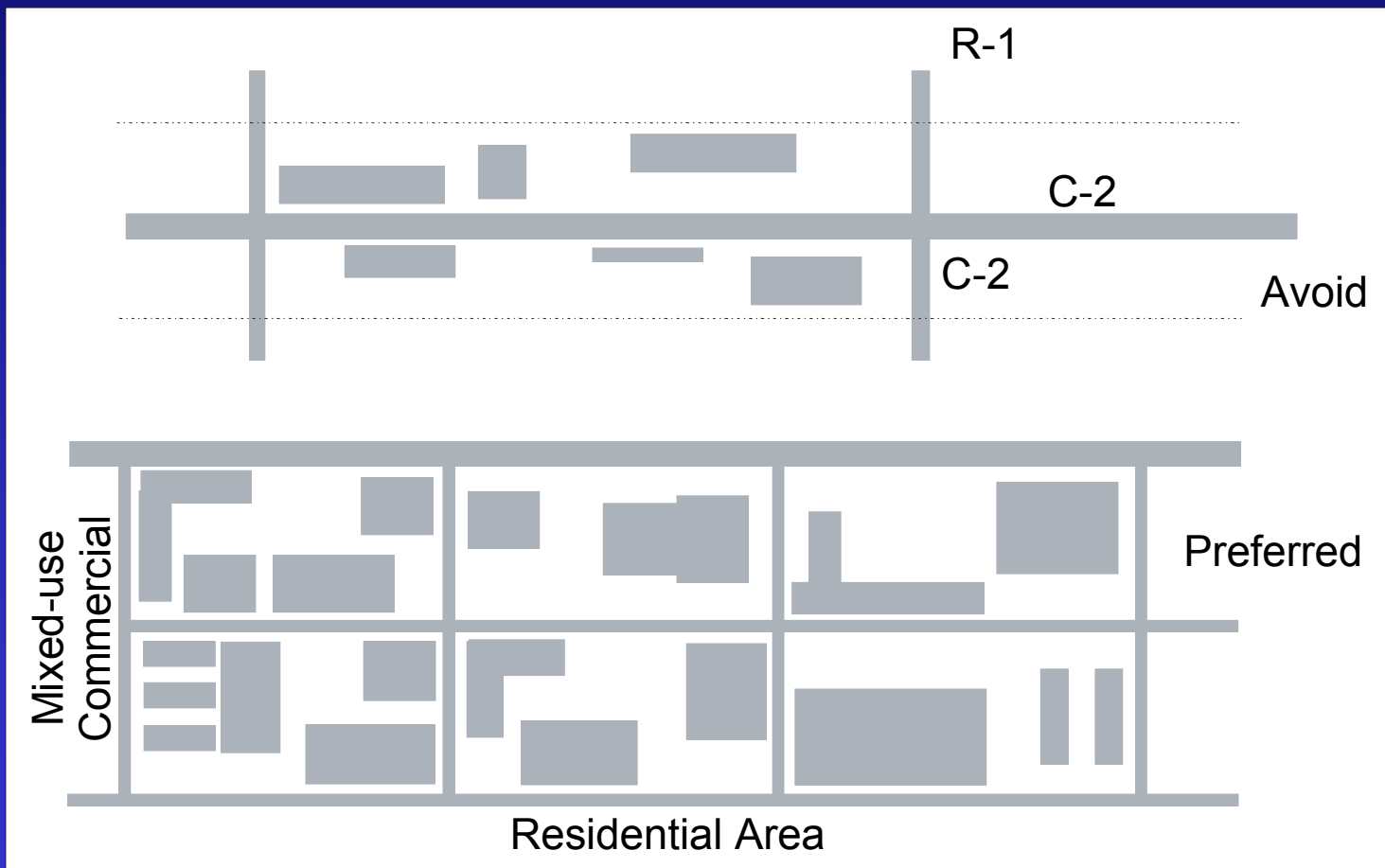
Roadway Classification



Listokin, D. and Walker, C. The Subdivision and Site Plan Handbook,
New Jersey: The State University of New Jersey, 1989



Promote activity centers NOT strips



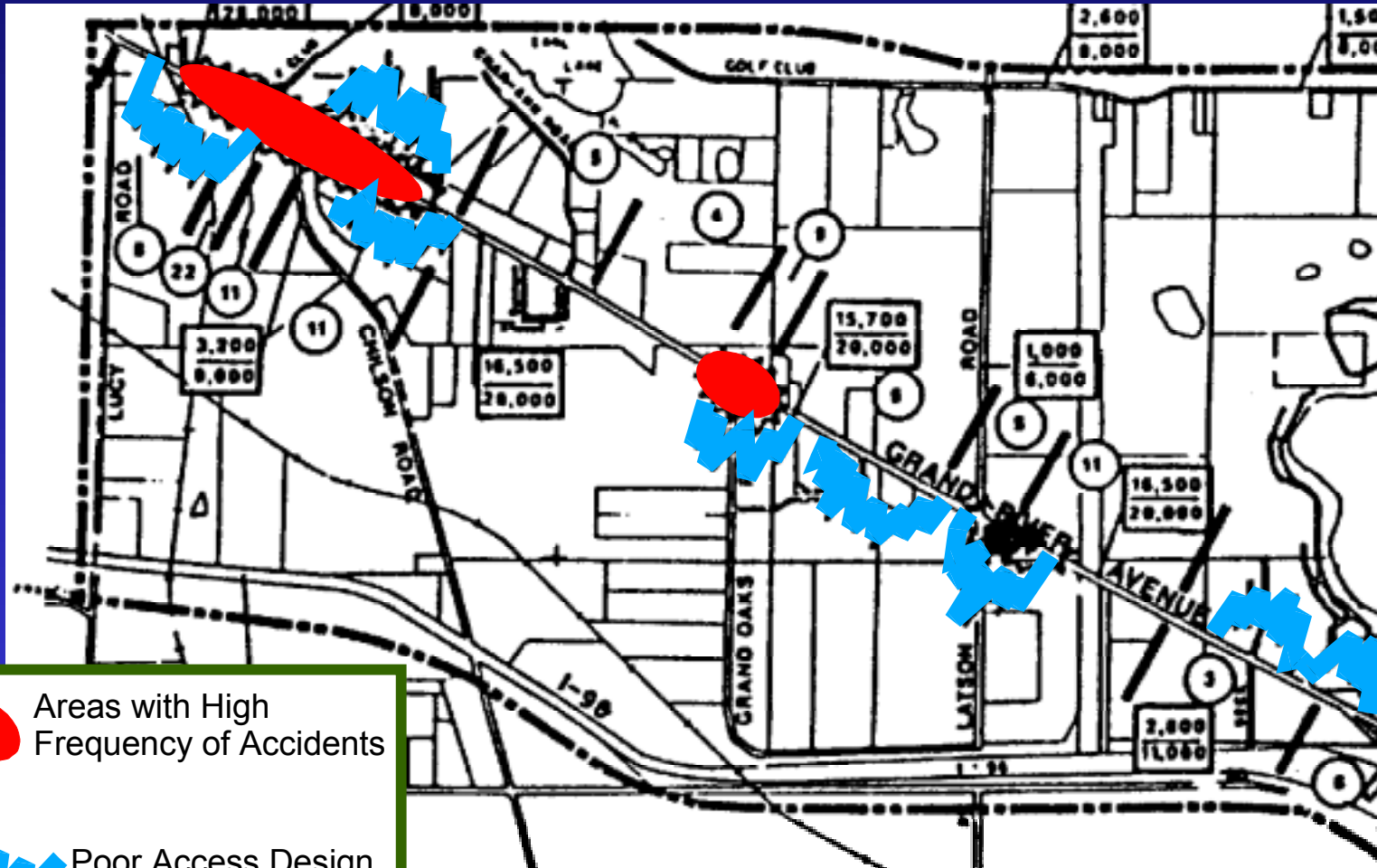


Provide a supporting local street and circulation system



- Interparcel and side street connections
- Variety of street types and design options

Corridor Plans & Studies



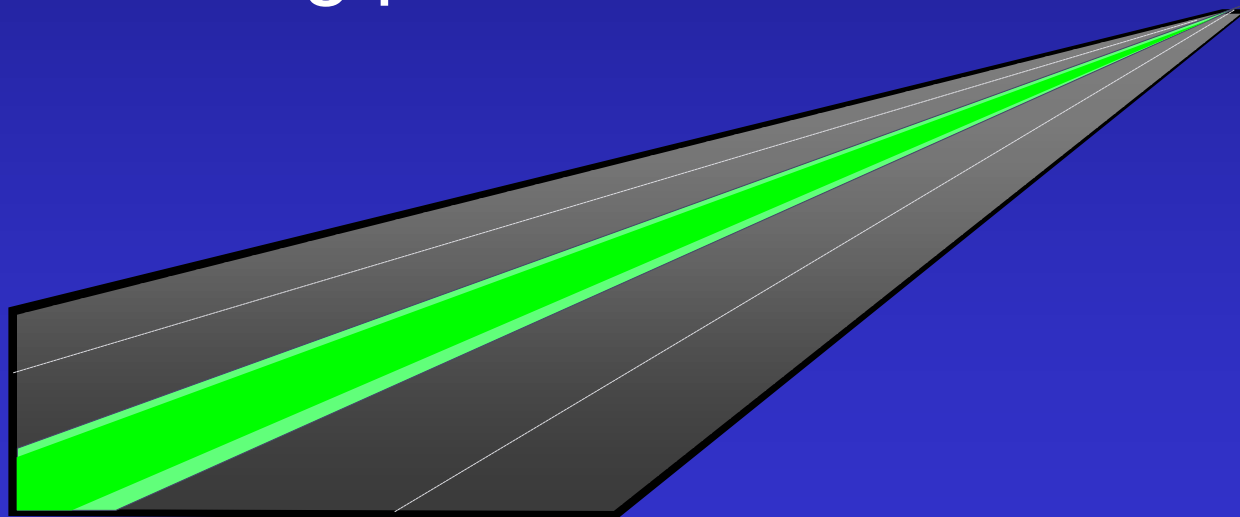
 Areas with High Frequency of Accidents

 Poor Access Design



Use Medians

- Pedestrian and vehicular safety
- Corridor beautification
- Retrofitting problem areas

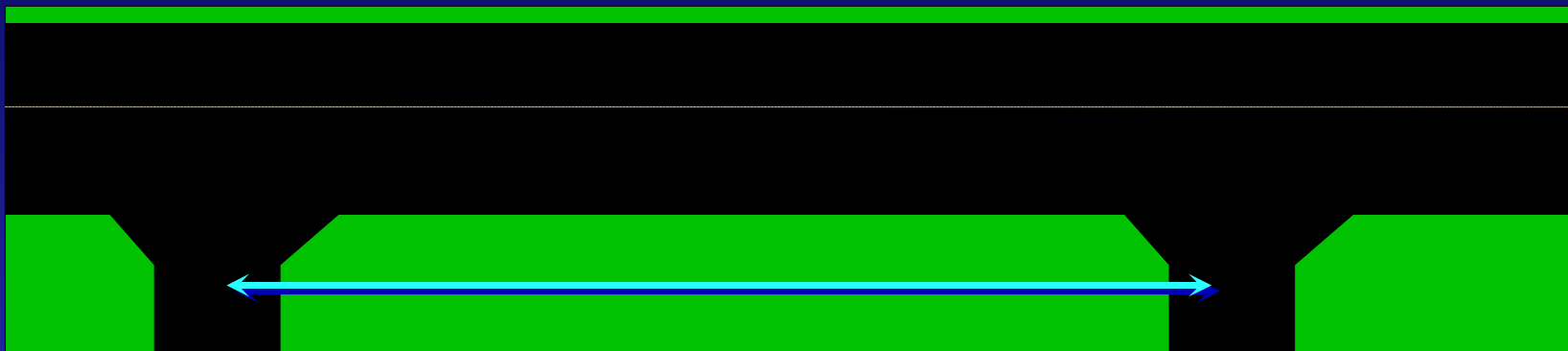




Land Development Regulations

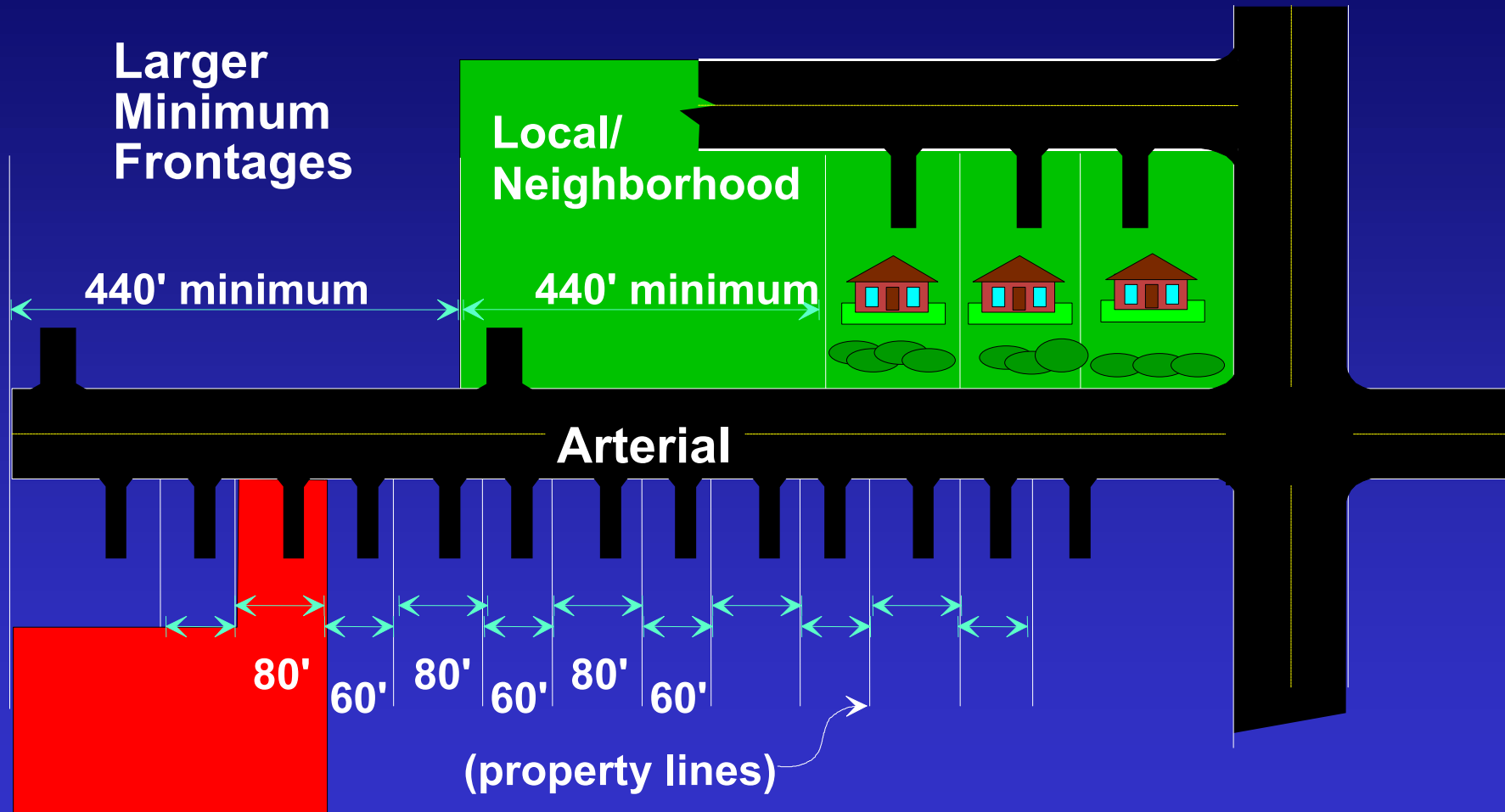


Driveway Spacing Standards



- **Adopt minimum spacing standards for driveways**
- **Reinforce with minimum lot frontage and joint access requirements**

Minimum Lot Frontage



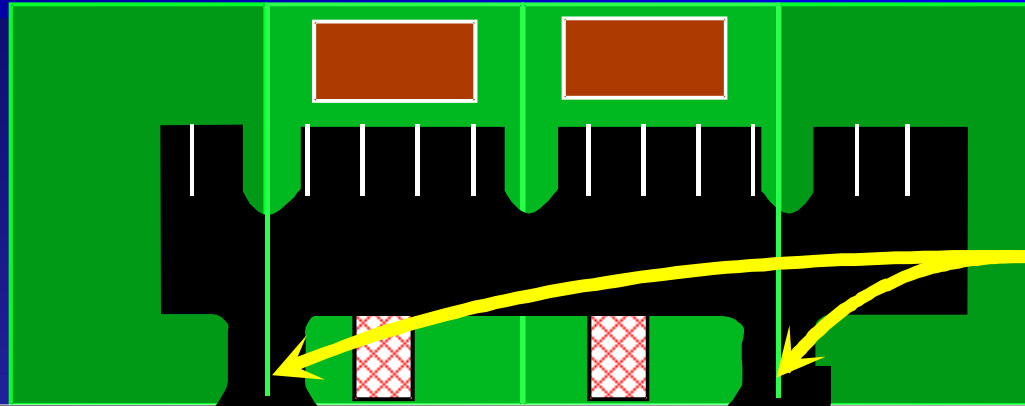
See Section 15/ Reverse Frontage pg 2 - 26

Section 14/ Overlays pg 2 - 23 as it relates to lot size

Section 17/ Lot width to depth ratios pg 2 - 28

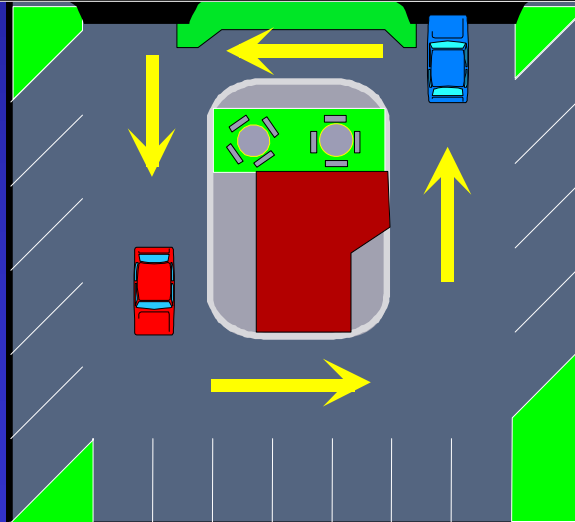


Joint and Cross Access



**Encourage
Joint and
Cross Access**

**Complete
On-Site
Circulation**



See: Section 7 –
Joint and Cross Access pg 2 – 13
Section 18 –
Shared Access pg 2 - 28



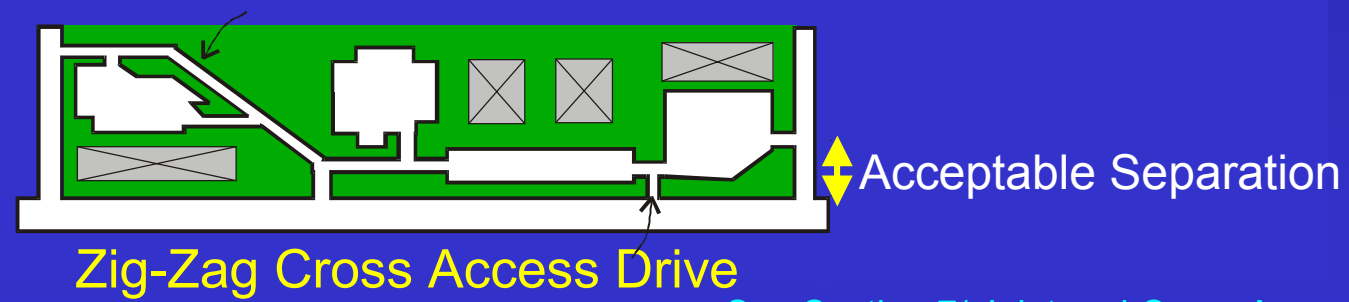
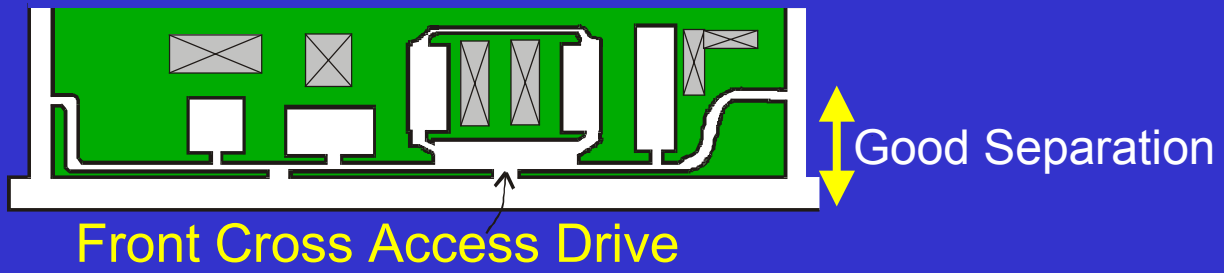
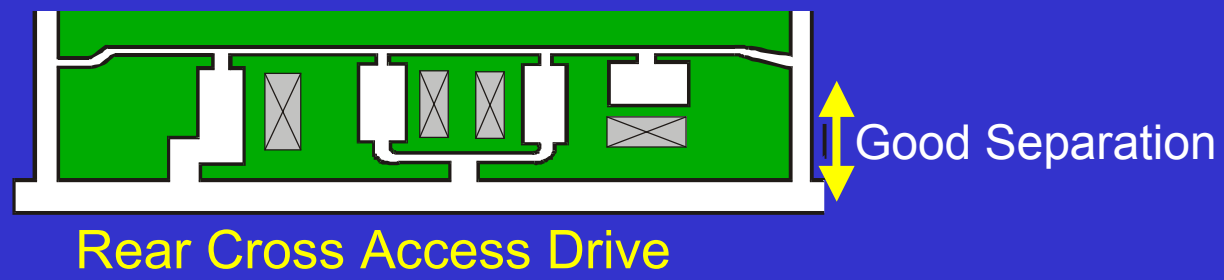
Written agreements



- Property owners must record cross access easement
- Agreement to close temporary driveways
- Joint maintenance agreement



Cross Access Corridor Overlay



See Section 7/ Joint and Cross Access
Also see Cross Access Agreement Appendix 1



Shared Access and Signage





Interparcel Circulation





Joint Driveway





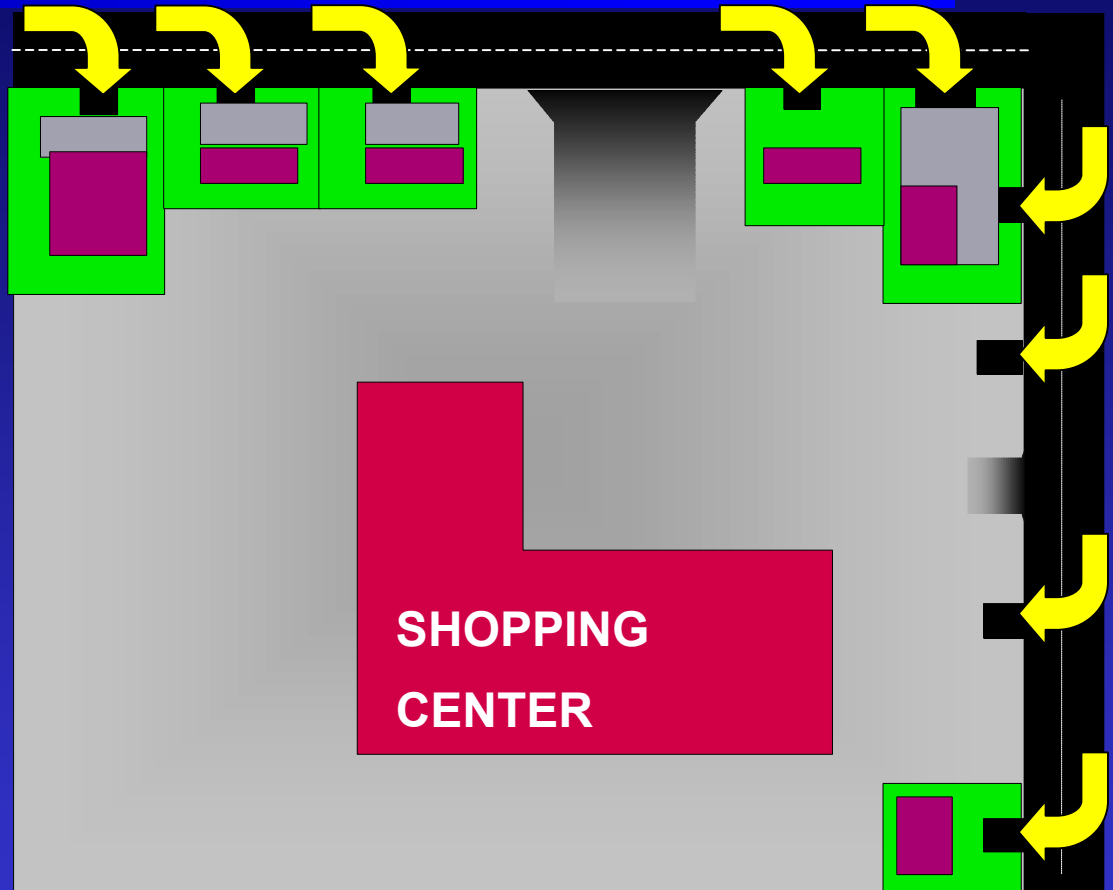
Shared Service Drive





The problem with outparcels

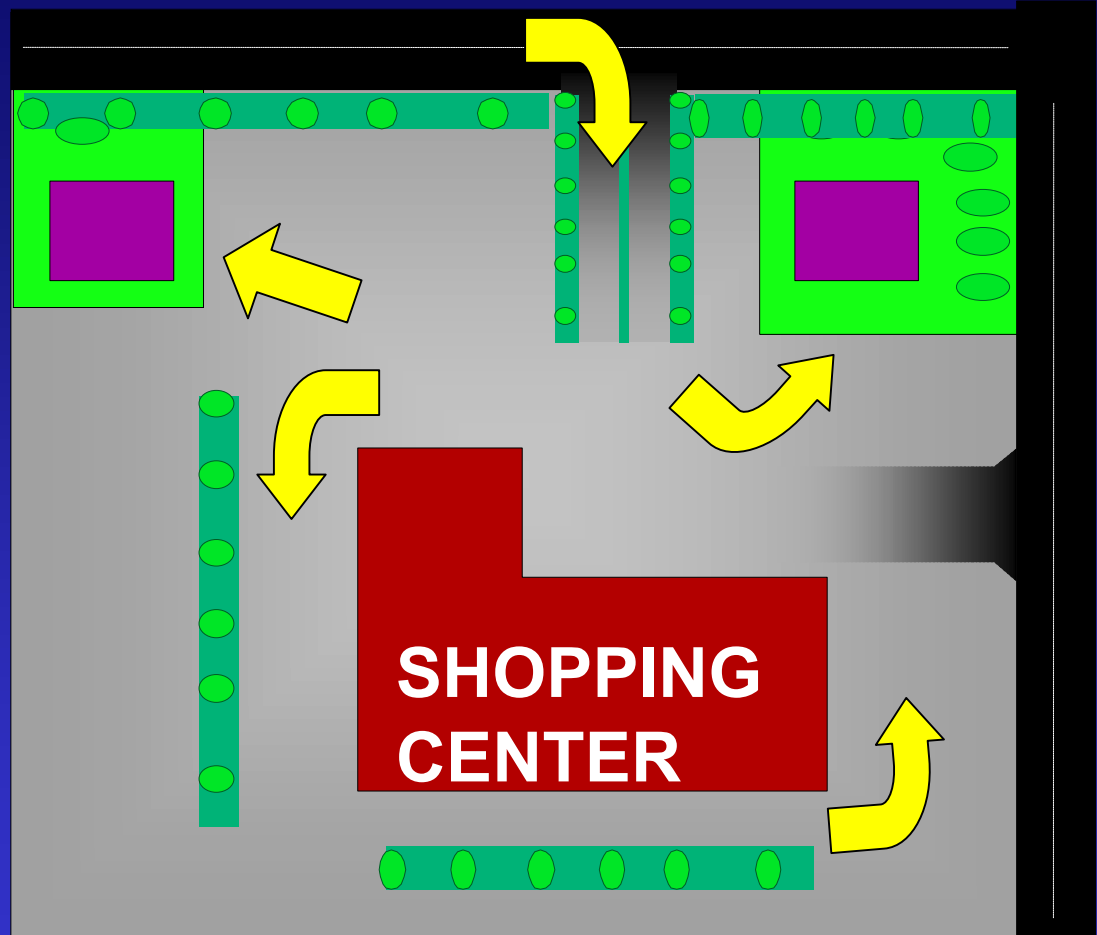
- Increased demand for arterial access



Site plans often fail to coordinate on-site circulation and access

Improved Outparcel Regulations

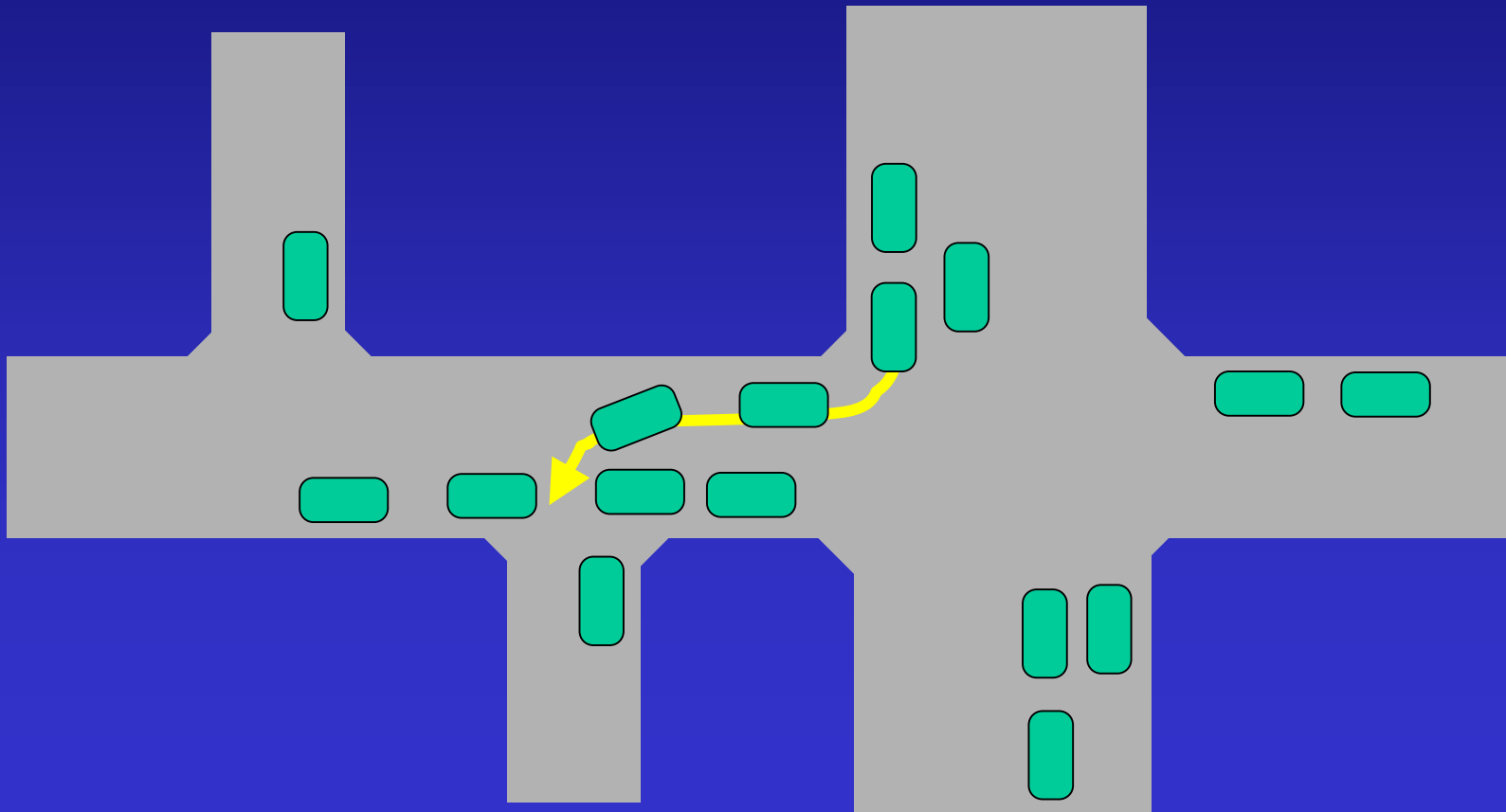
- Use main access drive
- Limit number of outparcels
- Increase minimum lot frontage
- Require unified parking and circulation
- Landscaping and pedestrian systems
- Regulate signage





Corner Clearance Standards

- Inadequate corner clearance causes delay and safety hazards





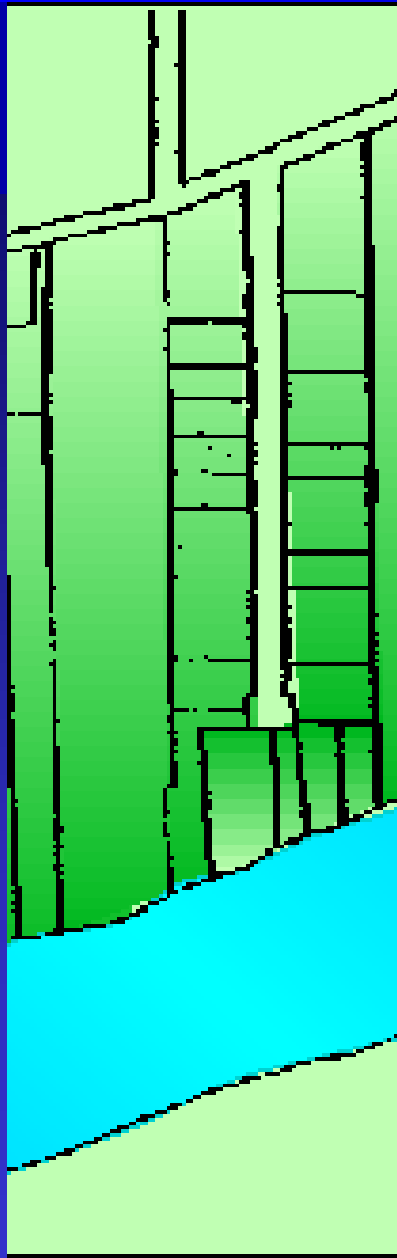
Corner Clearance





Retrofitting Nonconforming Properties

- Access to nonconforming properties may be improved
 - When new driveway permits are requested
 - Substantial enlargements or improvements
 - Significant change in trip generation
 - As changes to roadway design allow



Land Division and Subdivision Regulation



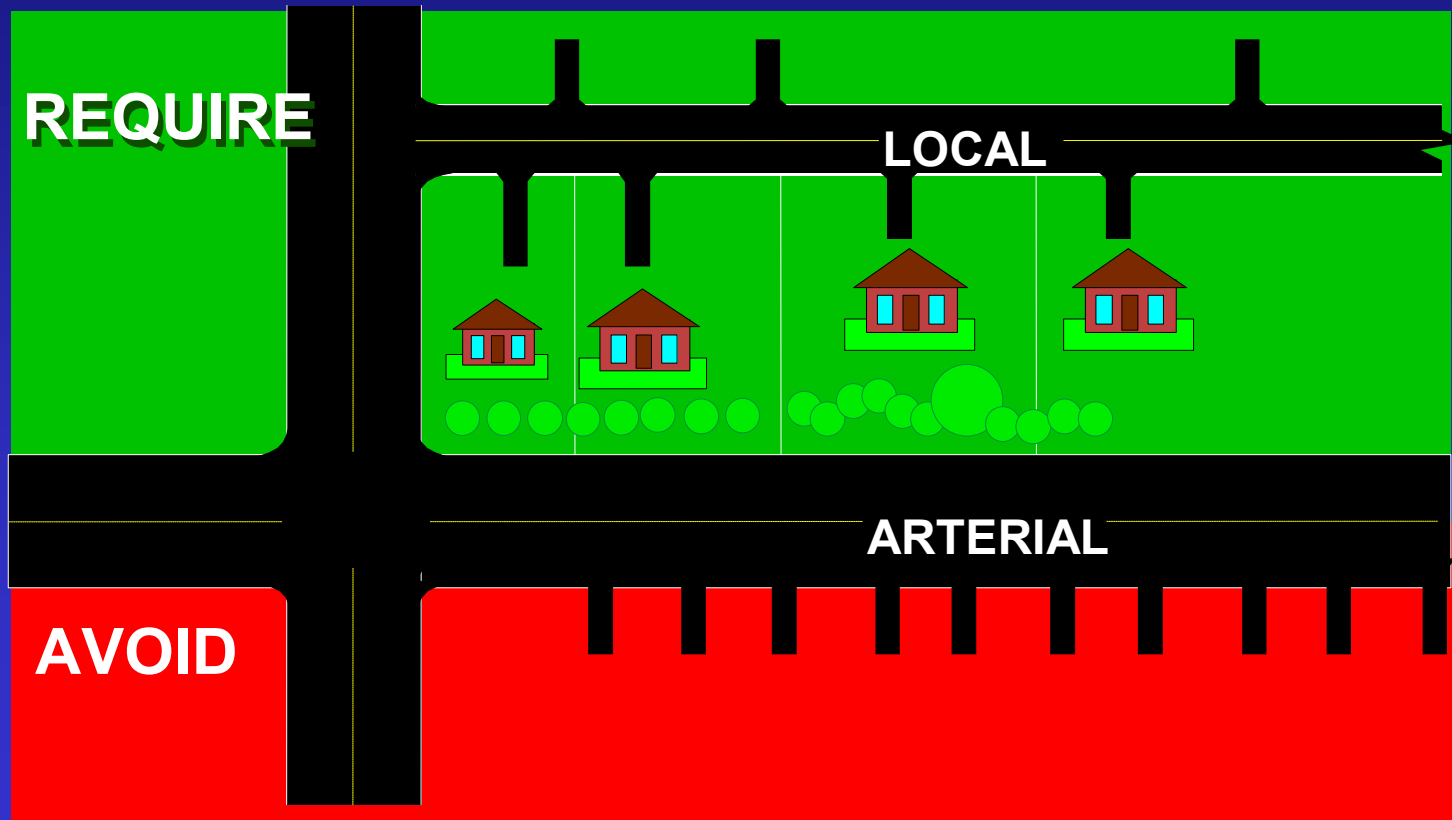
Improved subdivision regulations

- Proper street layout in relation to existing or planned roadways
- Adequate space for emergency access
- Units obtain access on residential streets
- Pedestrian path systems and sidewalks

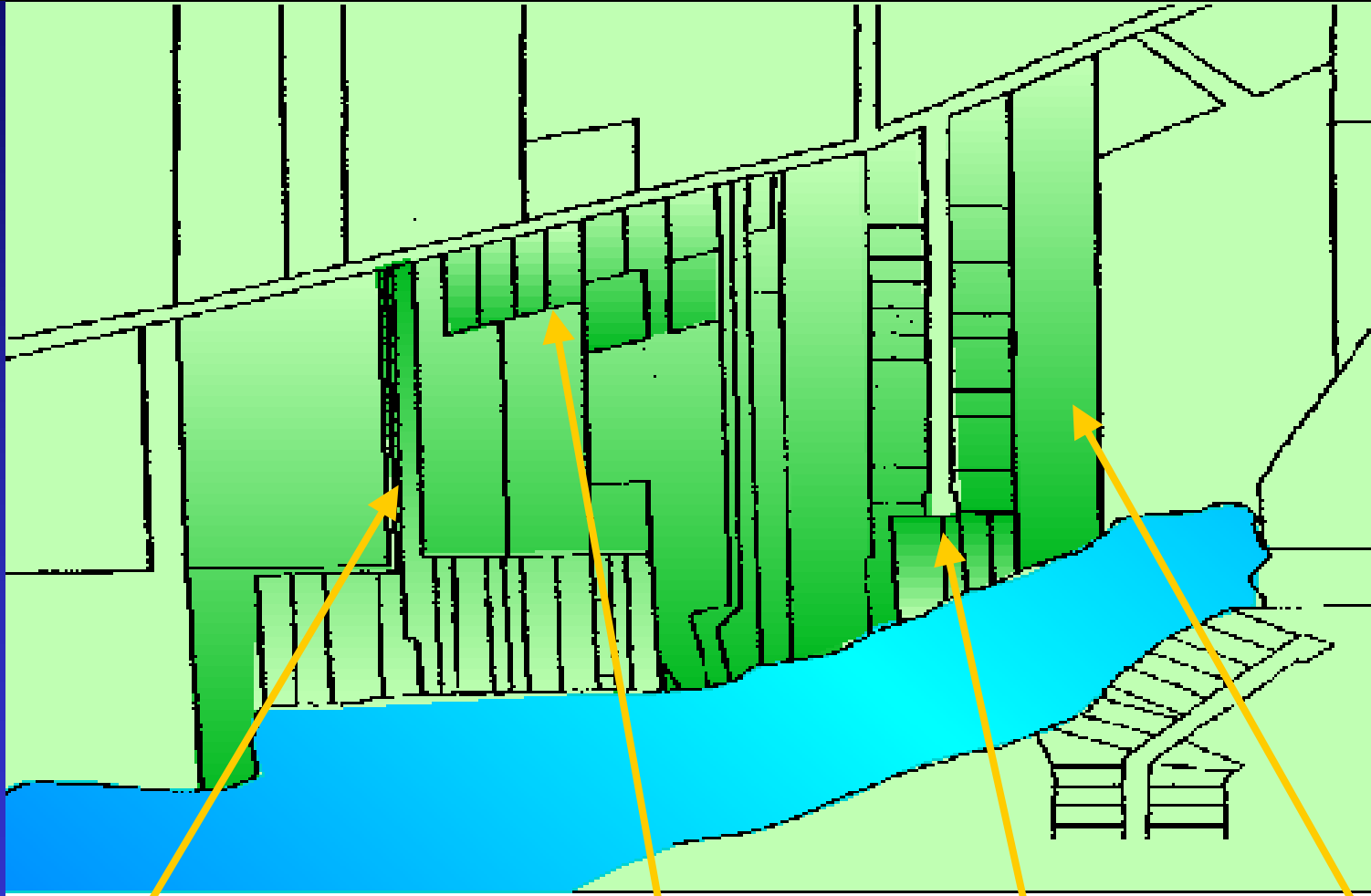


Residential Subdivisions

- Require reverse frontage
- Primary access should be to local streets



Land Division and Access Problems



Flag Lots

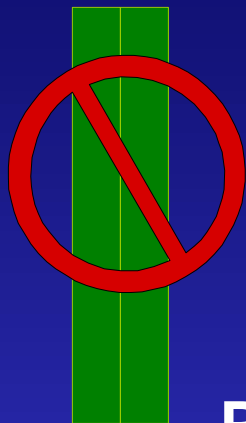
Strip Development

Cul-de-sac

Bowling alley lot

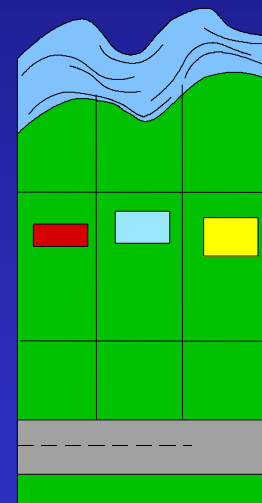
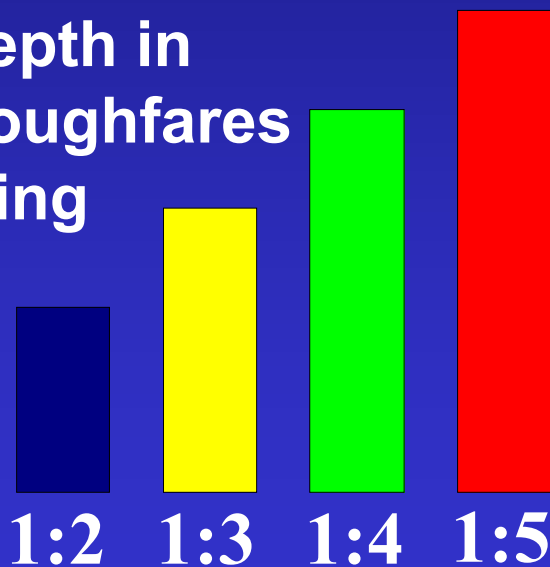


Lot width-to-depth ratios



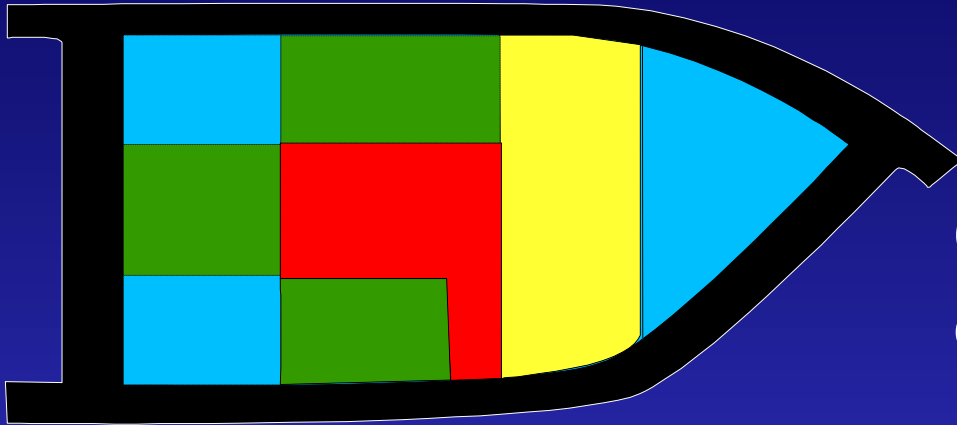
Prevent creation of bowling alley lots or irregularly shaped parcels

Provide for greater depth in coastal areas or thoroughfares designated for widening

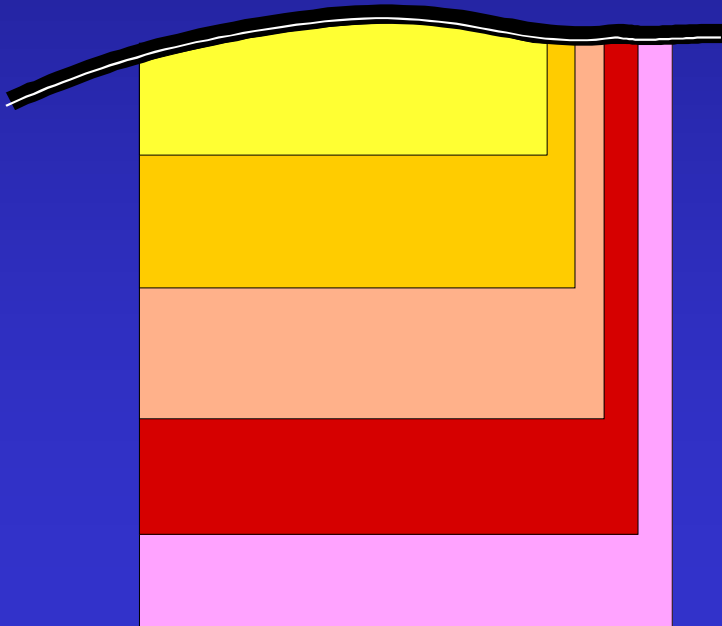




Flag Lots



Can be useful in certain circumstances



Often abused to avoid the expense of platting and providing a road



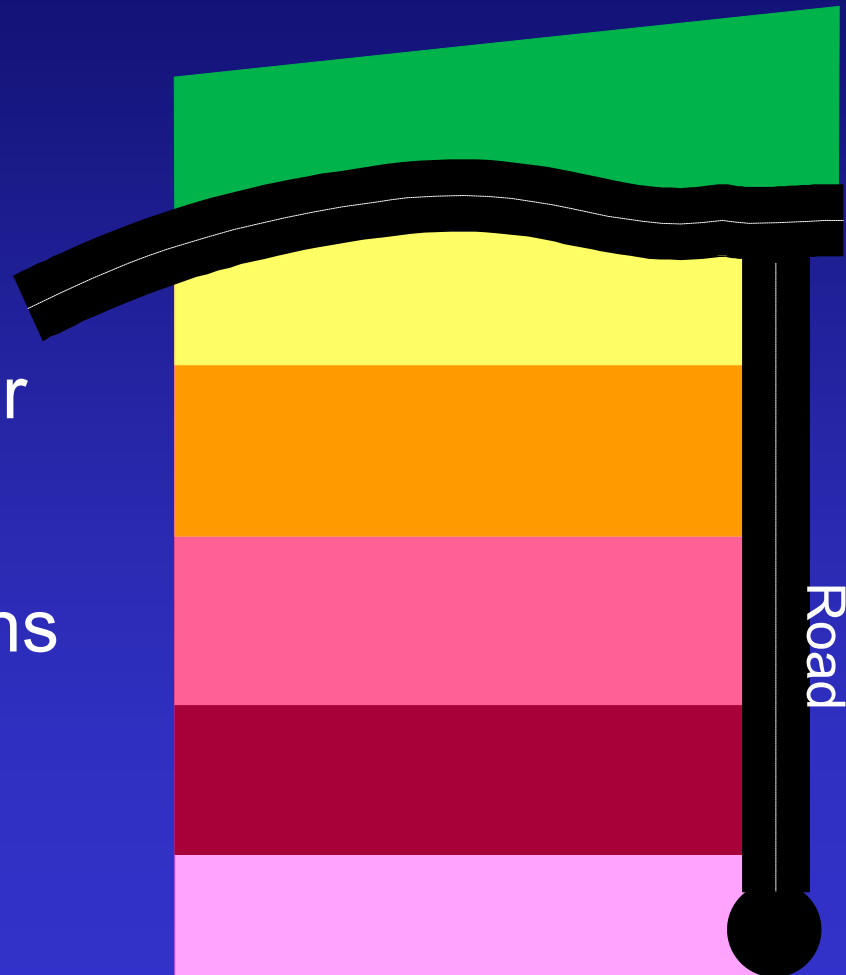
Why Was This Approved?





Flag Lots

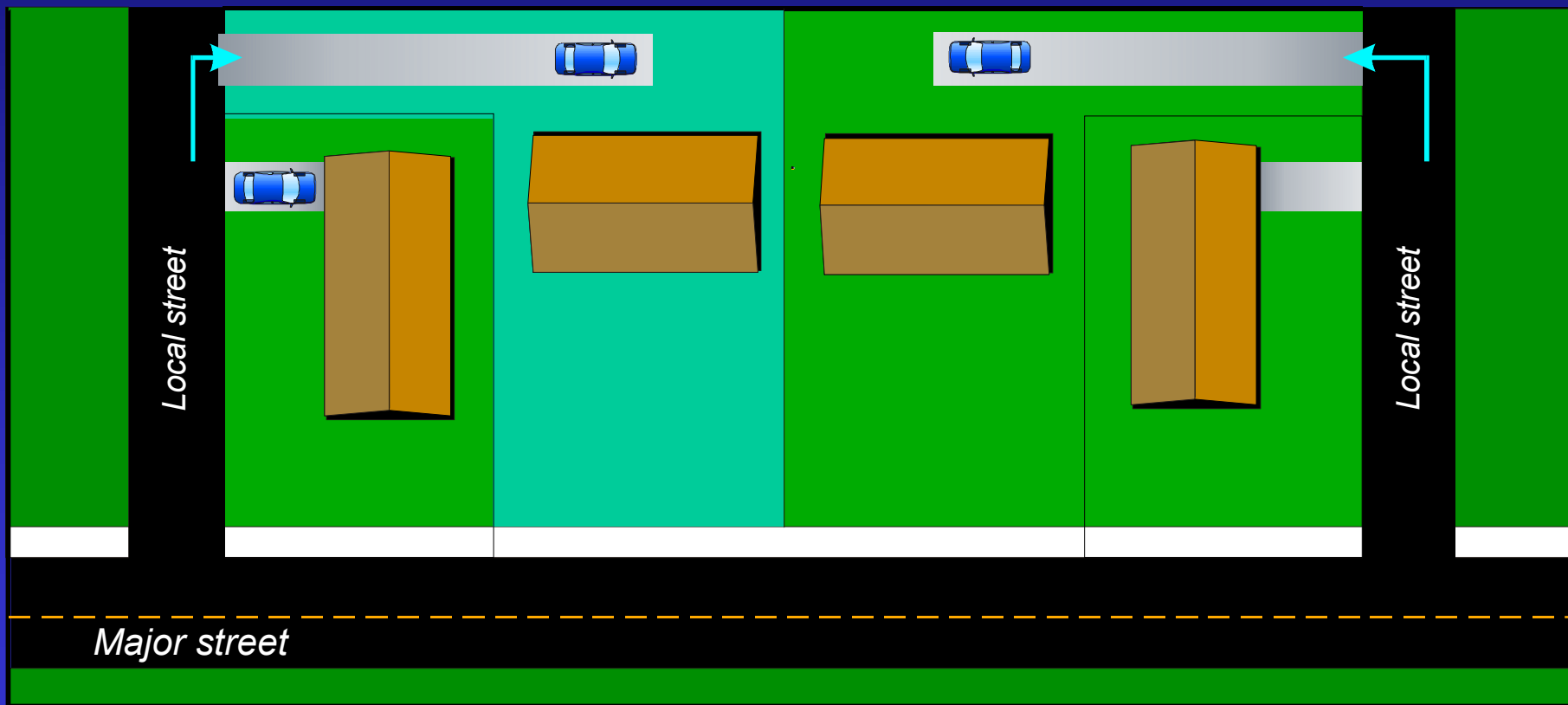
- Prohibit on thoroughfares
- Require a public or private road
- Establish conditions where they are permitted





Flag Lots for Side Street Access

Lots fronting major street with hammerhead car access





Shared Residential Access

Avoid



- Require shared access to small subdivisions
- Reduces curb cuts and improves site design



Encourage



Preserving Interchange Areas



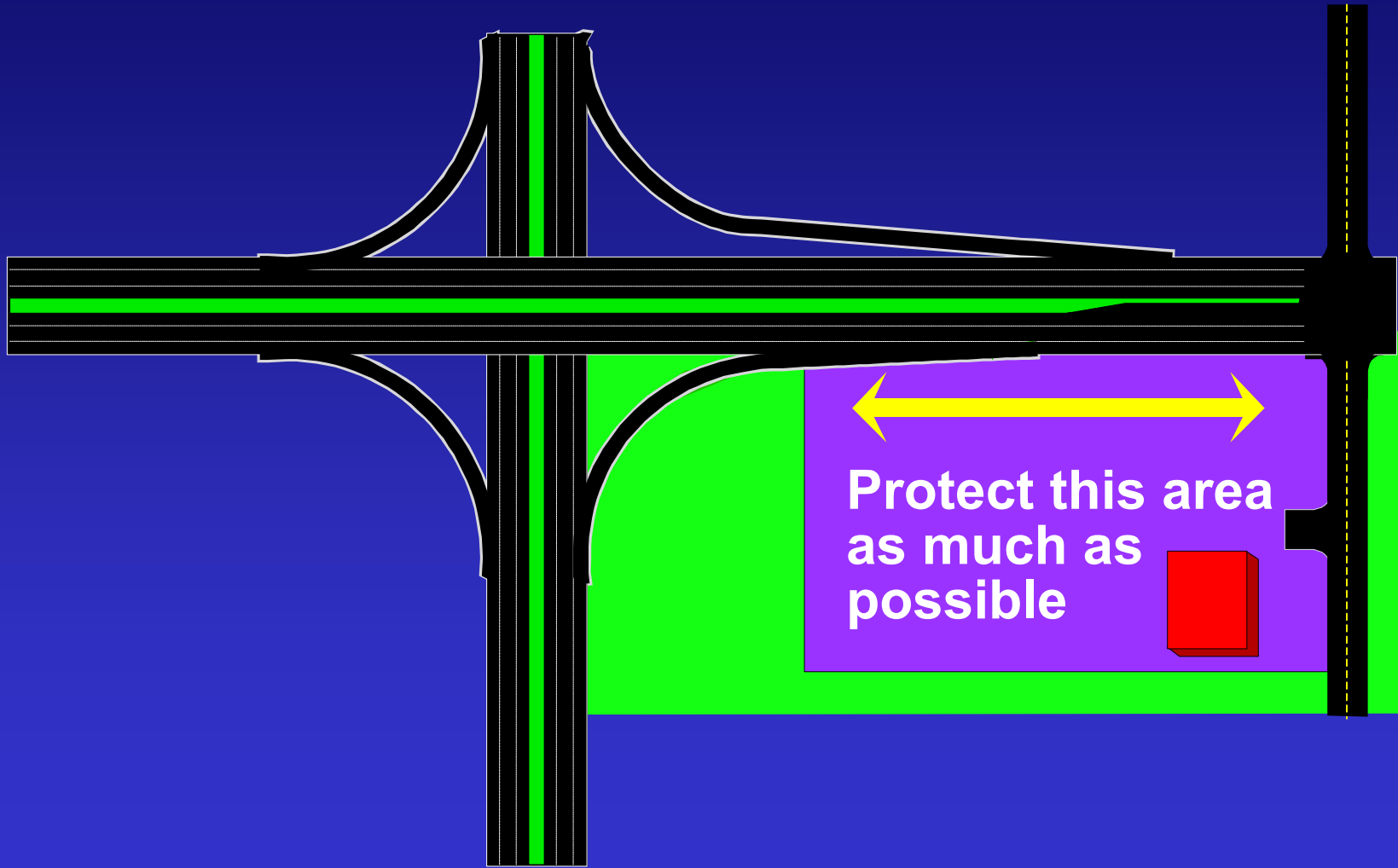
The interchange area is . . .

“ . . . an extension of the freeway. It presents conditions that are complex, unexpected and significantly different from other nearby surface street conditions.”

Robert Layton, PE, PhD,
Oregon State University



Move access away from interchange ramps

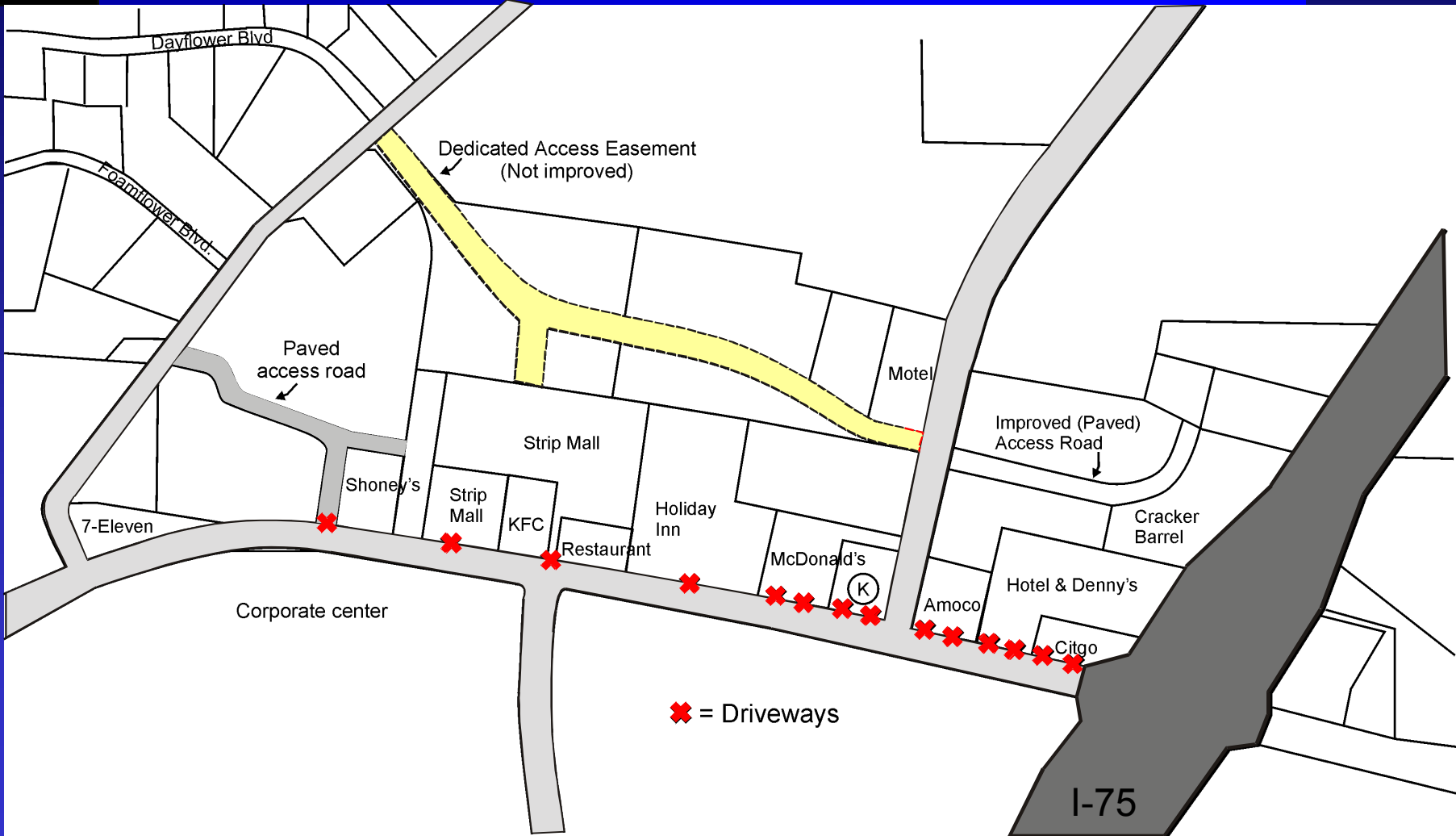




I-4 and Lee Road



I-75 and State Road 54



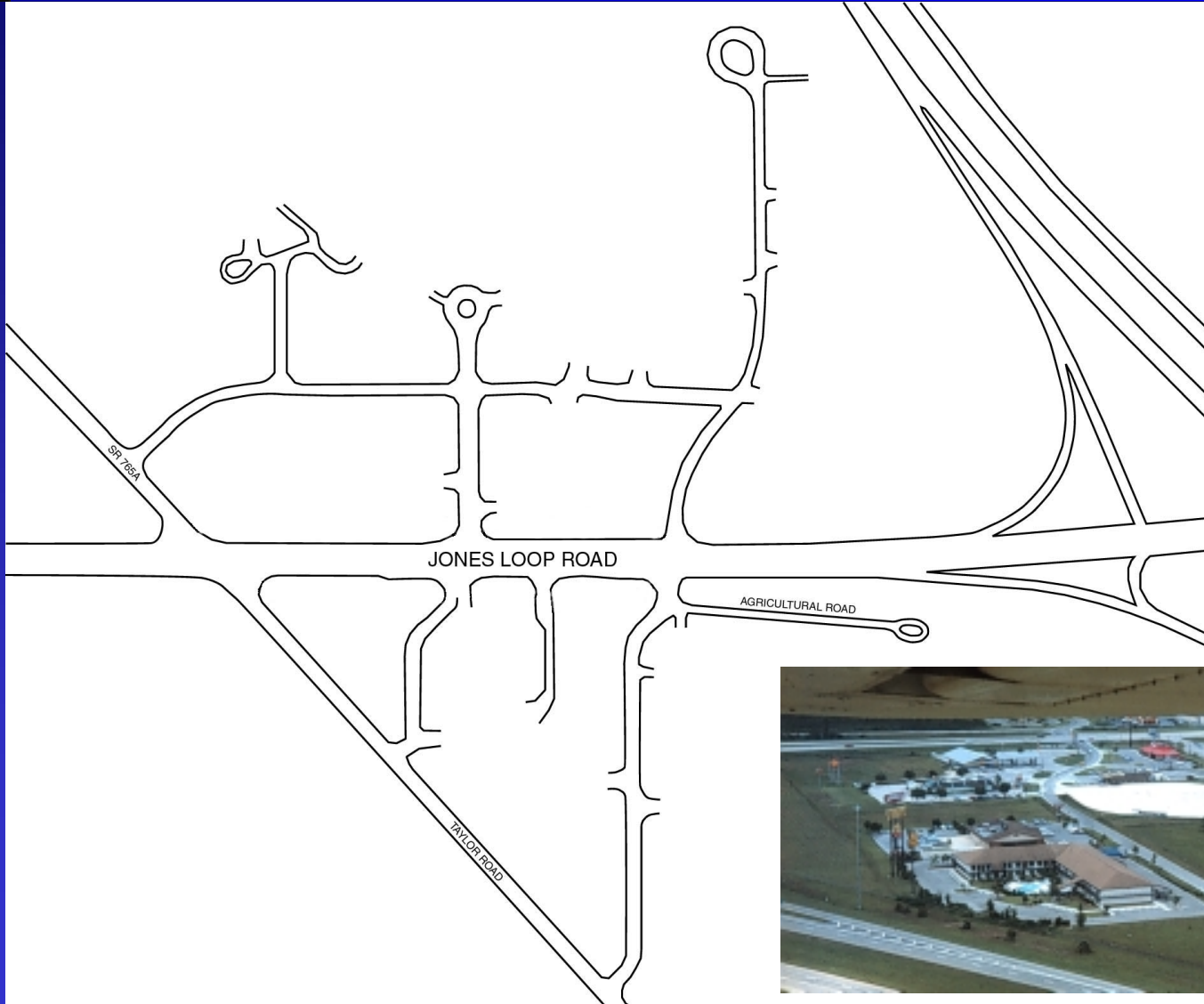


I-75 and Jones Loop Road





I-75 and Jones Loop Road





Interchange Management Strategies

- Alternate access roads
- Joint and cross access
- Medians
- Acquisition of access rights
- Agreements
- Coordination



Dumb Access Management Tricks . . .

And how to avoid them



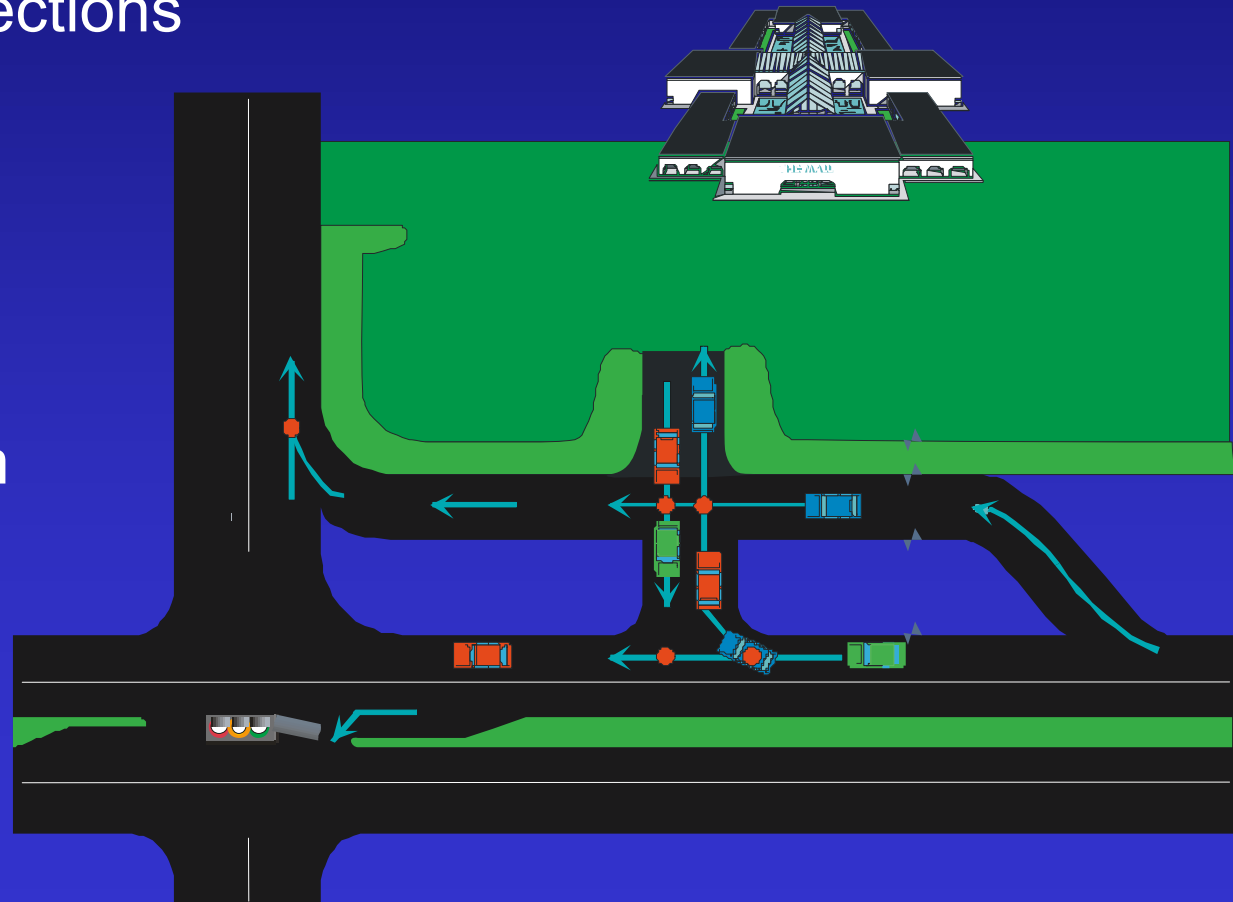
What Are These Dumb Tricks?

- Poorly designed frontage roads
- Overabundant exclusive right turn lanes
- Continuous right turn lanes
- Limiting side street access
- Limiting turns with driveway design only
- Too narrow driveways

Problems with frontage roads

CAUTION!

- Even one-way frontage roads (the safest) create conflicts and confusion close to signalized intersections
- Unless carefully designed and coordinated, they work OK
 - until you put traffic on them
- Full of unfamiliar movements





Frontage Road



Example of a frontage lane built in the 1960's. Stop signs have been added to frontage road due to confusion on right of way.



Trucks crossing frontage Road





Frontage Rd 2



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



Frontage Rd 3

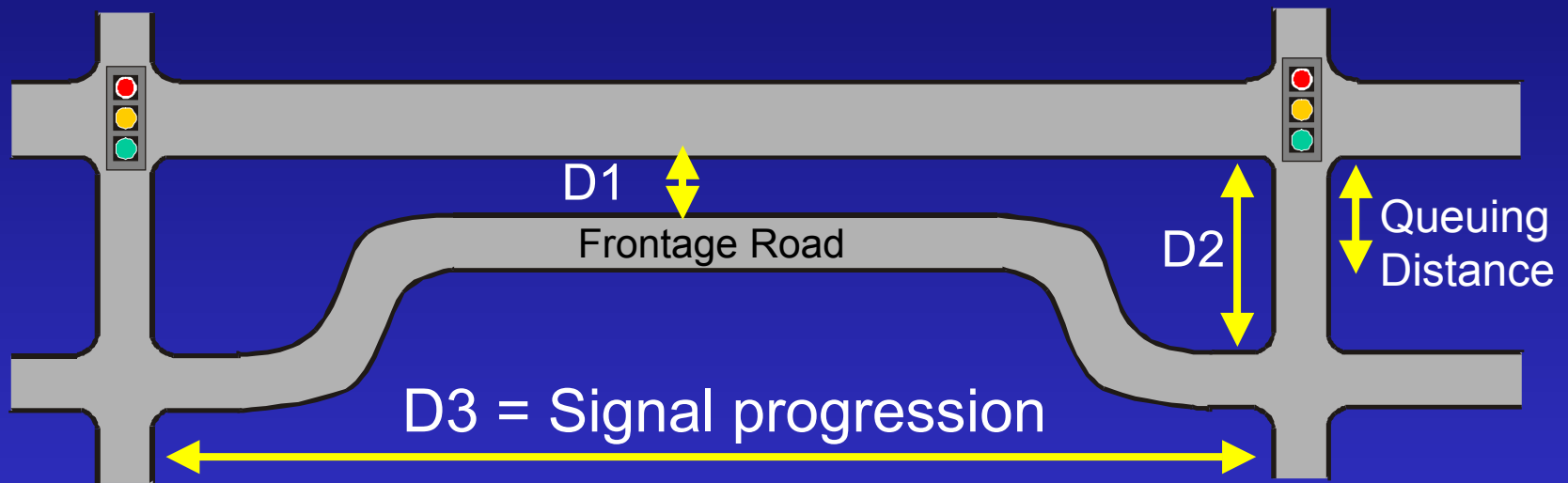


Pedestrian needs to cover much area to cross this arterial and frontage road.



Recommended Flare

D1 = Minimum midblock separation > 25 ft



D2 = Minimum separation
at intersection
> 150 ft min
> 300 ft preferred



Backage Road

Example of “backage road.” Note how the backage road flares out to provide good separation at the side street.



Source: Vergil Stover



Use Public Service Roads





Public Service Road with Potential





Same Place 5 Years Later





TGI Fridays later



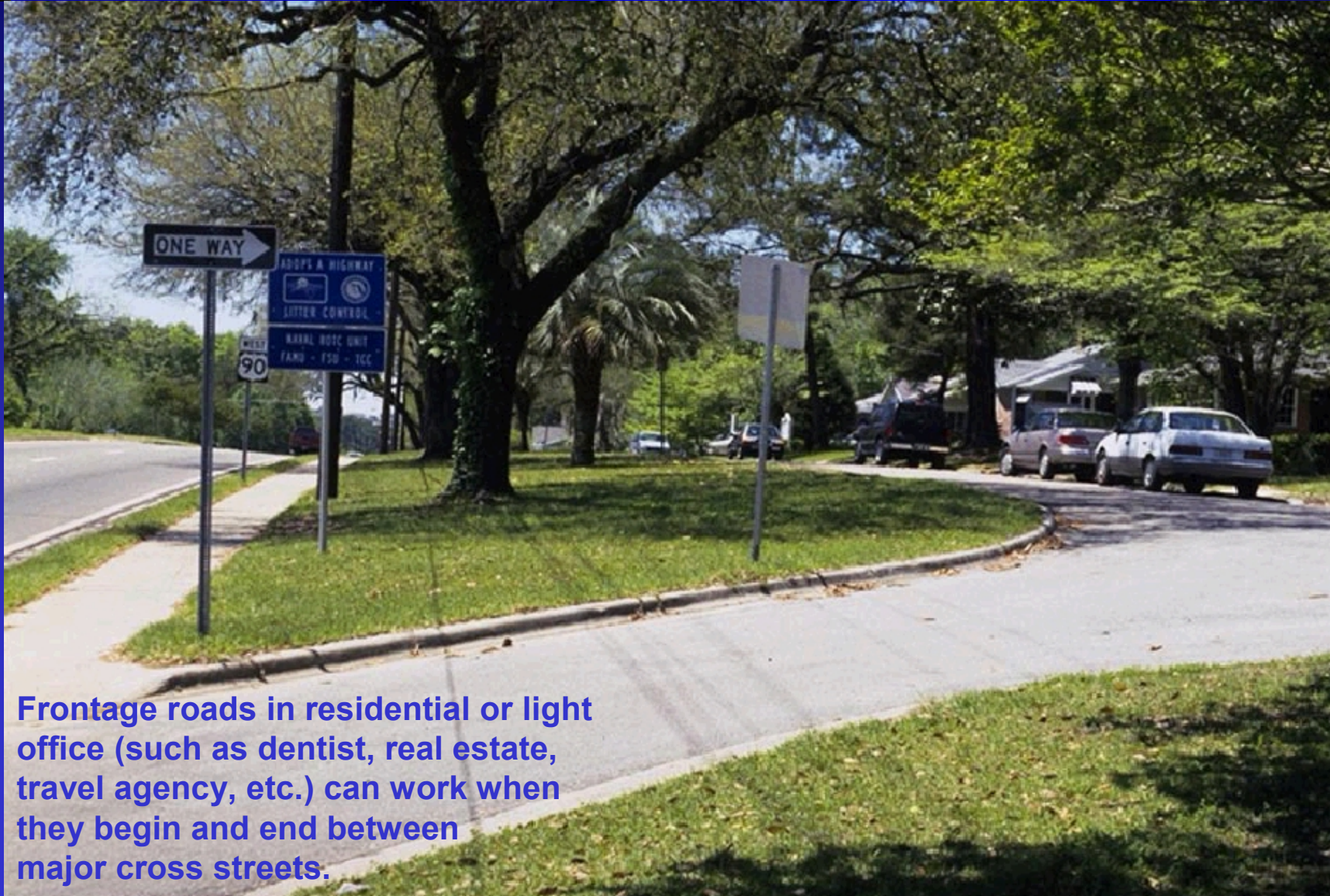


US 98 backage





Light Office Frontage Road



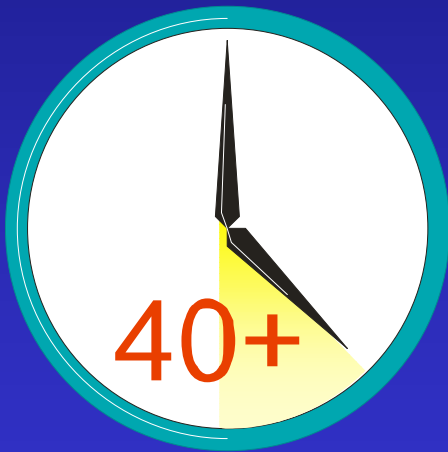
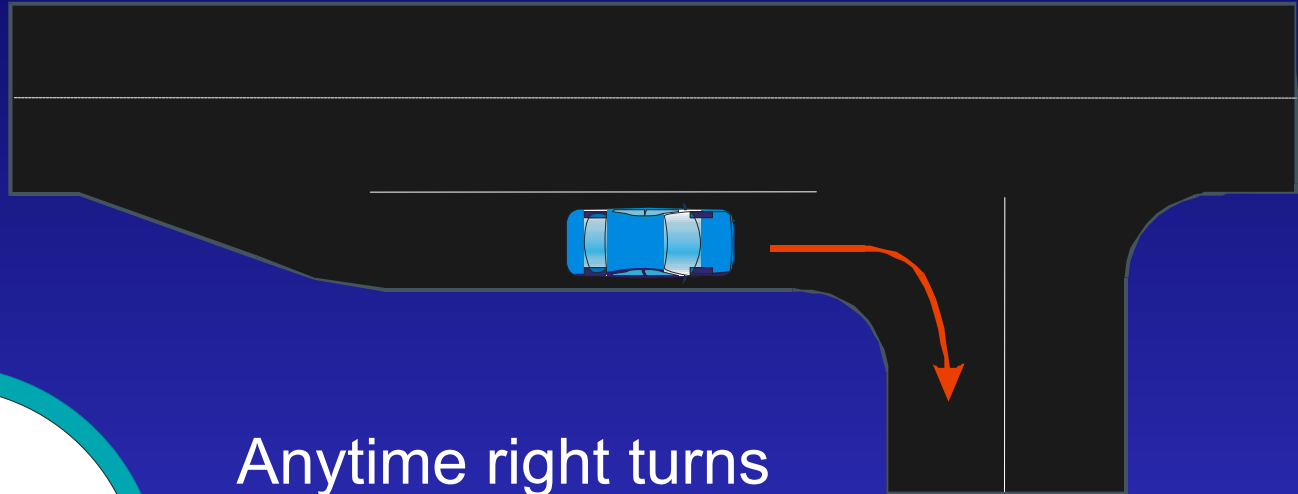
Frontage roads in residential or light office (such as dentist, real estate, travel agency, etc.) can work when they begin and end between major cross streets.



Overabundant
Exclusive Right Turn
Lanes



Right Turn Lane at 40



Anytime right turns are expected to be greater than 40 right turns per hour, a separate right turn lane should be considered



Right turn lane near driveway



Right turn lane
near a driveway



Burger King Driveway





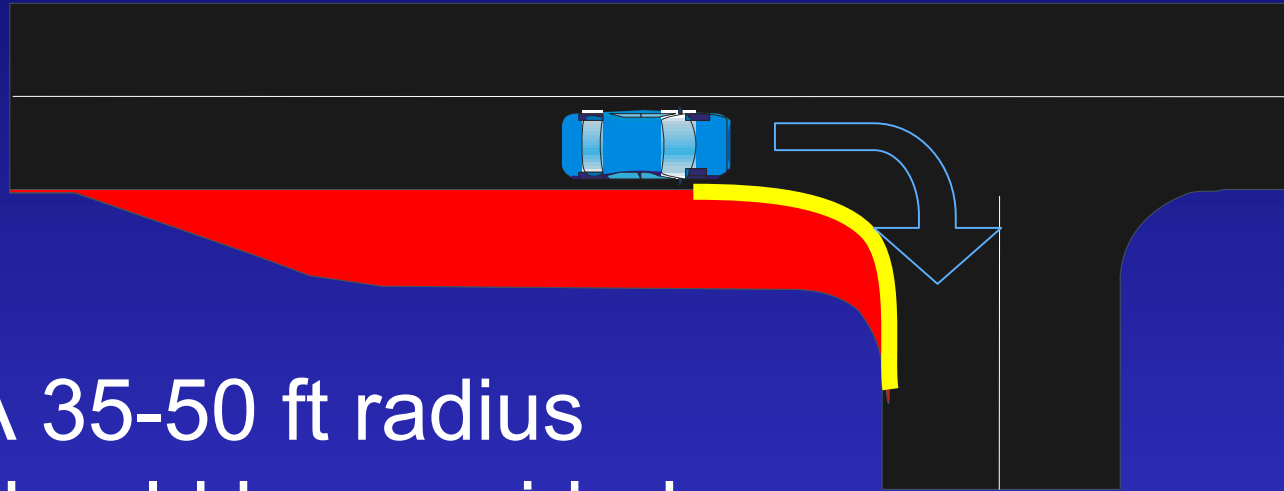
Suggested Volume Criteria for Exclusive Right Turn Lanes

- **All highways over 45 mph posted speed limit**
 - **30 - 40 rights/hour**
 - 30 most “called for” on high volume* 2 lane roads
 - 40 most “called for” on multi-lane highways
 - Speed limit of 45 mph may use this criteria if operating speeds at the time of the peak right turn flow are over 45 mph
- **All highways 45 mph posted speed or less**
 - **80 - 110 rights/hour**
 - 80 more “called for” on high volume and 2 lane roads
 - 110 more “called for” on lower volume roads and multilane
 - Right turn lanes may be unnecessary for 6 lane facilities where the curb lane acts like a right turn lane

* High Volume = 700/vehicles /hour/lane in one direction



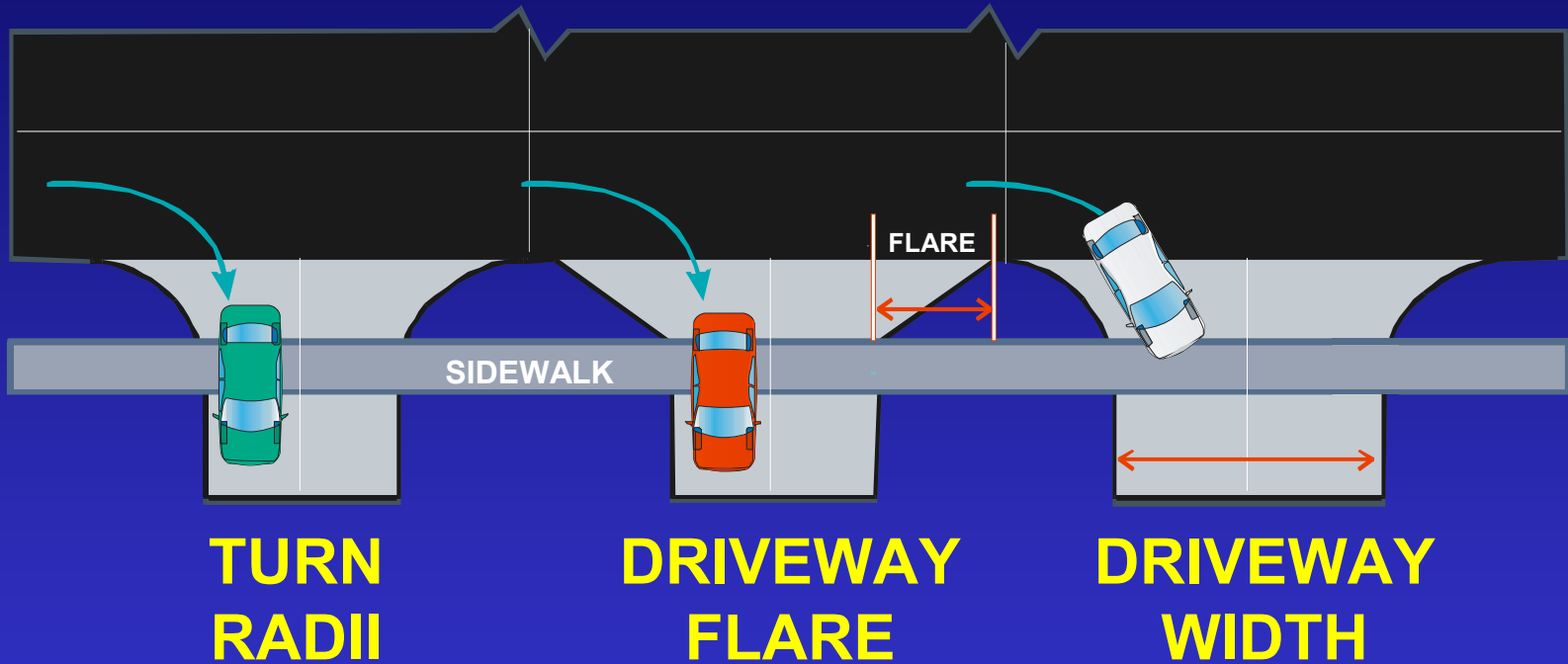
Where conditions may warrant a separate right turn and it cannot be provided,



A 35-50 ft radius should be provided on the approach edge of the connection



Improved driveway design



The faster the turning vehicle can get off the road, the less conflict with through-movement vehicles



Overly Narrow Driveways



Publix Sidestreet Drive



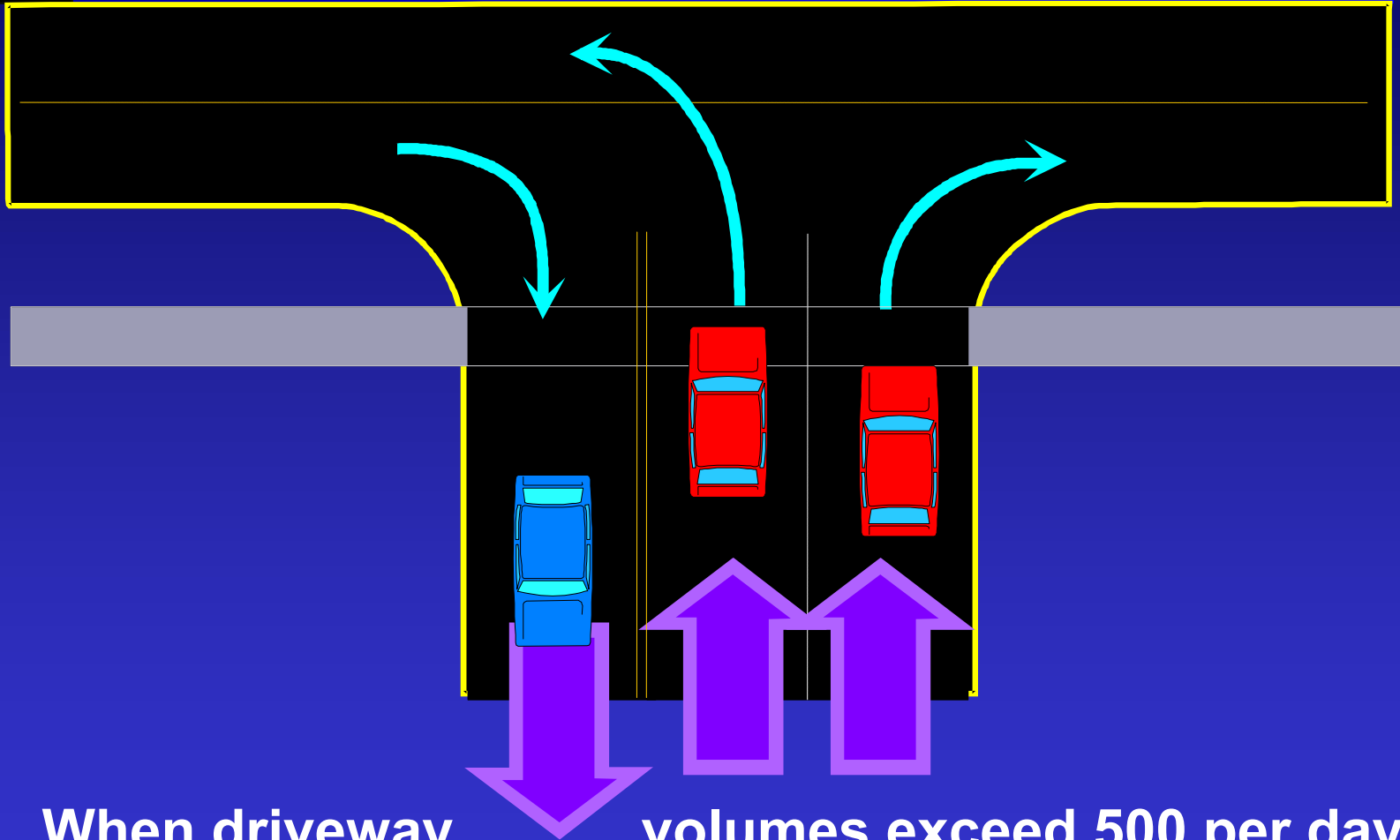


Publix Side Street Backup





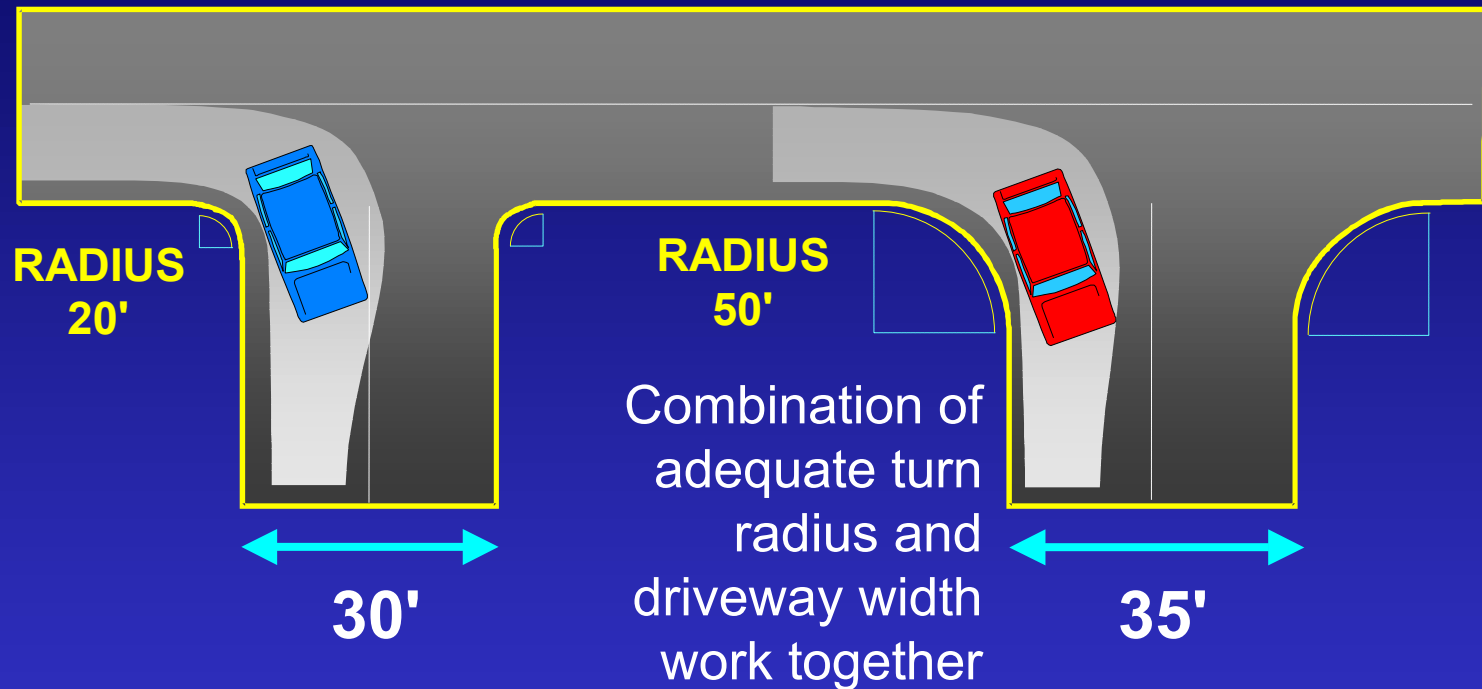
3 lanes at major drives



When driveway volumes exceed 500 per day a three-lane cross-section should be recommended



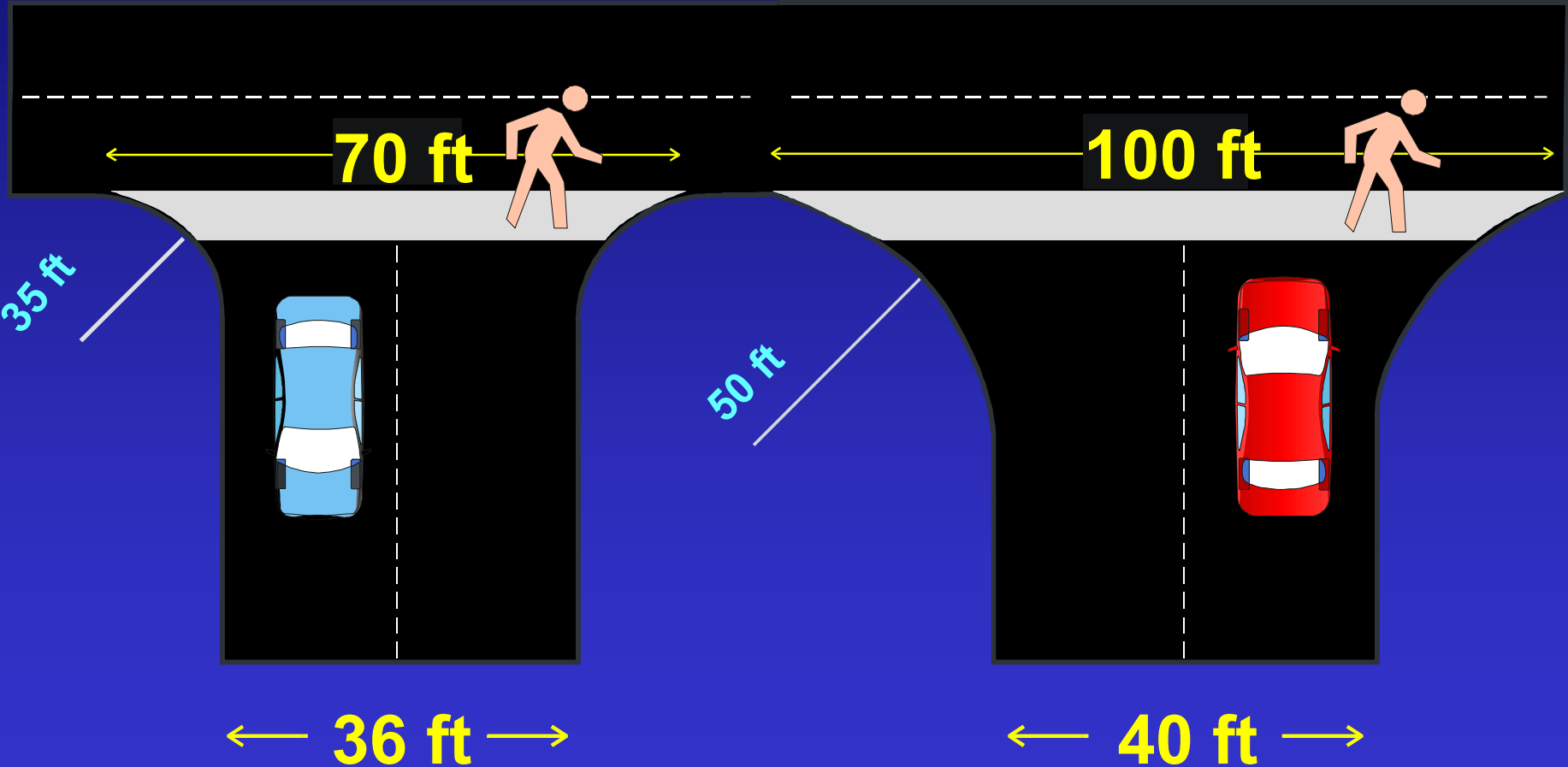
Width and Radius



Adequate Driveway Width can also help to get turning vehicles off the road at greater speed and with less encroachment into the oncoming driveway traffic

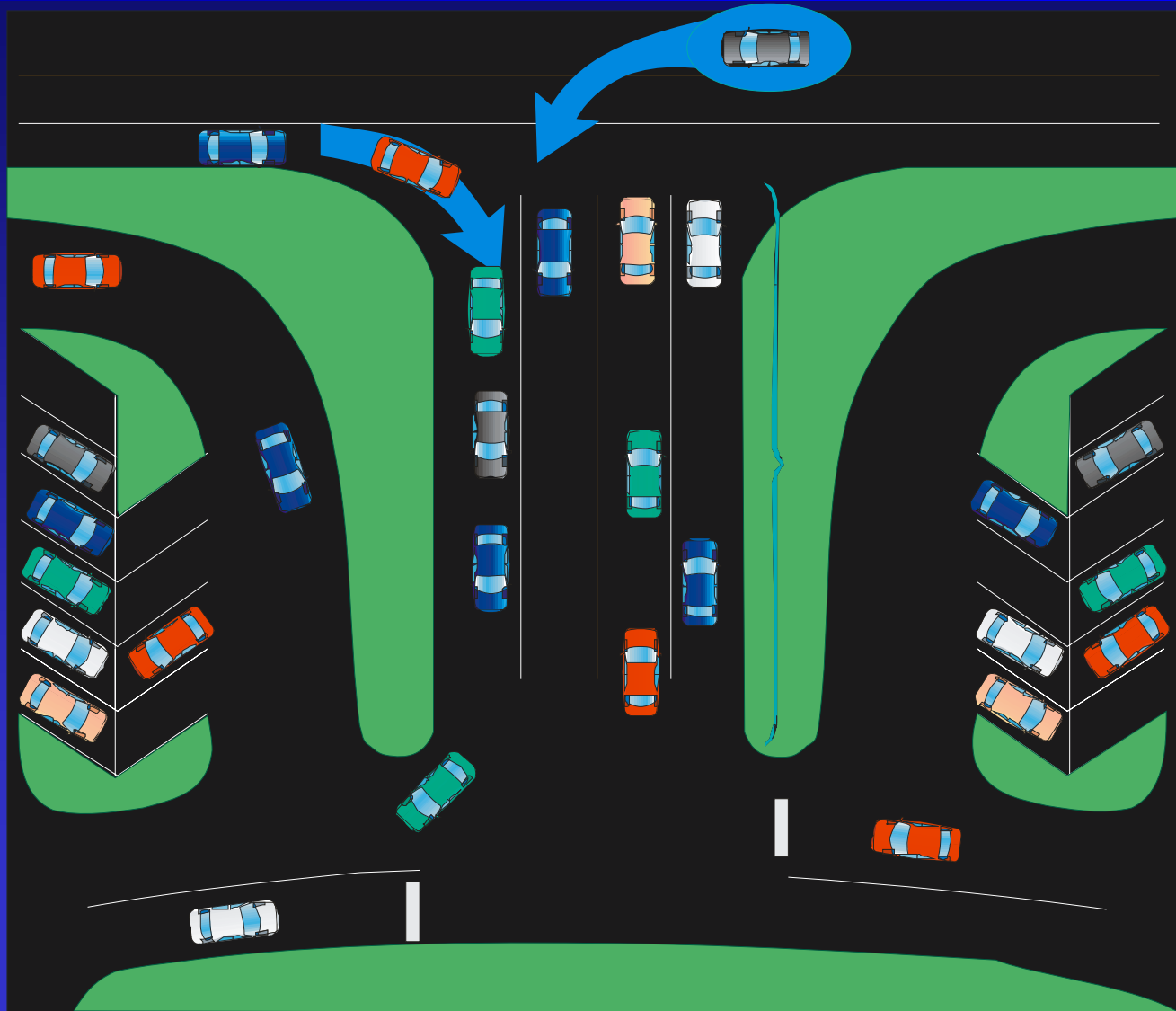


Pedestrian exposure due to very large radii



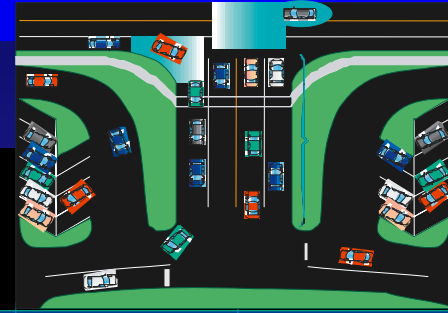
Connection Depth

Priority should be given to inbound traffic





Generally adequate driveway connection depth



	Meters	Feet
Regional Shopping Centers (malls)	75	250
Community Shopping Center (supermarket, drug store, etc.)	25	80
Small Strip Shopping Center	10	30
Regional Office Complex	75	250
Office Center	25	80
Other Smaller Commercial Developments	10	30

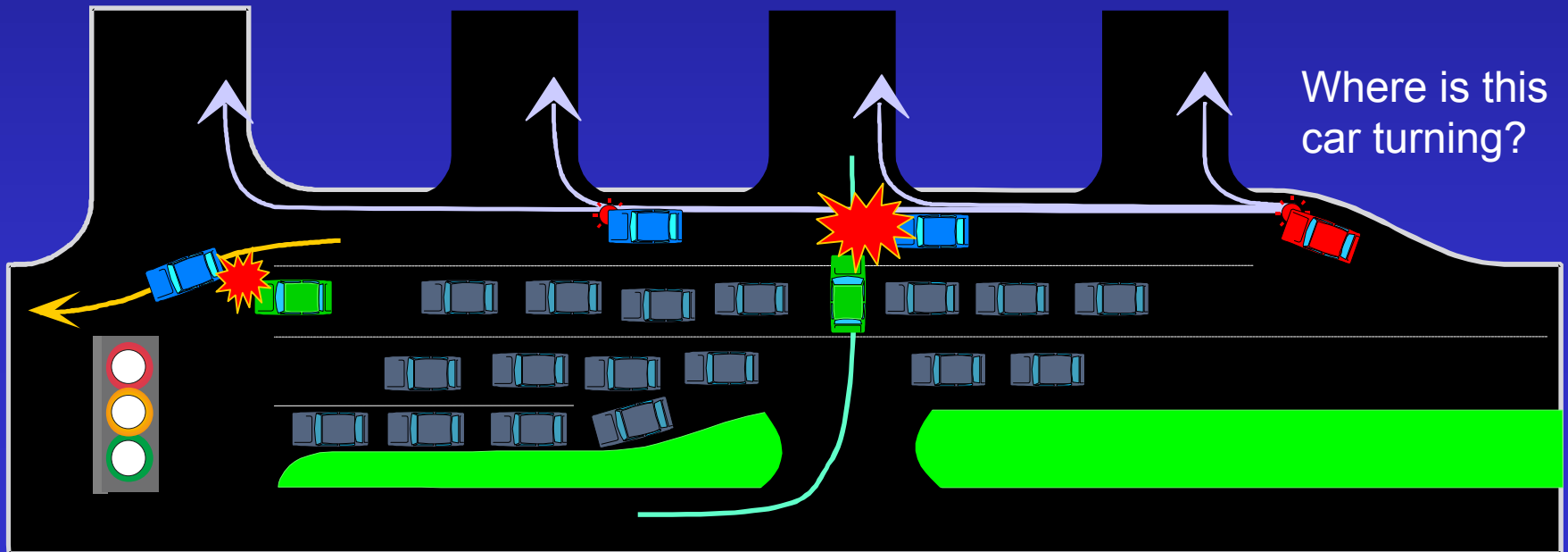


Continuous Right Turn Lanes



Continuous Right Turn Lane

- May encourage use as through-lane
- May lead to confusion where cars will turn right into driveway or street





How to break up continuous rights





Break up rights





Limiting Side
Street Access



Minco from Front





Minco off sidestreet





Minco side street view



MINCO



On The Border new driveway





Limiting Turns with Driveway Design Alone



Pork Chop

“Pork chop islands cannot control left turns without a median on the major road.





Pork Chop problem

“Pork chop islands cannot control left turns without a median on the major road. Note car going around the driver wanting to turn left where it is not allowed.





Pork Chop problem

“Pork chop islands cannot control left turns without a median on the major road. Note car going around the driver wanting to turn left where it is not allowed.





Too small?

Channelizing islands need to be larger than this





Channel Island Sizes

Minimum

area 7m^2 or 75ft^2

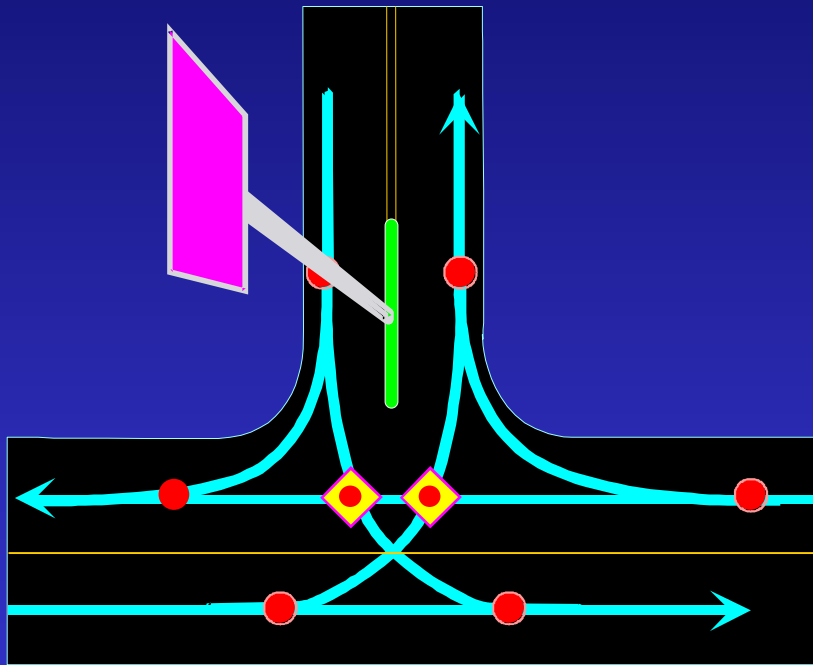
width 1.2m or 4ft

More desirable

area 9m^2 or 100ft^2

width 1.8m or 6ft

This allows for pedestrians
(even wheelchairs)



Standard Index # 515 on islands

URBAN SECTION		Trips/Day	1-20	21-600	601- 4000
		or Trips/Hour	or 1-5	or 6-60	or 61-400
Connection Width (2-way)	W	12' min 24' max	24' min 36' max	24' min 36' max	
Flare (Drop Curb)	F	10' min	10' min	N/A	
Returns (Radius)	R	N/A	25' min 50' std 75' max	small radii may be used	
Angle of Drive	Y		60° - 90°	60° - 90°	
Divisional Island			4'-22' wide	4' - 22' wide	

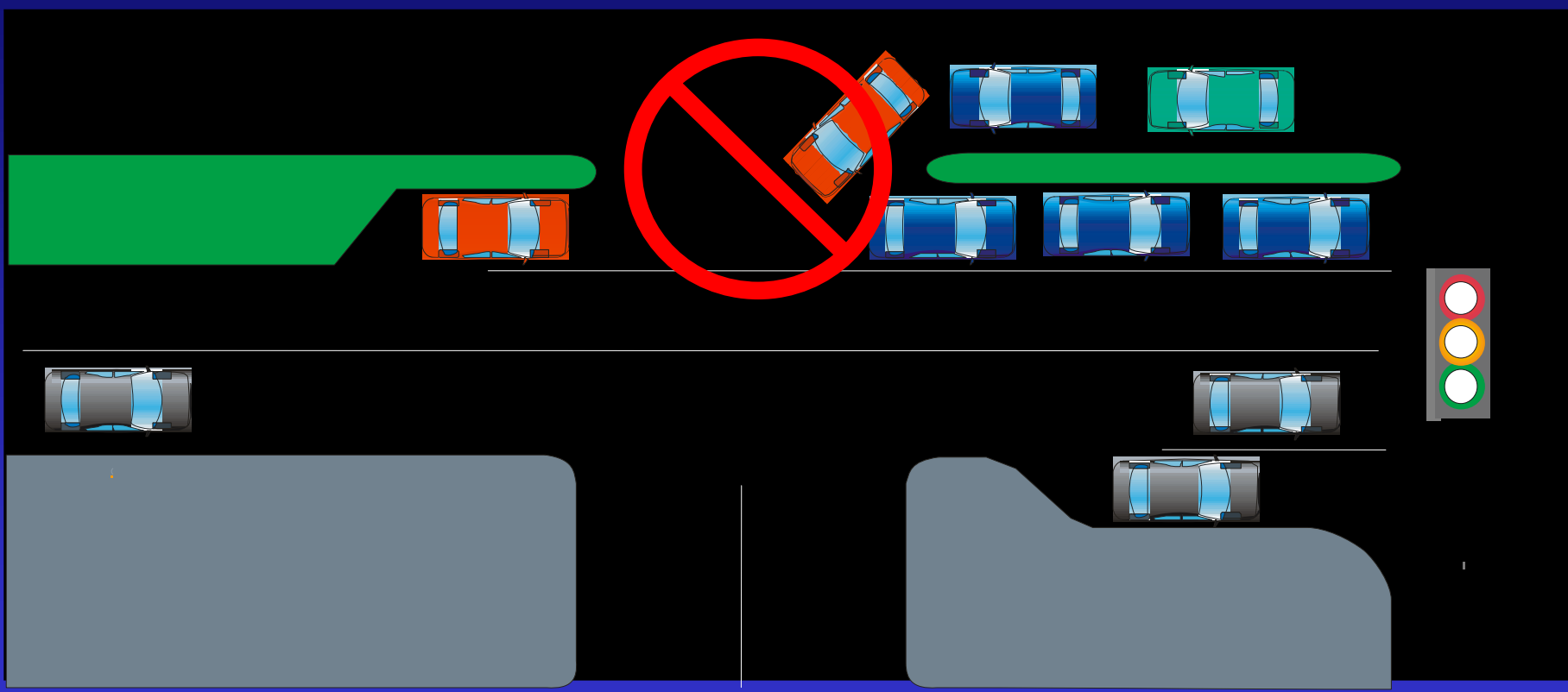


Super Walmart Entrance





No openings across left-turn lanes





Administrative Considerations



Provide Flexibility in Administration:

- Allow some variation from spacing standards
- Provide alternatives where standards prove impractical
- Variances as last resort



Lessons Learned

- Ask and you may receive
- Be clear about what you want
- Offer pre-application meetings
- Provide incentives
- Be consistent
- Periodic refresher sessions
- Roll with the punches



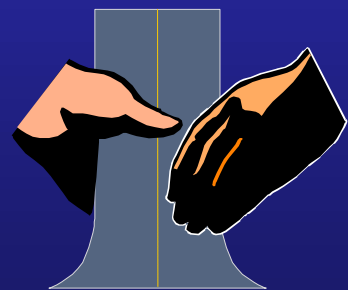
The US 27 Corridor



Access Issues on US 27



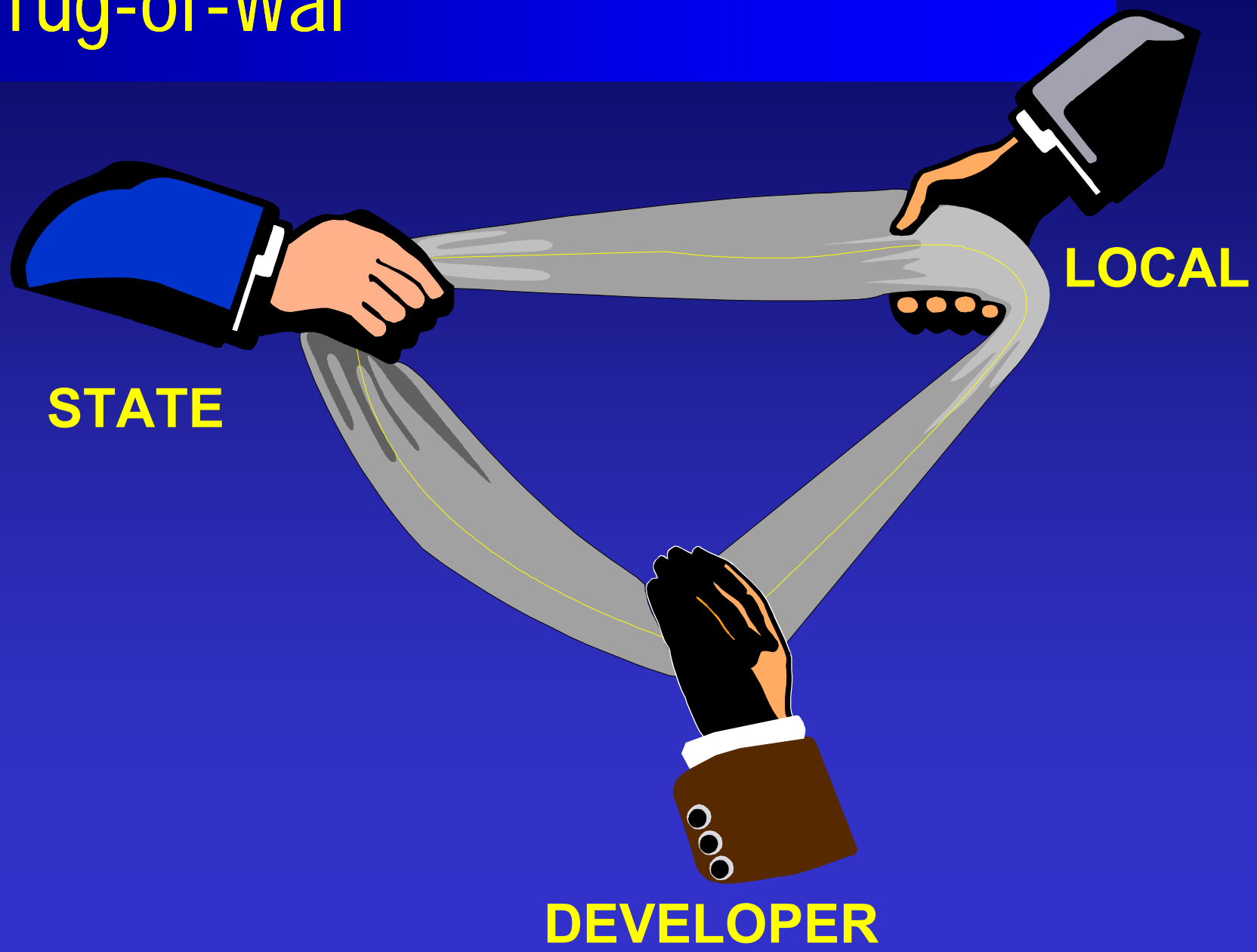
- Explosive residential growth
- Need for supporting road system and interparcel connections
- Retrofit of older developed areas
- Interchange area management
- Intergovernmental coordination



Coordination



Tug-of-War





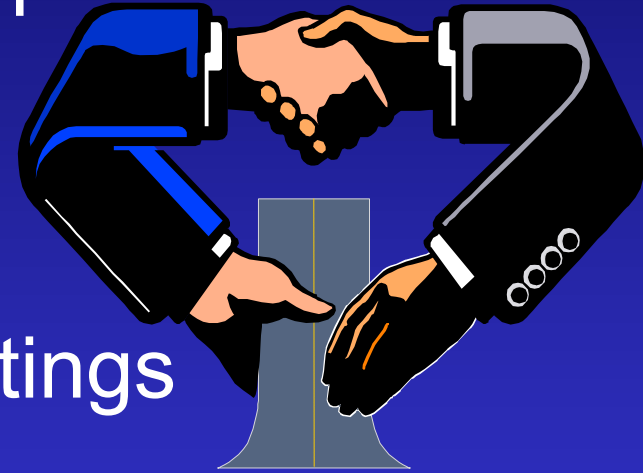
Coordination Issues

- Inconsistent state and local standards
- Plat applications and access
- Coordinating access review and development review
 - Local development orders involving access management conditions & access permit
 - Pressure for development approval based upon Notice of Intent to Permit access



Coordination Strategies

- Informal meeting and concept review
- Concurrent review process
- Regular access permit meetings
- Intergovernmental agreements
- Early and ongoing communication





Thanks for Coming!

