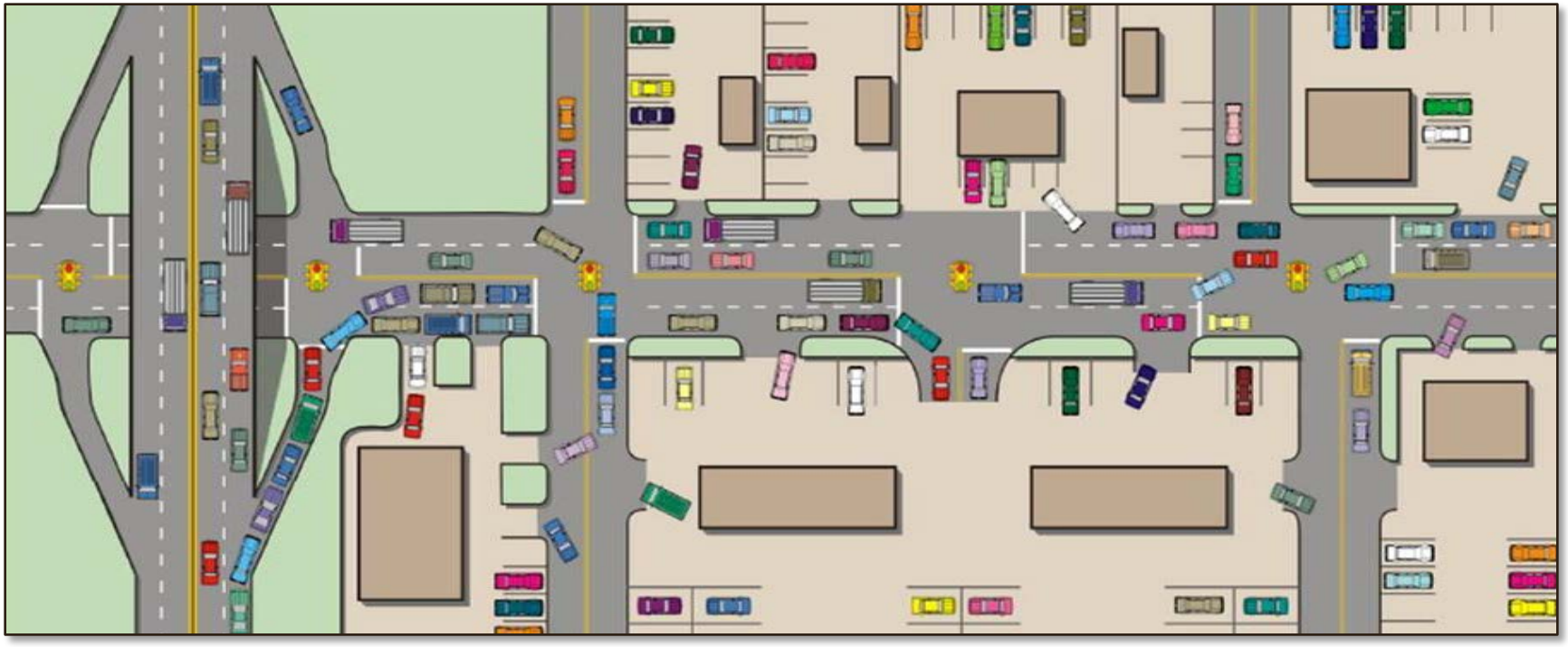
Virginia Department of Transportation

Access Management Regulations and Standards

October 2014

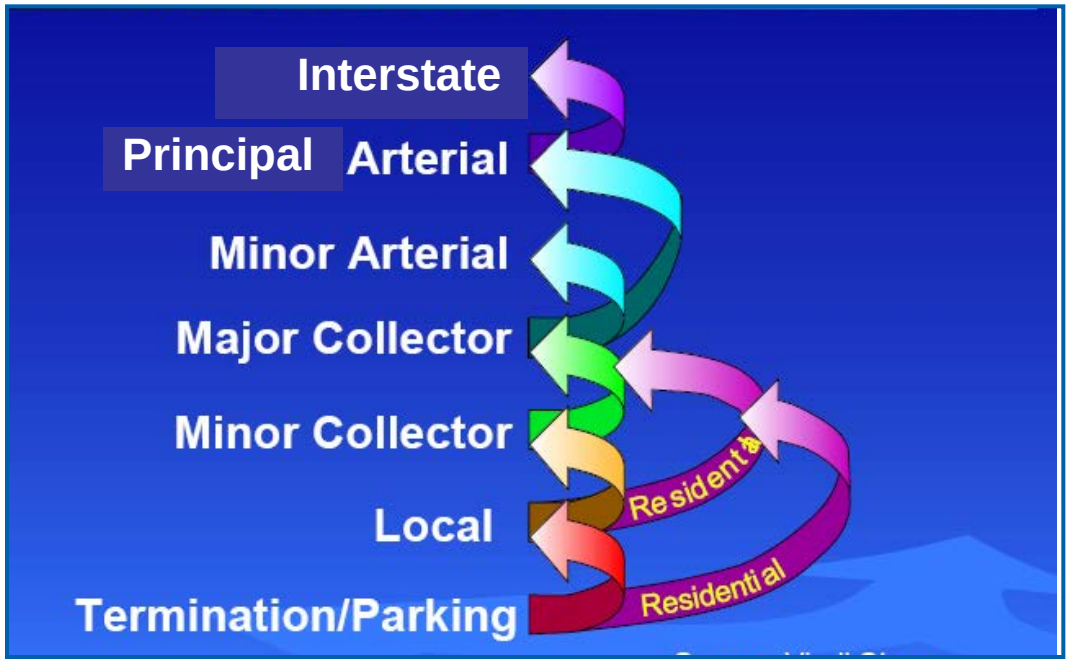
Concept of Access Management

“The way to manage access to land development while preserving the flow of traffic on the surrounding road system in terms of safety, capacity and speed.”



Roads Have Different Functions

- Travel involves movement through a network of roads
- Each road serves a distinct function



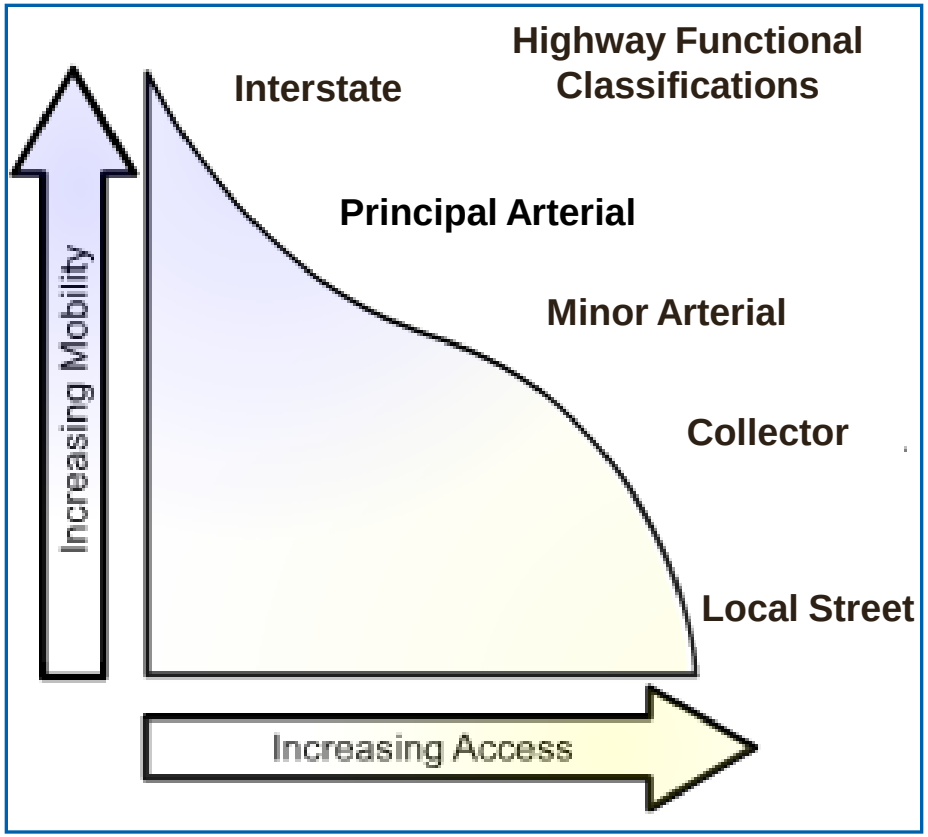
Access Management

Managing the location, number, spacing, and design of

- Commercial entrances
- Intersections/median openings
- Traffic signals
- Entrances near interchange ramps

According to the highway's functional classification

- Arterials
  - Function: Efficient flow of traffic
- Collectors
  - Function: Both traffic circulation in an area and access to property
- Local streets
  - Function: Provide access to property



Access Management: Purpose

- Reduce traffic congestion, motorist's time waiting in traffic
- Lower the number and severity of traffic crashes
- Preserve critical roadway capacity
  - Maximize the performance of existing highways, reducing the need for new highways & adding lanes to highways
  - Protect taxpayer investment in highways
- Support economic development
  - Better mobility expands the market reach of businesses and lowers the cost of transporting goods
- Provide property owners with reasonable access to the highway

Access Management: National Research Findings

“The lack of access control along arterial highways has been the largest single factor contributing to the obsolescence of highway facilities”

NCHRP Report 121 Protection of Highway Utility, 1971

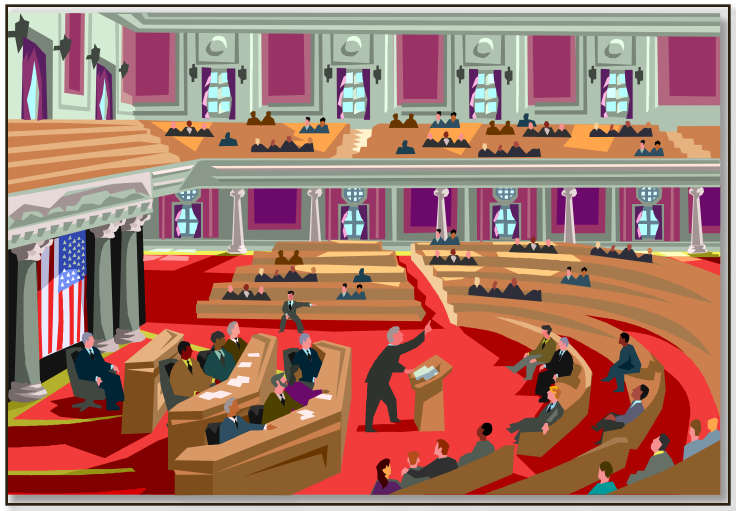
“Every study since the 1940s has indicated a direct and significant link between access frequency and accidents”

International Right-of-Way Association Report, 1999

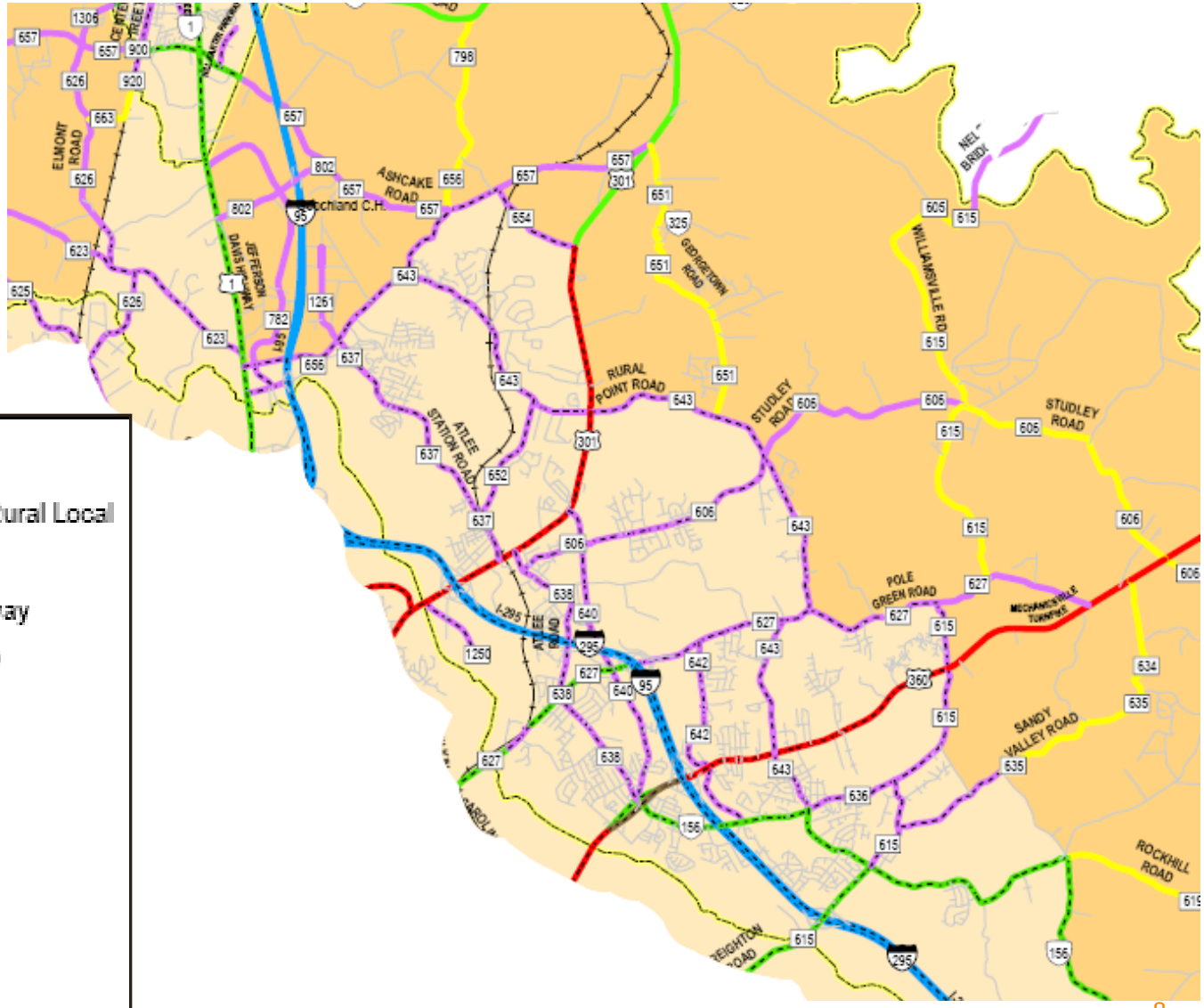
Authority for the Regulations and Standards

§ 33.2-245 of the Code requires VDOT to implement access management regulations and standards

- **For state maintained highways**
- **<u>Do not apply</u> to roads maintained by cities, towns over 3,500 population and secondary roads in two counties (Arlington, Henrico)**
- **For principal arterials, minor arterials, collectors, and local streets**



Example of Principal & Minor Arterial, Collector, Local Street Network



Legend

- Not Classified; Urban Local; Rural Local
- Urban Interstate
- Urban Freeway and Expressway
- Urban Other Principal Arterial
- Urban Minor Arterial
- Urban Collector
- Rural Interstate
- Rural Other Principal Arterial
- Rural Minor Arterial
- Rural Major Collector
- Rural Minor Collector

Development of the Regulations and Standards

Policy Committee reviewed and refined drafts during 2007

- VA Association of Counties
- Home Builders Association of VA
- Piedmont Environmental Council
- VA Commercial Real Estate Association
- VA Section, Institute of Transportation Engineers

Public comments

- Five public hearings throughout the state
- Over 450 comments received
- Regulations/standards revised based on public comments

Training/Information Sessions

- Nine sessions; one in each VDOT District
- Over 600 people attended

Access Management - Implementation

Access Management Regulations 24 VAC 30-73

- Apply to all highway functional classifications

Access Management Design Standards, Appendix F of VDOT's Road Design Manual

- Standards for spacing and design of entrances

Access Management Regulations

VDOT will permit reasonably convenient access to the highway

- **Fewest number of entrances to reduce turning movements**
- **Focus on side streets**
- **Use of right-in/right-out entrance design**
- **Demonstrate safety of proposed entrance & its impact**
- **Mitigate any impacts on highway operation and safety.**

Too many entrances can lead to a reduction in the flow of traffic and potential collisions

Regulations: Section 120

Access Management Requirements

1. Keep entrances out of the functional area of intersections and away from interchange ramps
2. Share the entrance with adjoining property owner
3. Provide connections to property line for vehicular and pedestrian circulation between land uses
4. Control traffic movements at entrances
5. Comply with spacing standards to separate signals, intersections, median openings, and commercial entrances

Exceptions to the requirements are referenced in the Regulations.

Application to Entrance Types

The Access Management Requirements

The five requirements apply to *commercial entrances*

- Entrances to land uses that generate more than 50 vehicles per day (VPD)
- Examples: businesses, offices, residential developments, schools

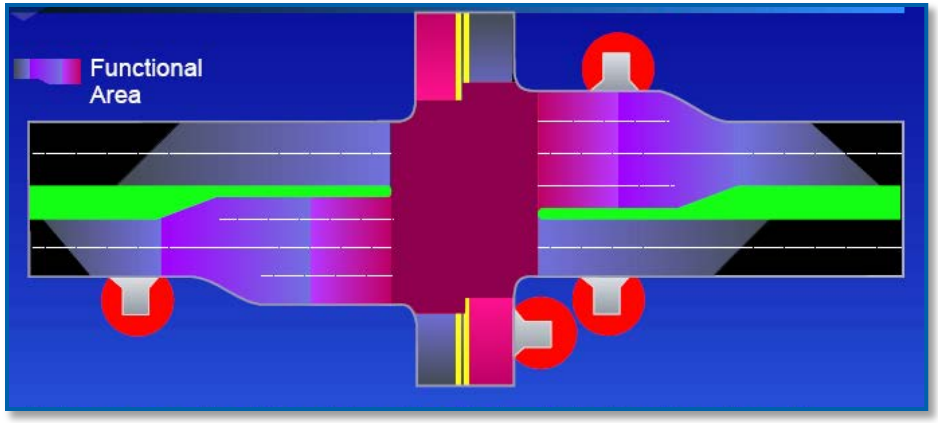
The five requirements do not apply to:

- Private entrances – driveway entrances to 1 or 2 homes, cell towers, uses that generate 10 or fewer VPD
- Low volume commercial entrances – for land uses with 50 or less VPD such as a 4 or 5 lot private road entrance to the highway

See the Regulations and Appendix F Design Standards for more information.

1. Keep Entrances Away from Intersections

Protect the Functional Area of Intersections



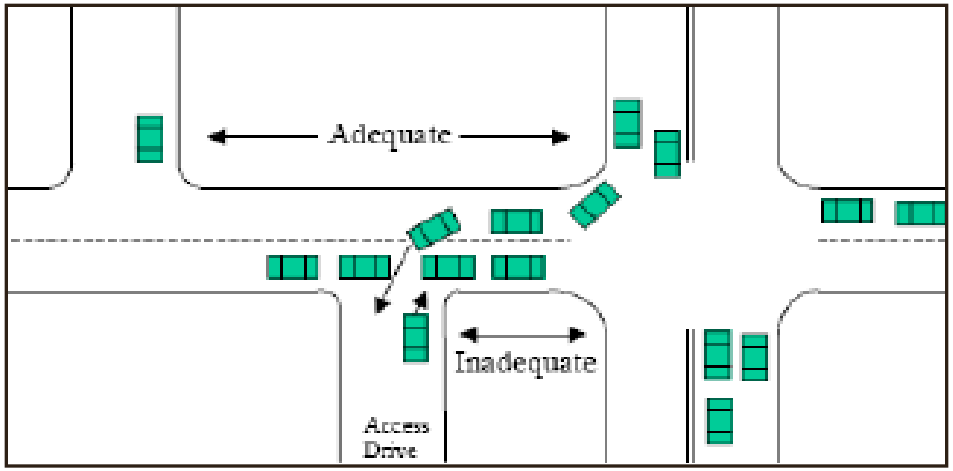
Entrances (collision points) in the right turn lane

Exiting entrance and cutting across lanes of traffic

EXCEPTION: Approval of a traffic study documenting the entrance will not affect the intersection movements or public safety.

Protect Traffic Movements at Intersections

Motorists stopping to turn at entrances too close to an intersection can cause crashes, congestion, vehicles backing up on to main highway.



Corner Clearance on Minor Side Street: Locate entrances away from Intersections

Keep Entrances & Intersections Away From Interchange Ramps

- Prevents traffic backups onto ramps
- Reduces crash potential near the ramps

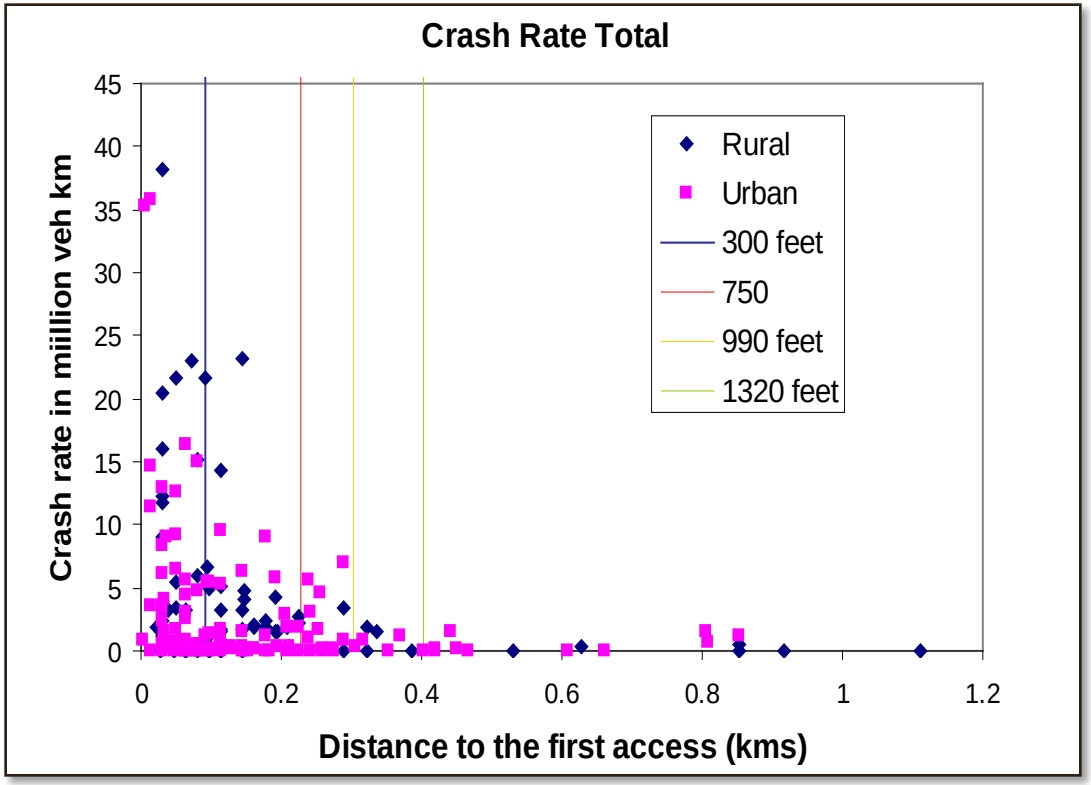
Keep Entrances & Intersections Away From Interchange Ramps

Traffic backing up on the off ramp creates safety issues for motorists exiting the highway

Entrance/Intersection Spacing Research

VA Tech 2007 Access Spacing Study

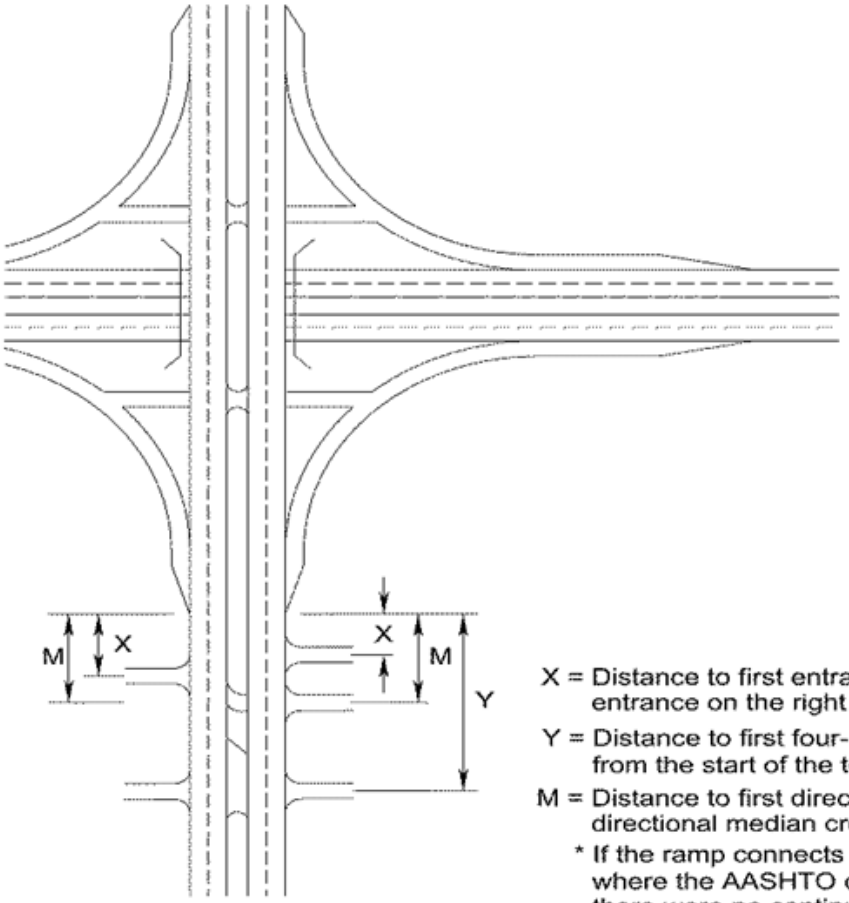
- Analyzed crash data at 186 interchange ramps
- Over a 5 year period
- 2,277 crashes
- Crashes decrease as distance from ramp increases 750 to 990 to 1,320 ft

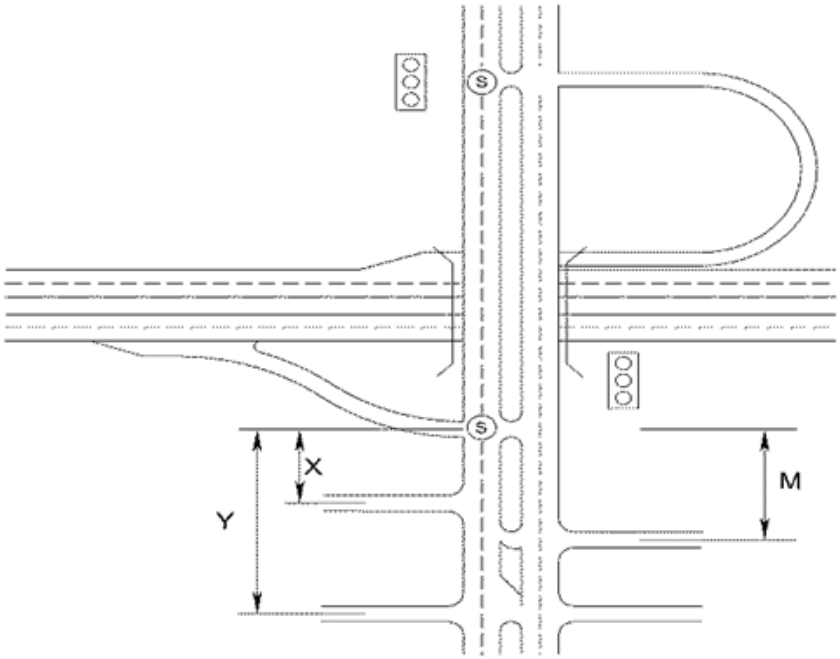


Research Findings

Greater spacing reduces the crash rate resulting in fewer fatalities, injuries, and property damage.

Spacing Distances for Entrances & Intersections Near Interchange Ramps





X = Distance to first entrance on the right from end of off-ramp terminal or distance from last entrance on the right to start of on-ramp terminal; right in/right out only.*

Y = Distance to first four-legged intersection measured from the end of the off-ramp terminal or from the start of the terminal for the on-ramp.*

M = Distance to first directional median crossover from off-ramp terminal; distance from last directional median crossover to start of on-ramp terminal.*

* If the ramp connects to a continuous anxiliary lane, spacing distance is measured from where the AASHTO calculated acceleration or deceleration lane and taper would end if there were no continuous anxiliary lane.

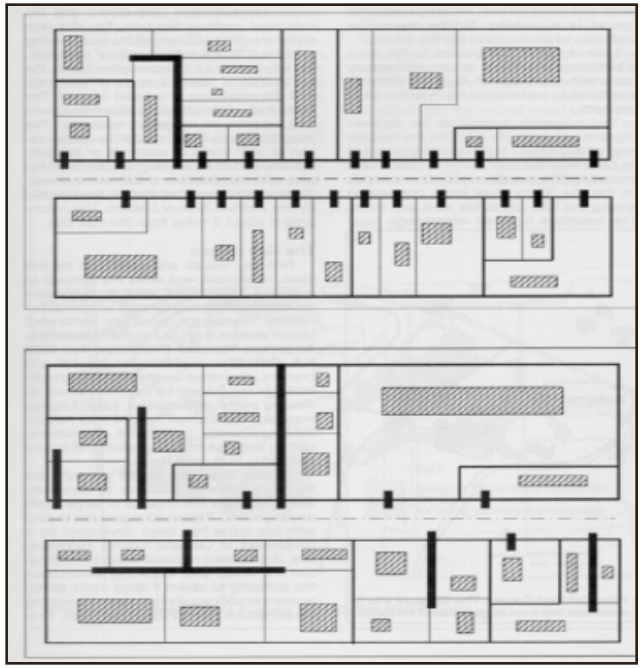
Spacing Distance		
X	Y	M
750’	1320’	990’

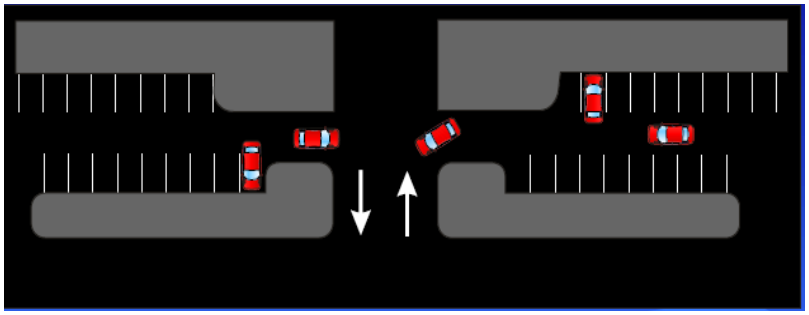
2. Share Entrances

- Reduces the number of entrance/exit points along the highway
- Businesses can share (gain) customers; share construction cost
- Record agreement for joint use and maintenance of the entrance

Top Right:
23 entrances,
28 parcels

Bottom Right:
10 entrances,
29 parcels





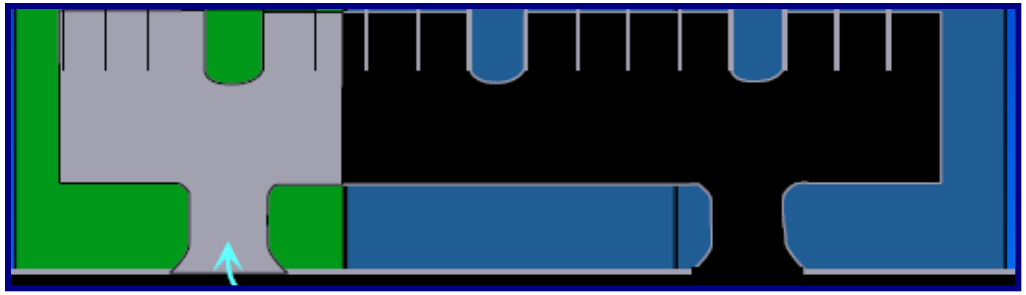
EXCEPTIONS

- Physical constraints such as topography, environmental, hazardous land uses
- Adjoining property owner will not agree to share entrance

3. Vehicular Circulation between Adjoining Properties

Vehicles travel on site; less traffic on the highway

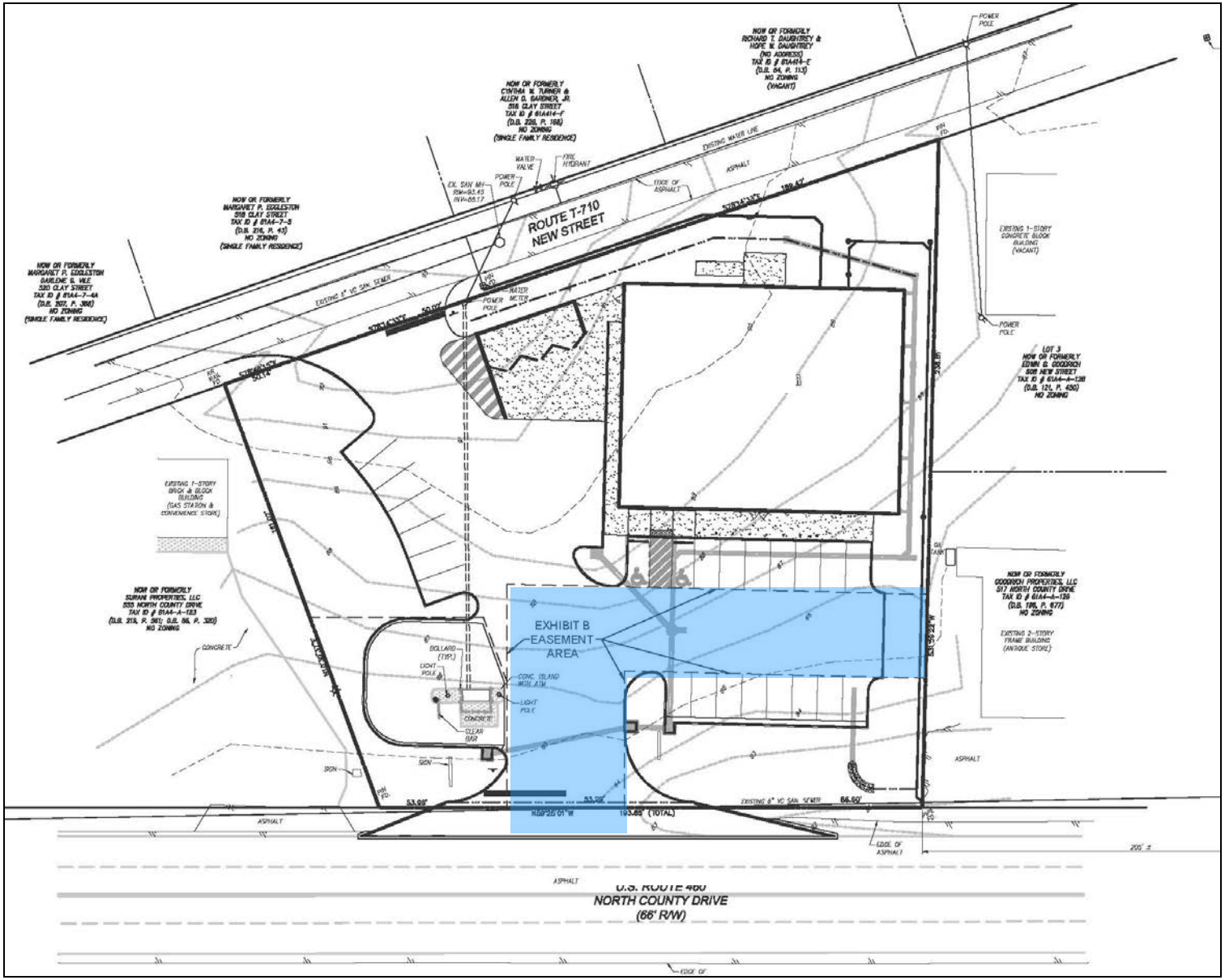
Facilitate customer circulation between businesses



- **Record access easement, construct connection to adjoining undeveloped parcel boundary**
- **Adjoining parcel connects when developed**

EXCEPTION: **Physical constraints to the connection such as topography, environmentally sensitive areas, adjacent hazardous land use**

3. Cross Access Interparcel Easement



Examples

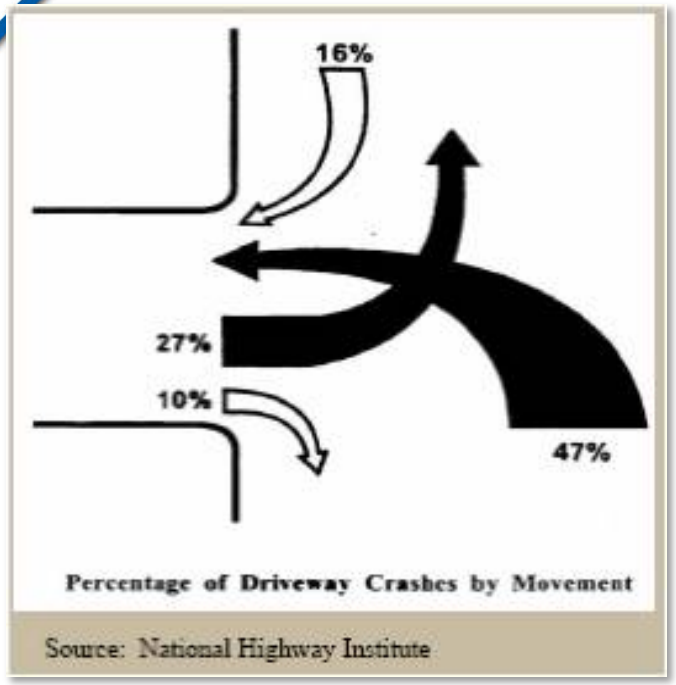
Three red entrances too close to intersection.

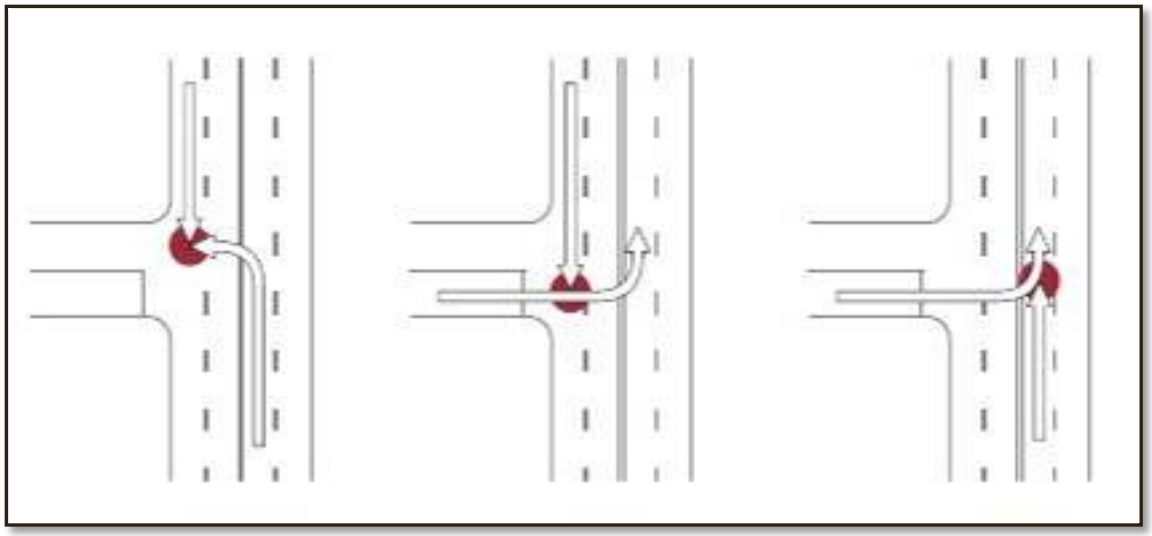
Blue entrance away from intersection area.

Blue shared entrance instead of two red entrances.

Blue connection to allow vehicle & pedestrian circulation between businesses.

4. Control Turning Movements at Entrances



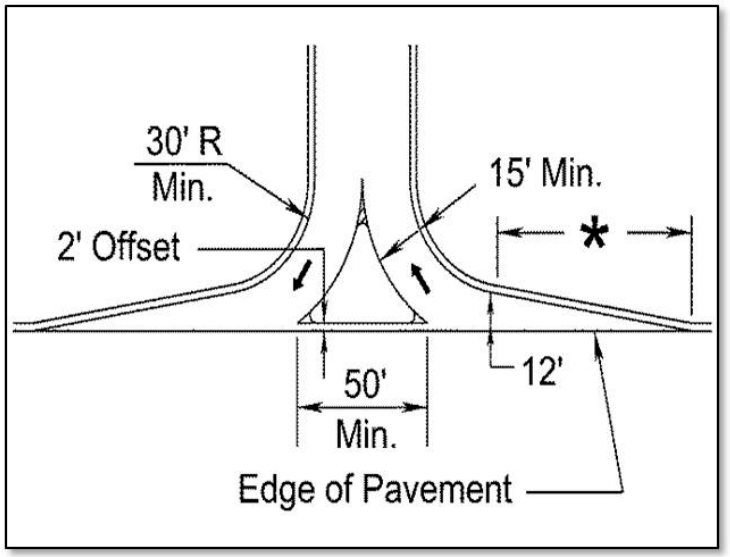


74% of Crashes at Entrances Involve Left Turns

Control Turning Movements at Entrances

Technique:

- Right-in/right-out entrance design
- Prevents left ingress & egress turning movements



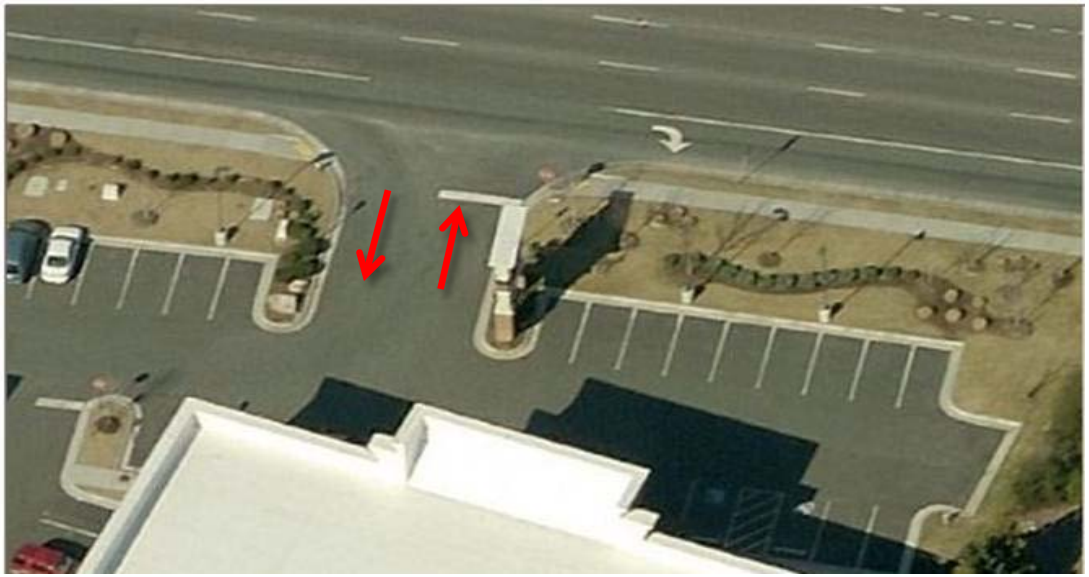
Entrance Island to Limit Left Turns

Median to Prevent Left Turns

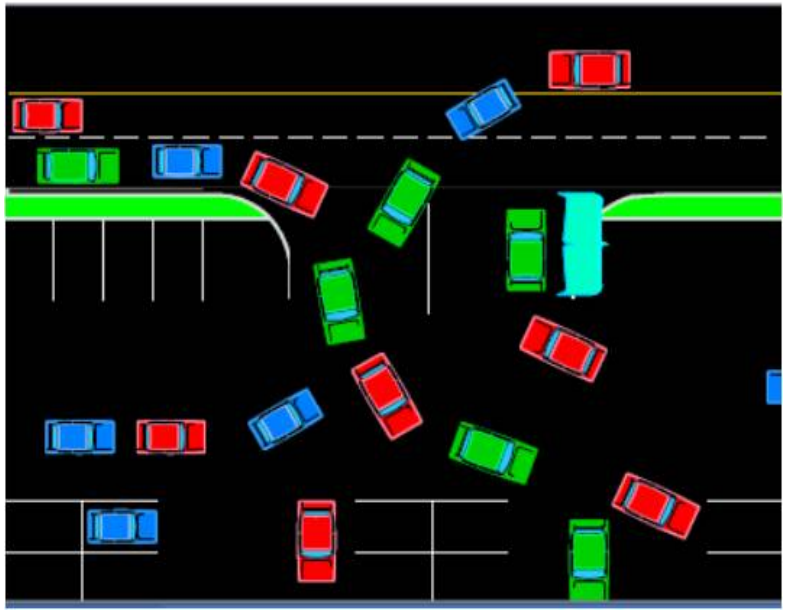
Control Turning Movements at Entrances

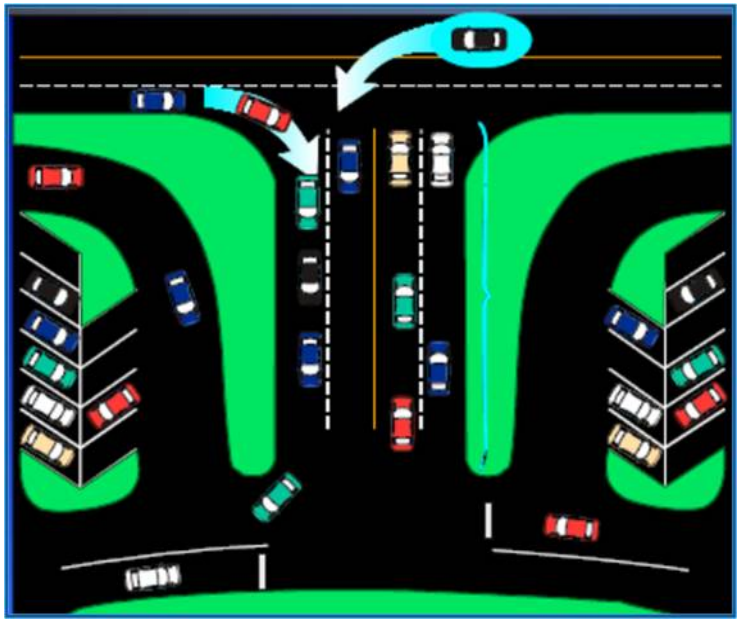
Technique:

Design entrance so ingress & egress points easily identified



Control Turning Movements at Entrances





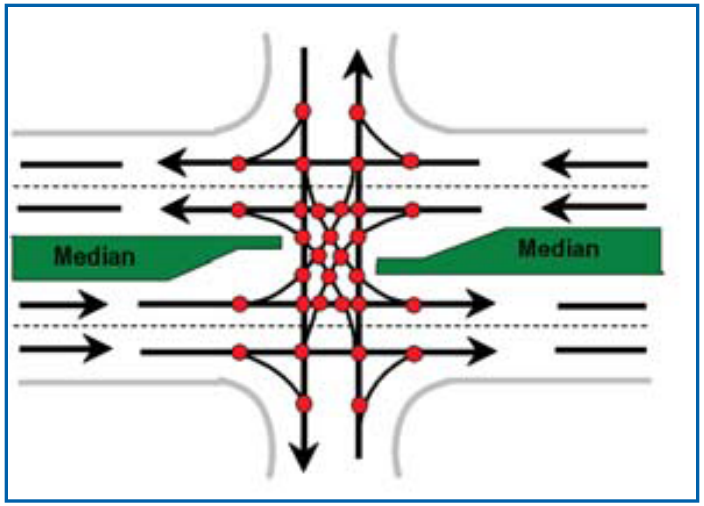
Technique: Entrance Throat

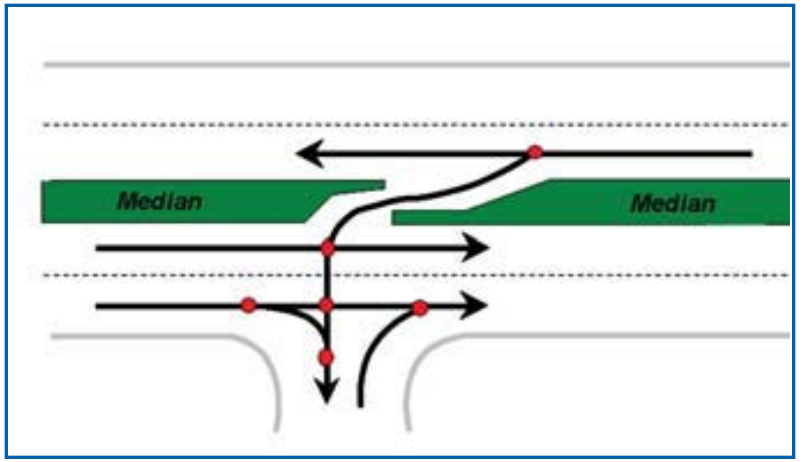
- Prevents vehicles from backing up on to the highway
- Helps protect on-site circulation

5. Entrance & Intersection Spacing

As the number of turning movements and traffic conflict points* increase, so does congestion and traffic crashes

32 conflict points
Greater spacing is needed





6 conflict points
Less separation needed

*** Traffic conflicts occur where vehicle paths intersect. Each conflict point is the location of a potential collision.**

Entrance Spacing

Separation between entrances so motorists do not have to react to multiple, overlapping ingress/egress turning movements

NCHRP Report 420

***Crash rate* average for entrance spacing of 150 ft was:**

1.7 times greater than for 265 ft spacing

2.5 times greater than for 550 ft spacing

Separation between Traffic Signals

- More efficient traffic progression
- Reduces stop & go delay
- Simplifies signal synchronization
- Use less gas; less vehicle emissions

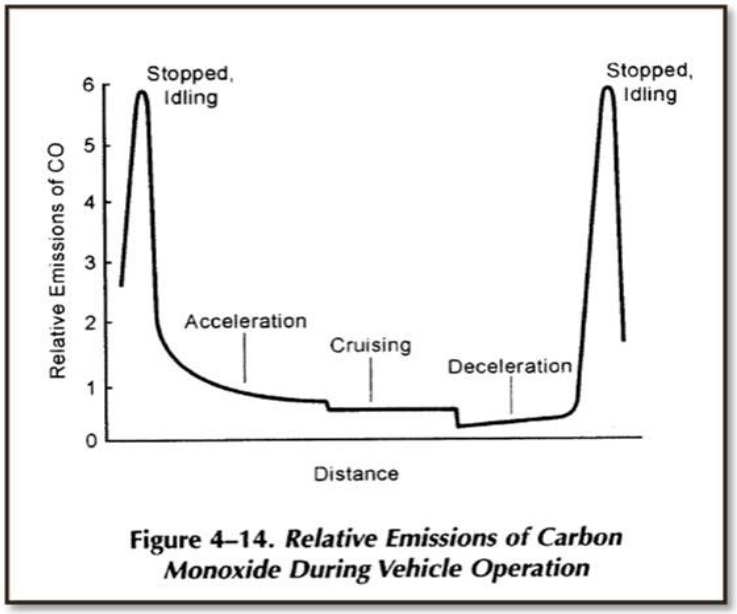
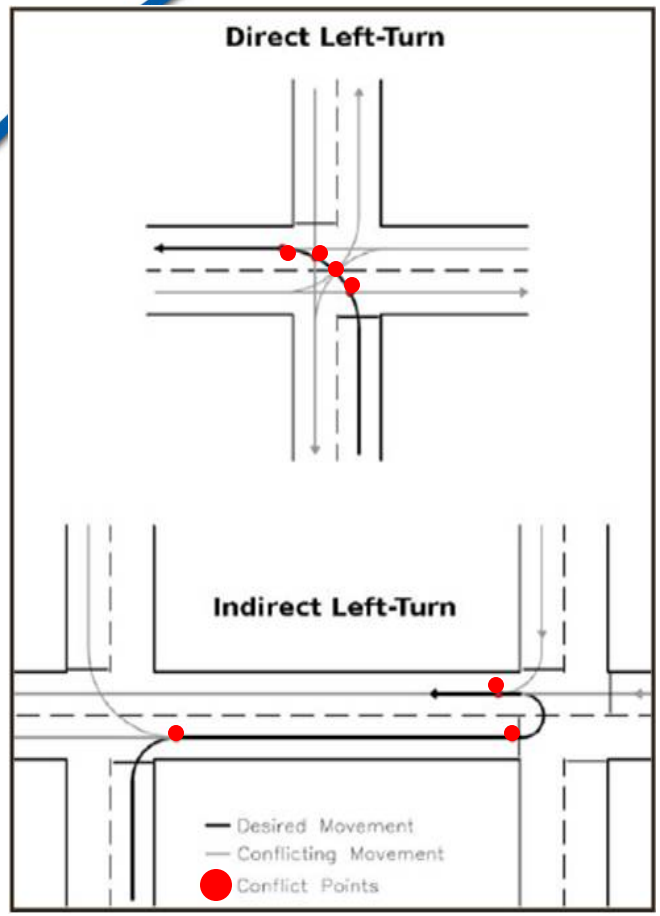
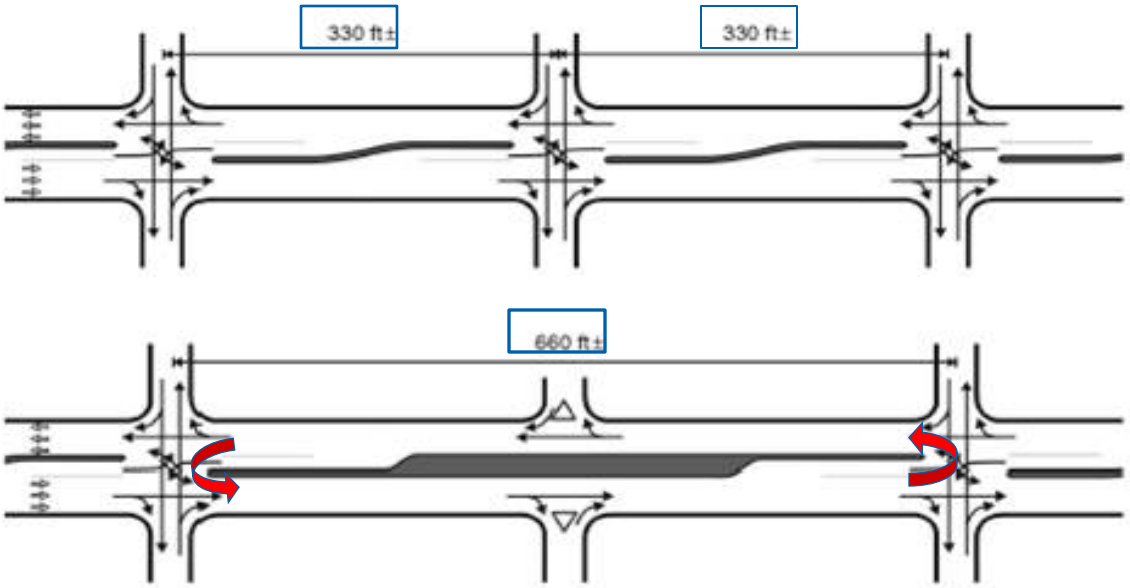


Figure 4–14. *Relative Emissions of Carbon Monoxide During Vehicle Operation*

Fewer Intersections: U-Turns vs. Left Turns





Making a U-Turn at an Intersection is 25% Safer than a Left Turn Across Highway Lanes*

*** 2001 Research Study for Florida Dept of Transportation**

VDOT Criteria for Spacing Standards

Functional classification of highway

Mobility vs. access to property

Highway speed limit

Higher speed - longer distance needed to slow down to react to vehicles turning in or out of an entrance or at an intersection

Traffic signal

Separation of signals for efficient traffic progression

Type of entrance

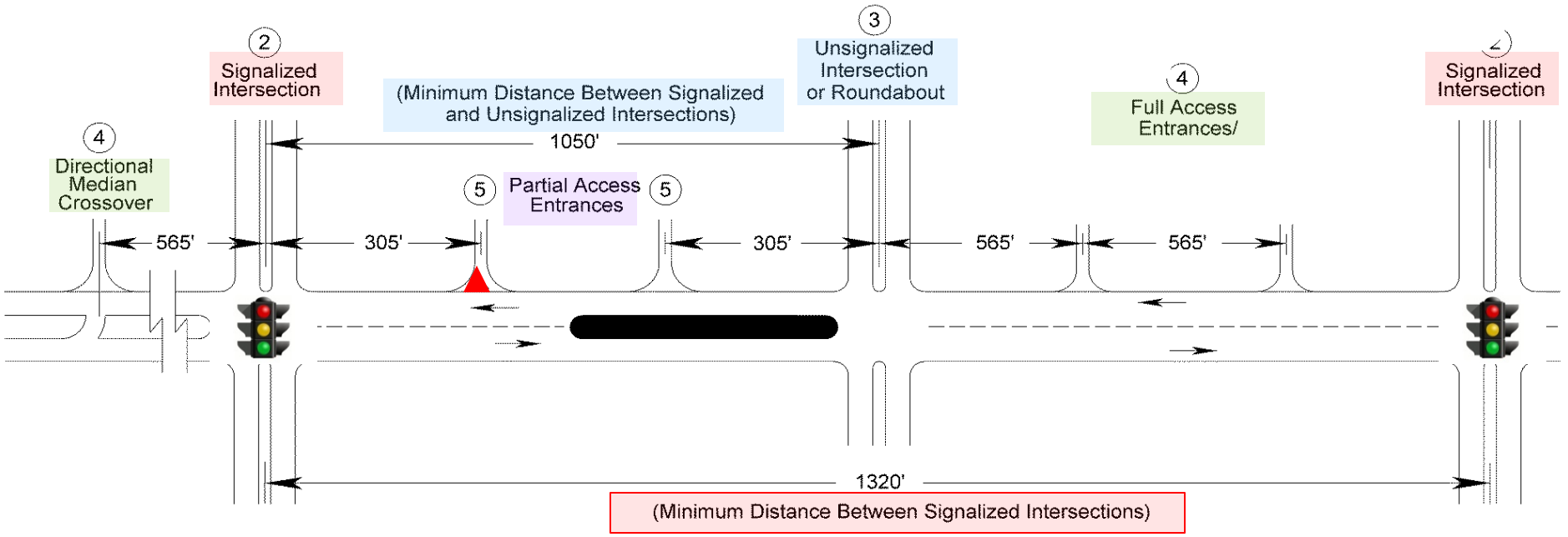
More turning movements, more conflict points

* Rev. 7/14

VDOT Spacing Standards

Highway Functional Classification	Legal Speed Limit (mph)①	Minimum Centerline to Centerline Spacing (Distance) in Feet			
		Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized Intersections & Full Median* Crossovers to Signalized or Unsignalized Intersections& Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to Any Type of Entrance, Intersection or Median Crossover
Principal Arterial	≤ 30 mph 35 to 45 mph ≥ 50 mph	1,050 1,320 2,640	880 1,050 1,320	440 565 750	250 305 495
Minor Arterial	≤ 30 mph 35 to 45 mph ≥ 50 mph	880 1,050 1,320	660 660 1,050	355 470 555	200 250 425
Collector	≤ 30 mph 35 to 45 mph ≥ 50 mph	660 660 1,050	440 440 660	225 335 445	200 250 360
Local Street	Commercial entrance spacing: See Figure 4-11.				

See Appendix F, Table 2-2, VDOT Road Design Manual



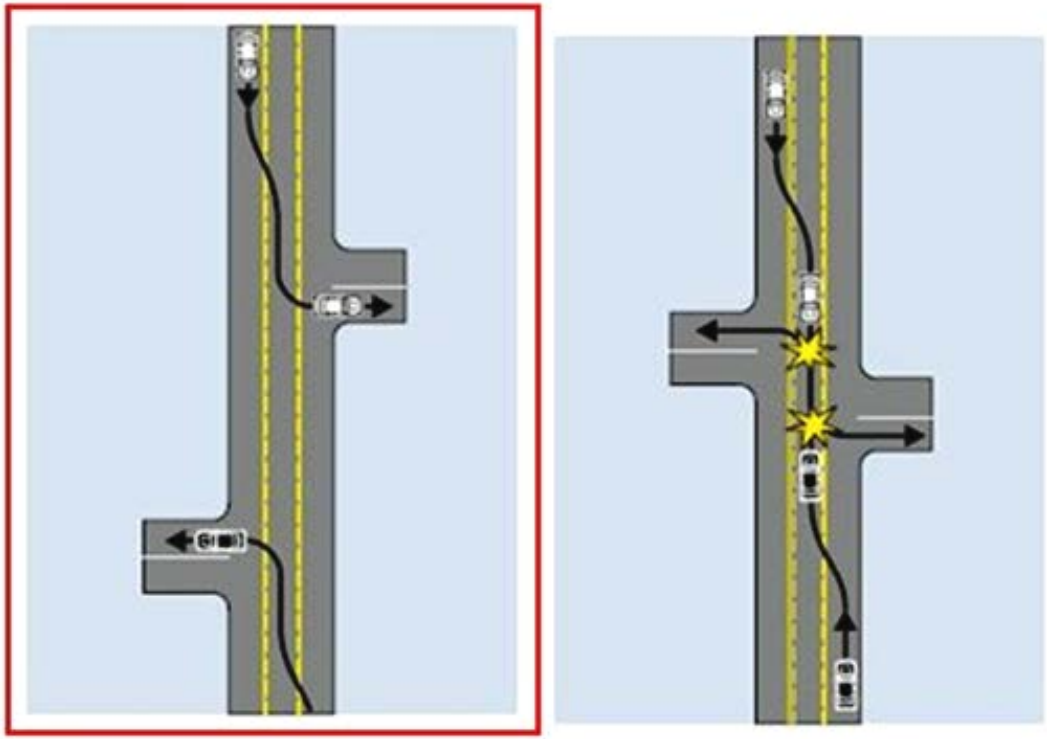
Example: Principal Arterial with 35 to 45 mph Speed Limit.

Not To Scale

Entrance Spacing

Offsetting Entrances on Opposite Sides of the Road

Separate Entrance Left Turn Movements to Reduce Crashes



Positive Offset

Negative Offset

Regulatory Exceptions to the Spacing Standards

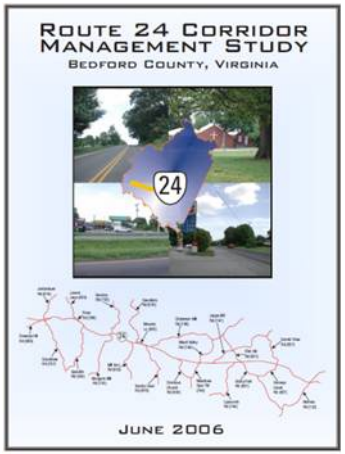
On an established business corridor

Existing spacing does not meet standard

Not enough property frontage

Entitled to right-in/right-out access

Located on a highway with a corridor access management plan



<u>Within</u> a mixed use "town" type development

Exceptions to the Access Management Requirements

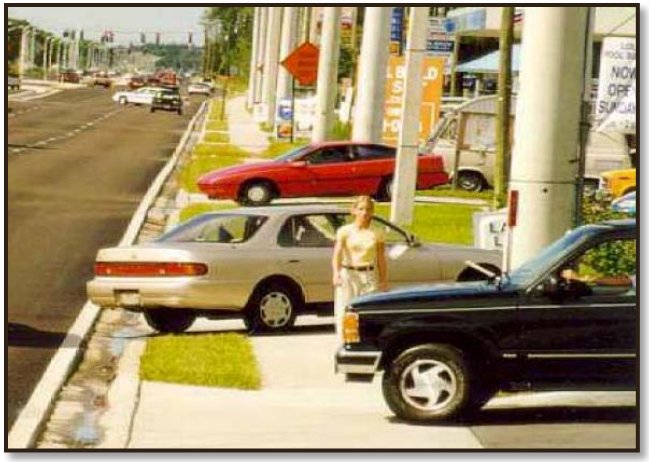
Rules & Procedures to Request an Exception

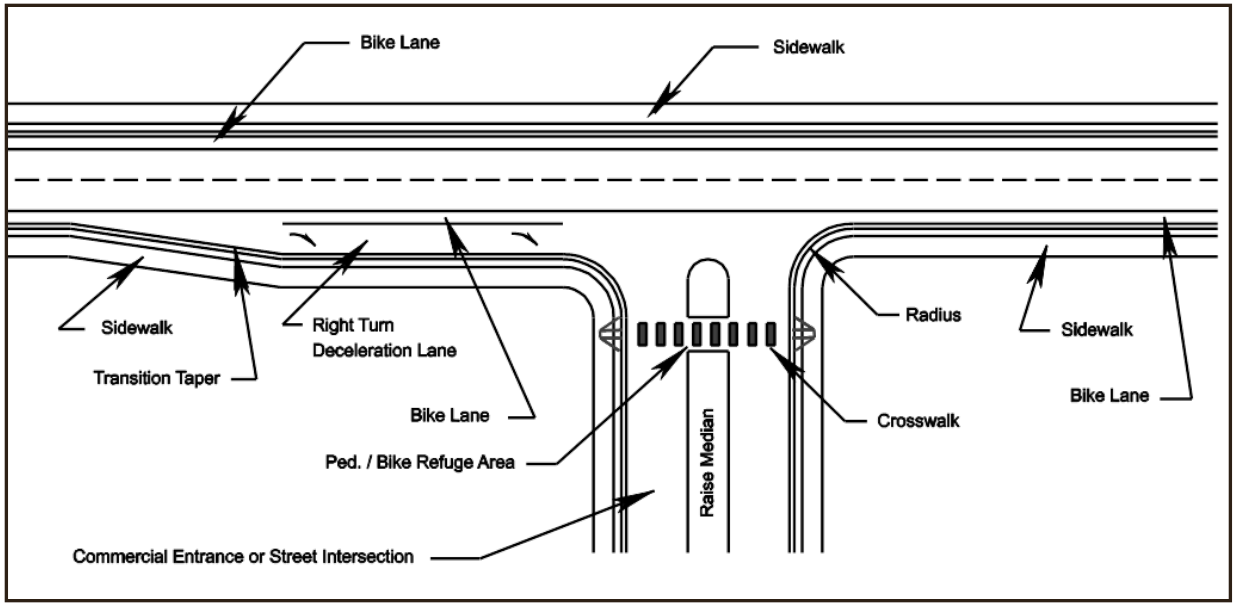
- Submit in writing to VDOT District Area Land Use Engineer using the Exception Request Forms*
- The request should:
  - Identify the type of exception (shared entrance, spacing, interparcel connection)
  - Describe reasons for the request
  - Include all required justification (traffic engineering study)

* Available on VDOT access management web site

Access Management: Pedestrians and Bicyclists

- Entrance design should accommodate pedestrians and bicyclists
- Fewer entrances reduce vehicular conflicts with pedestrians/bicyclists
- Sidewalk, crosswalk, and bicycle lane design criteria in Road Design Manual on VDOT web site





Summary: Virginia's Access Management Program

Property owners have a right to reasonable access to the highways

Roadway users have the right to:

- **Freedom of movement,**
- **Safety, and**
- **Efficient expenditure of public funds.**

Balancing these interests is the goal of access management

For more information or questions contact:

Land Development Section
(804) 786-0780