

## REQUEST FOR BOARD ACTION

### HENDERSON COUNTY PLANNING BOARD

**Meeting Date:** May 20, 2010

**Subject:** Access Management Presentation

**Staff Contact:** Hope Bleecker, Transportation Planner

**Attachments:** 1. PowerPoint Presentation

#### **SUMMARY OF REQUEST:**

The recently completed Etowah Horse Shoe (EHS) and Edneyville Community Plans included several transportation recommendations, with particular emphasis on traffic safety and access issues. Henderson County continues to support NCDOT staff in their efforts to administer the access management principles specified in their Policy on Street and Driveway Access to North Carolina Highways, July 2003. This presentation is part of the ongoing discussion of the EHS Plan.

It is not expected that the Planning Board will need to complete discussion or endorse any policy during this meeting.

#### **Suggested Motion:**

No motion suggested.



# The Benefits and Impacts of Roadway Access Management

Henderson County Planning Board  
May 20, 2010

## Presentation Outline

- **What is access management?**
- Example streets
- Benefits of managing access
- Techniques and treatments for managing access
- Access management and business vitality
- Implementing access management
- Conclusions

# What Is Access Management?

- "Access Management is the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity, and speed".

(Source: Federal Highway Administration)

## A Key Goal

- A key goal of access management is to maintain the functional integrity of the roadway system... In other words,
- Ensures that a road or street is designed to fulfill its intended purpose, which is to be the safest and most efficient travel venue to other parts of the network.

## High Mobility and Limited Access: The Freeway



## High Access, Limited Mobility: The Local or Collector Street



## More traffic needs to use less space more efficiently



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# Superstreet

## US 15/501 – Chapel Hill NC



James Dunlop, Congestion Mgmt Engineer for NCDOT reported that total travel time (moving and delay) at this superstreet conversion was reduced by 60 percent.

**PAPE-DAWSON  
ENGINEERS**

# Moderate Access Management



- Divided Median
- Signalization
- Likely some spacing of driveways
- Ped Crossing

## Little/No Access Management



- Undivided 4-Lane
- No Driveway Spacing
- Ped Facility has Become a Driveway

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## What Are The Benefits of Managing Access?

- Improved Safety
- Better traffic operations (increased LOS, capacity, and speed)
- Better Business Environment



## Auto Accident Rates in the United States

- 10.6M auto accidents nationally
- 43,100 auto accident deaths nationally
- An estimated \$80 billion per year is lost due to access related accidents

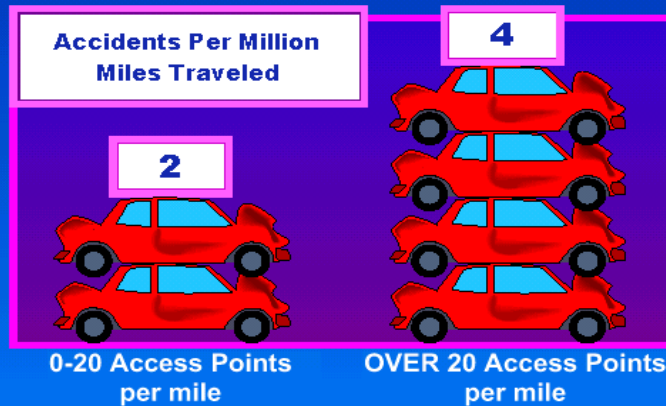
### In North Carolina in 2000

- More than 15,500 driveway related crashes and 110 fatalities

Source National Safety Council Car Accident Data 2007

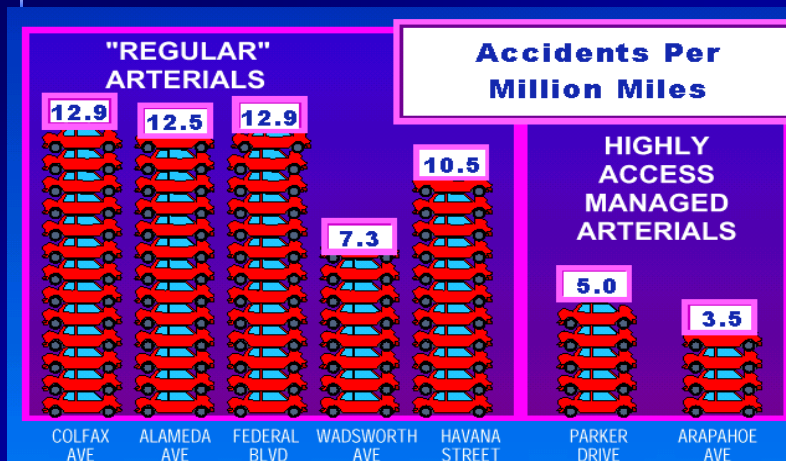


## Driveway Spacing And Accident Rates Are Strongly Related



Based on P.R. Statfield "Accidents Related to Access Points and Advertising Signs in Study" Traffic Quarterly (January 1953)

## Lower Number of Accidents Per Mile on Managed Arterials

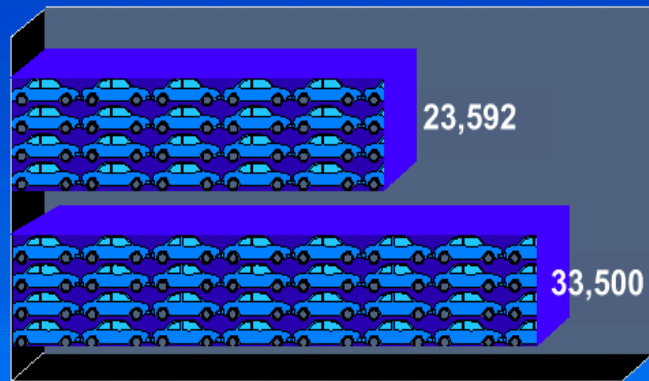


SOURCE: "Colorado Access Control Demonstration Project" 1985

## Higher Capacity Ratings

LOW  
ACCESS  
MANAGEMENT

HIGH  
ACCESS  
MANAGEMENT



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

\* Source: FDOT and 1985 Highway Capacity Manual

## Presentation Outline

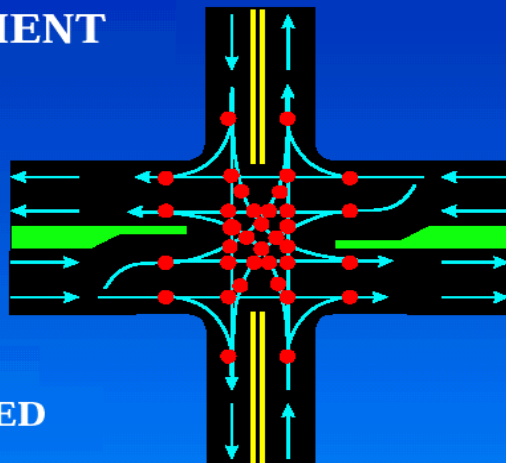
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## How to Manage Access

- Maintain the functional integrity of the roadway system by:
  1. **Limit** conflict points
  2. **Separate** conflict points
  3. **Remove** turning traffic from through traffic lanes

## Limit Conflict Points at Intersection

**FULL MOVEMENT**

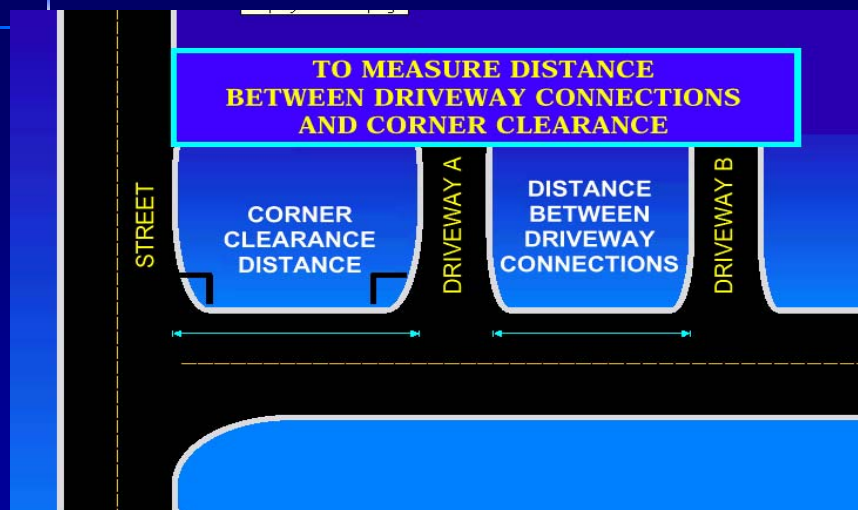


**36 CONFLICTS  
22 IF SIGNALIZED**

## Separate Conflict Points: Why?

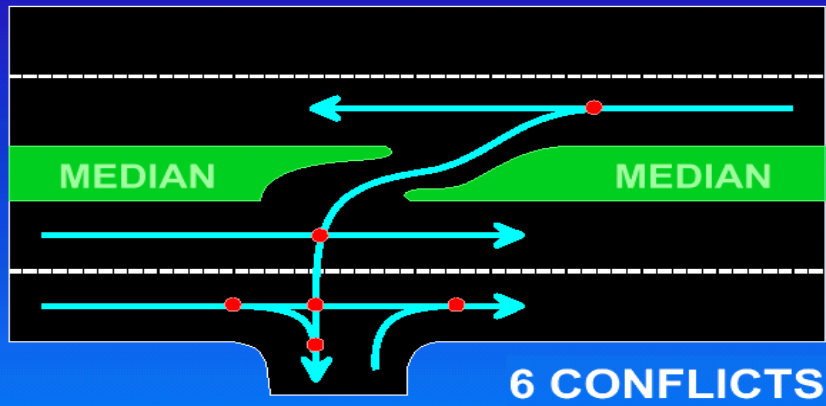
- Drivers can only mentally process one conflict point at a time
- Separation also provides enough time and space for drivers to react to the unexpected
- Conflict points represent opportunities for accidents, congestion, and delay

## Separate Conflict Points

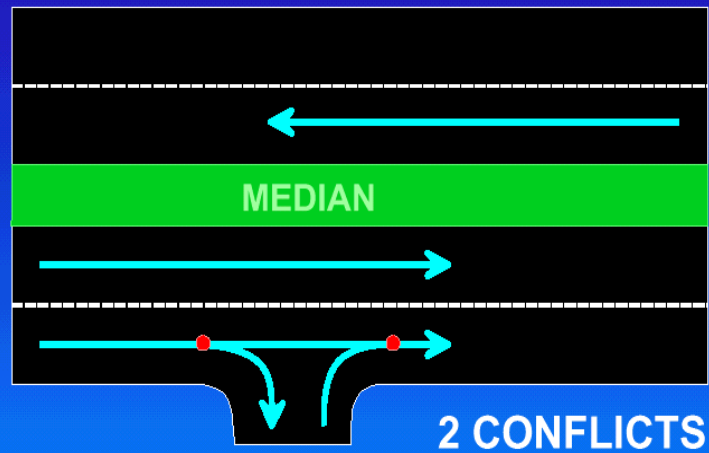


# Remove Conflict Points: Medians

## RIGHT-IN/RIGHT-OUT/LEFT-IN



## RIGHT-IN/RIGHT-OUT

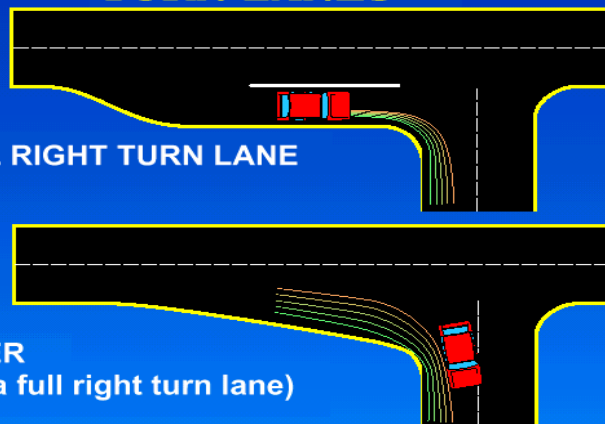


## Facilitate Turning Movements

### TURN LANES

FULL RIGHT TURN LANE

TAPER  
(Not a full right turn lane)



## Right Turn Taper NC 107 (Sylva)

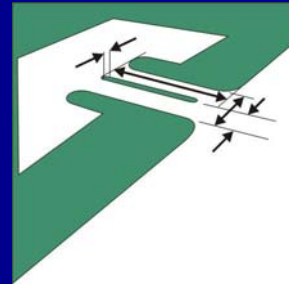
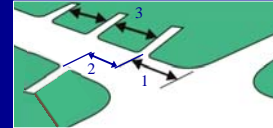


## Common Access Management Treatments

1. Driveway Design and Consolidation
2. Corner clearance
3. Two-way left-turn lanes (TWLTL)
4. Raised medians
5. Frontage roads
6. Rear Access roads

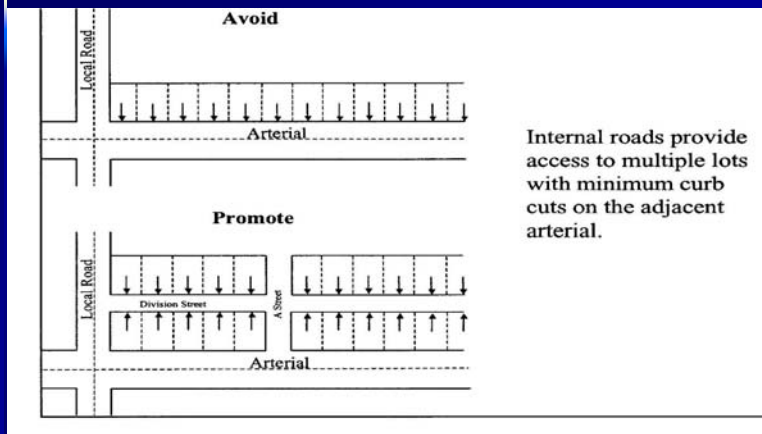
# 1. Driveway Design

1. **Clearance:** as far as possible from intersections, especially signals
2. **Number:** as few as feasible
3. **Offsets:** aligned or well spaced from other drives or median crossovers
4. **Spacing:** as far apart as feasible
5. **Design:** appropriate for the vehicles which use them.



# 1. Driveway Design

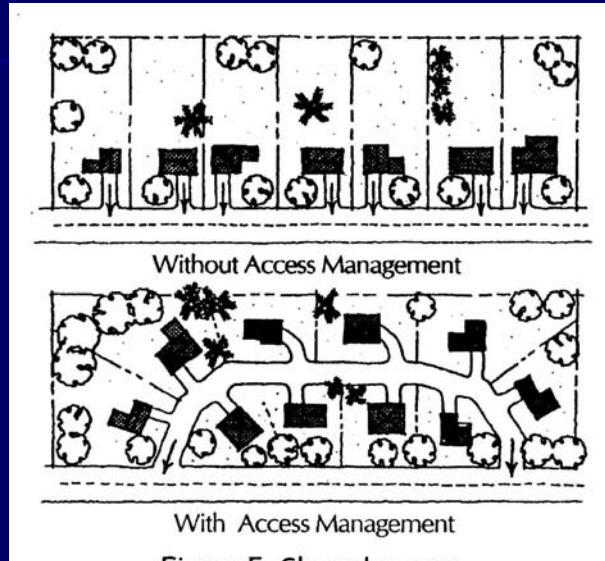
Internal or Rear Access rather than Street Access





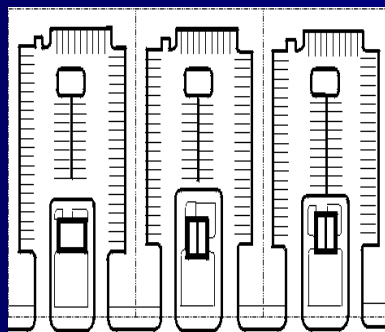
# 1. Driveway Design

## Residential Shared Access

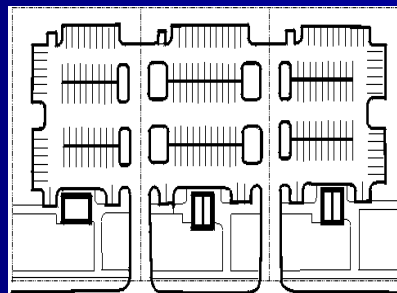


# 1. Driveway Design

## Shared Use Maintenance



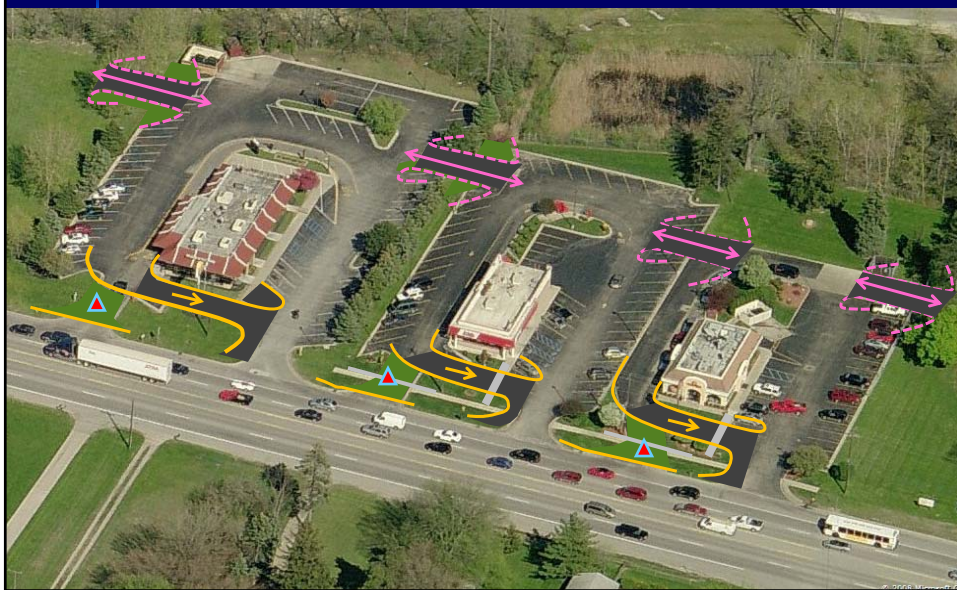
A typical pattern with separate in and out driveways.



Shared driveways and rear yard parking provides fewer curb cuts and greater tree planting opportunities which will positively alter a commercial zone of influence.

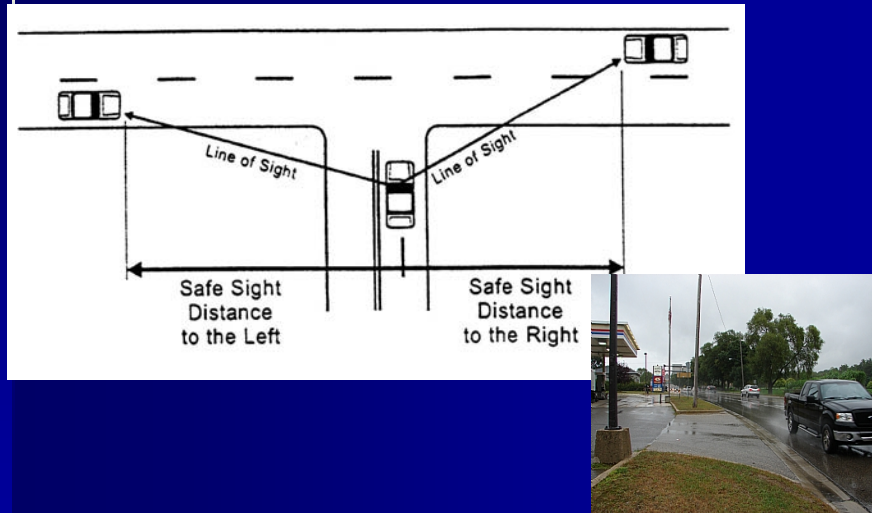


## 1. Driveways: Connectivity

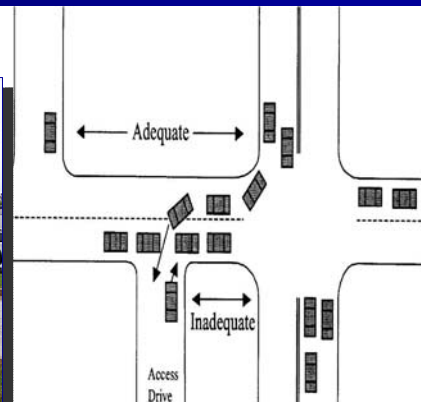


## 2. Corner Clearance

Provide Adequate Sight Distance



## 2. Corner Clearance: Provide Adequate Spacing from Intersections



### 3. Two-Way Left Turn Lane a.k.a.(TWLTL)



### 3. TWLTL: Benefits

- Significant reductions in total and rear-end crashes on 3-lane TWLTL compared to 2-Lane divided yellow line
- Observed reductions in head-on, intersection and non-intersection crashes
- Rural sites more effective than urban
- Research is needed to answer where urban treatments are most effective

### 3. TWLTL Accident Reduction

(Source: FHWA Turner Fairbanks Research Center 2006)

Several group sites were evaluated where TWLTLs installed

- Arkansas – rural 51.2%
- Arkansas – urban 3.8%
- California – rural 50.8%
- California – urban -2.8%
- Illinois – rural 16.7%
- Illinois – urban 59.4%
- North Carolina – rural 27.3%
- North Carolina – urban -5.0%

### 4. Raised Medians: Benefits

#### **Safety**

Fewer and less severe traffic crashes  
Less auto/pedestrian conflict

#### **Efficiency**

Greater vehicle capacity  
Less stop and go traffic

#### **Aesthetics**

More room for landscaping and pedestrians  
More attractive corridors  
Less roadway pavement

• Source: CUTR, *Median Handbook*, 1997.





## 4. Medians

Two Lane Roundabout in Park City, Utah



## 4. Medians

### High Rate of Mobility



## 4. Raised Median



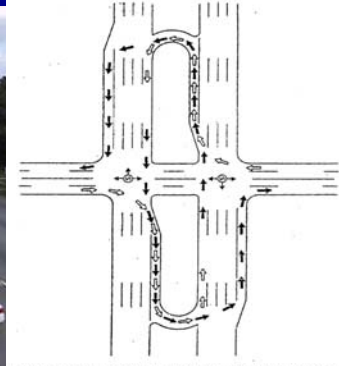
Photo by Dan Burden

## 4. Medians

### Example of Indirect U-Turn

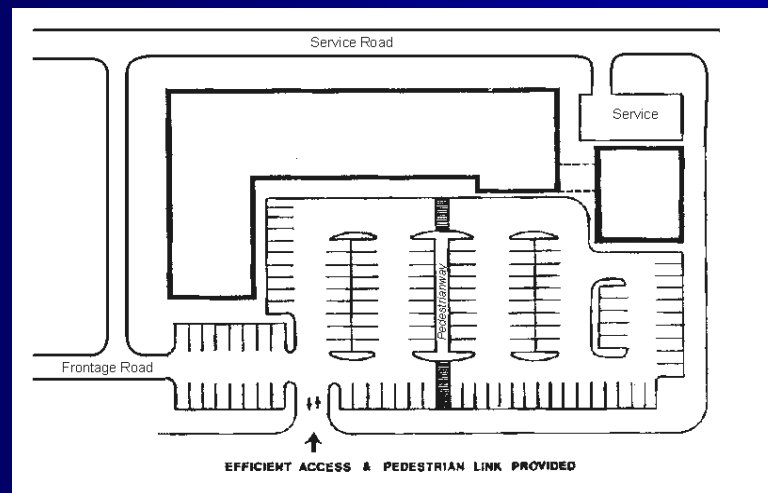


Figure 3-33: Indirect U-turn



Source: Levinson, Herbert, et al. "Indirect Left-turns-The Michigan Experience" for the 4<sup>th</sup> Access Management Conference, 2000.

## 5. Frontage Access





## 5. Front and 6. Rear Access Drives



## 6. Rear Service Road



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## Business Vitality:

- Business owners often oppose access changes or restrictions
- Overall impacts on businesses are neutral to positive
- Recent Study Produced by Center for Transportation Research and Education shows:
  - **Lower business failure rates**
  - **Improved retail sales levels**
  - **Potential for land redevelopment**
  - **Some individual businesses may be negatively affected**

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## Implementation

- In most states, roadway jurisdictions are legally responsible for managing access and providing access to properties.
- State legislation usually spells out the regulatory powers of roadway jurisdictions
- Local governments can usually also manage access via land use regulations

## Implementation

- Road improvement techniques and projects
- Driveway permitting
  - Prior to new development
  - Prior to expanded development
- Land use regulations
  - Subdivision regulations, such as joint or cross access regulations
  - Zoning

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## Who Wins When Access Management Is Done Right?

- **Motorists:** safer, less congested roads
- **Taxpayers:** less expense related to better use of existing roads
- **Business Communities:** congestion and safety issues discourage tourists and shoppers
- **Communities:** commercial, environmental, and other benefits

Questions?