Context Sensitive Solutions Workshop

Session 8

John (Jack) Broz, P.E. HR Green

March 9-10, 2010

A New Balance for Transportation Corridors

COMPLETE STREETS

HRGreen

Session 8 Objectives

- What is a “Complete Street”
- How we have been designing streets?
- How we can design “Complete Streets”

A Complete Street?

Safe access for all users of all ages and abilities □ motorists, transit users, pedestrians and bicyclists can move safely along and across complete streets.

Not a Complete Street

More of a Complete Street

Benefits of Complete Streets:

- Improved pedestrian, bicyclist, transit user & motorist **safety**
- Improved **mobility and access** for a large segment of the population that cannot or does not drive
- Improved public and environmental **health**
- Increased **transportation capacity** and modal options improve mobility and combat congestion
- Increased **economic activity** and **property values**
- Improved **quality of life** through more livable and sustainable transportation systems, communities, commerce, social interaction and growth

CDC

BlueCross BlueShield of Minnesota

Mobility vs. Speed

- Speed: Measurement of how fast you are moving
- Mobility: Measuring if you are moving
  - Travel: Movement from point A to point B, (such as a trip to work)
  - Circulating: Movement around a community (stopping for gas, banking and groceries)
  - Access: Movement into a destination (You park, get off the bus or park your bicycle and walk into your destination)

National Complete Streets Status

2000 US DOT Guidance:

Bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist

Few jurisdictions embrace or follow this guidance

Complete Streets Status in Minnesota

- HF 3800 passed in May 2008
- Directs Transportation Commissioner to conduct feasibility study and cost/benefit analysis of adopting state-wide Complete Streets policy
- Report Recommended a State policy
- The Proposed State Policy are in current bills are H.F. 2801 and S.F. 2461
- The Commissioner has created a partnership with CS Stakeholders to identify process issues with implementation
- Hennepin County along with the City of Rochester adopted a policy in 2009

Additional Resources

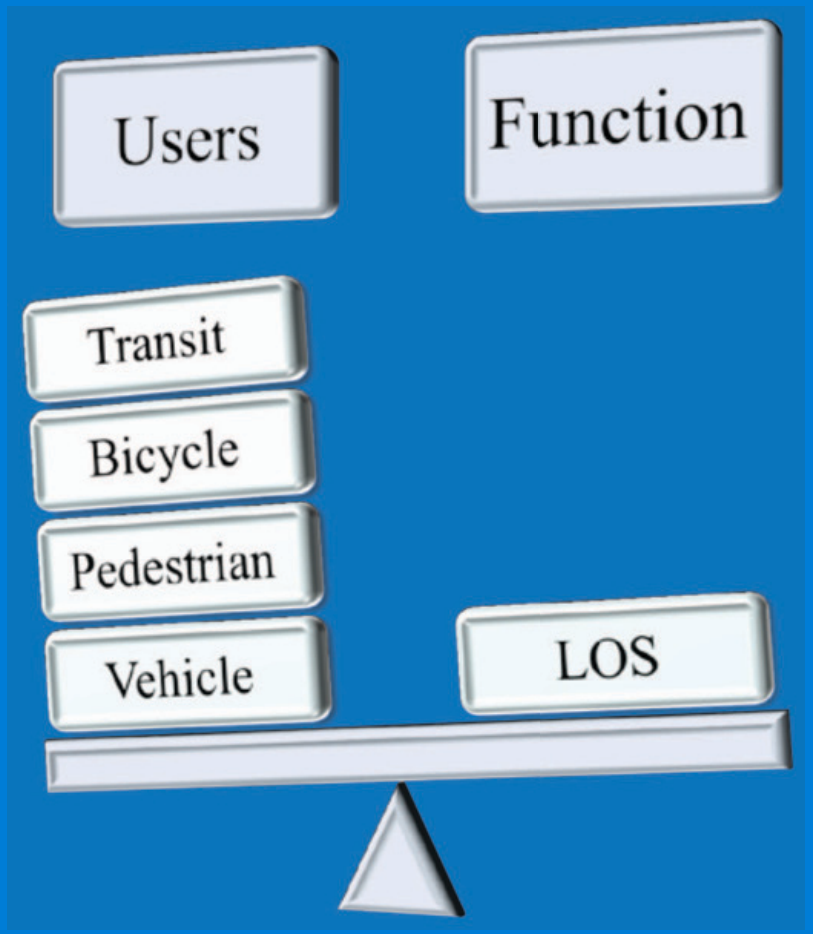
- McCann, Barbara. *Complete the Streets!* Planning. May 2005. pp. 18-23.

- LaPlante, John, P.E. and McCann, Barbara. *Complete Streets: We Can Get There from Here*. ITE Journal. May 2008. pp. 24-28.

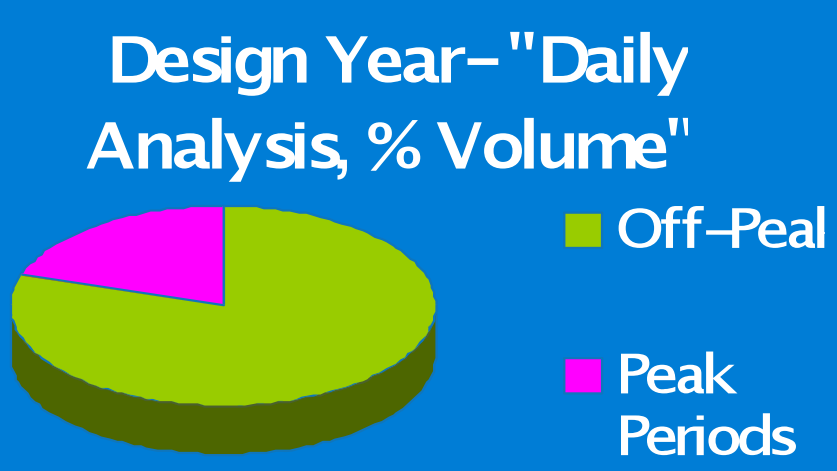
- National Complete Streets Coalition. *Let's Complete America's Streets*. Available at http://www.completethestreets.org/

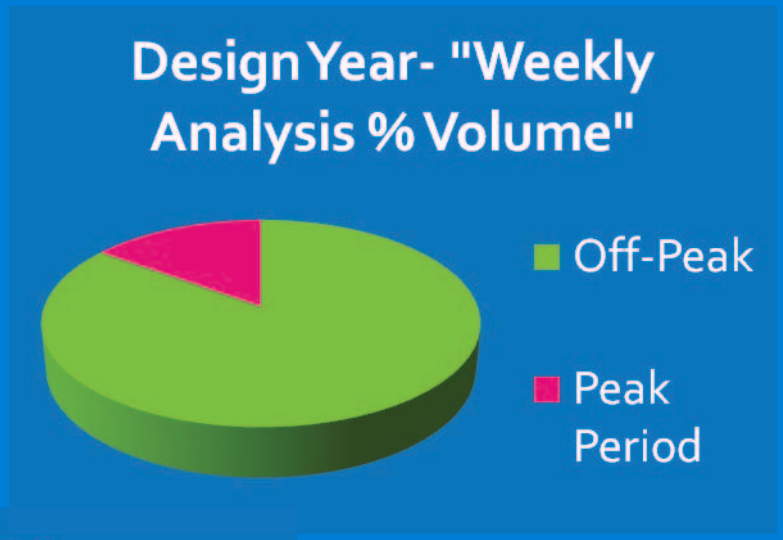
User Groups

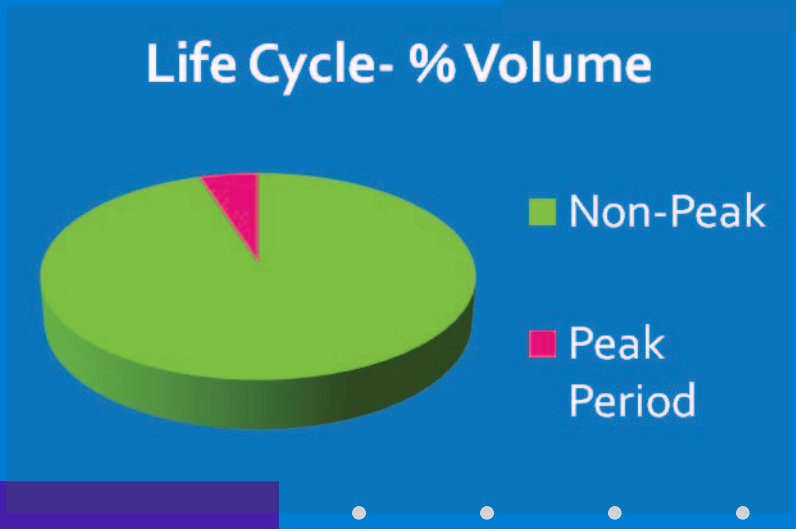
- Pedestrians
- Bicyclists
- Vehicles
  - Trucks
  - Cars
  - Transit Vehicles
- Transit Users
- Parking



Vehicle Level of Service

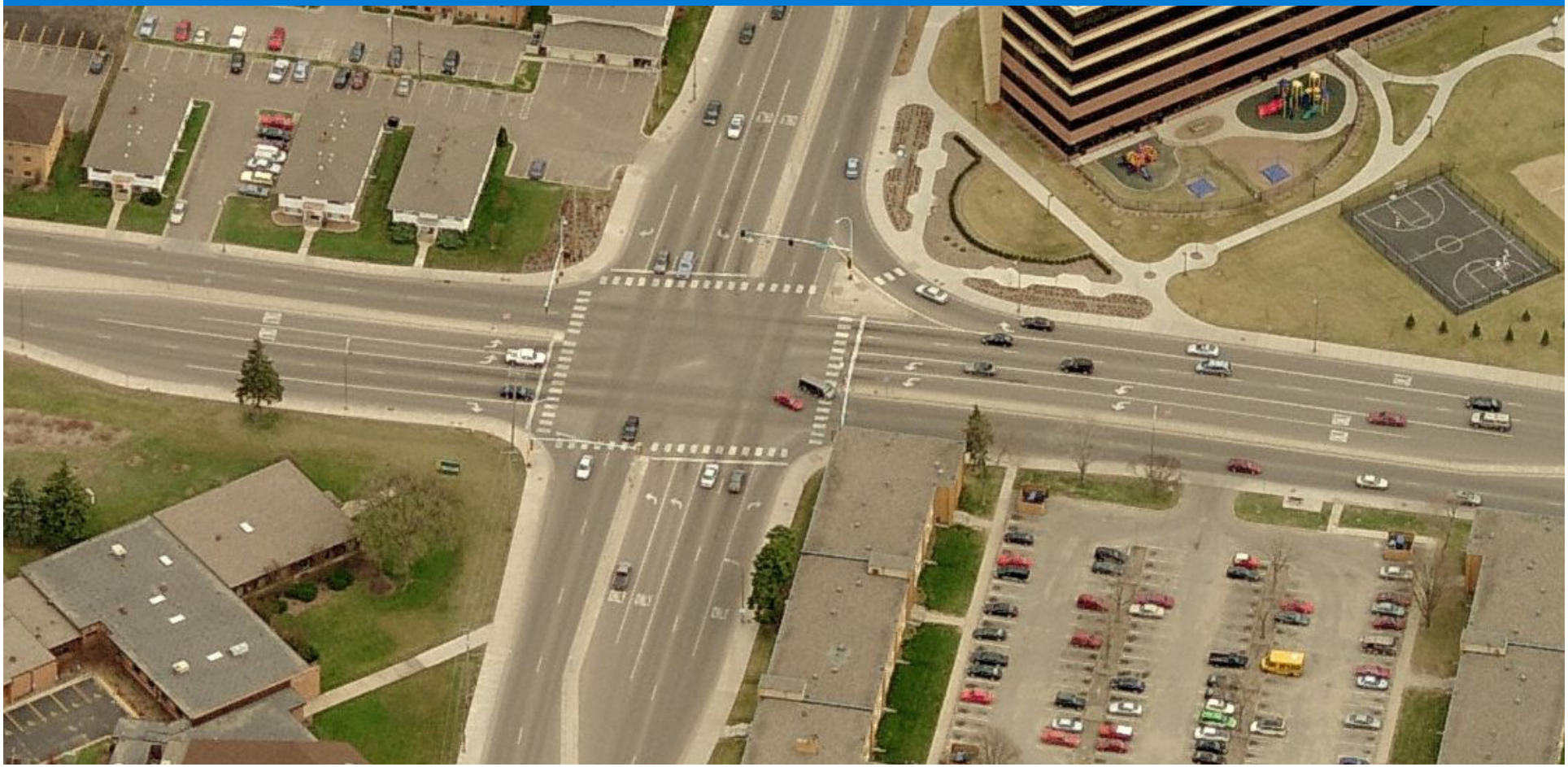






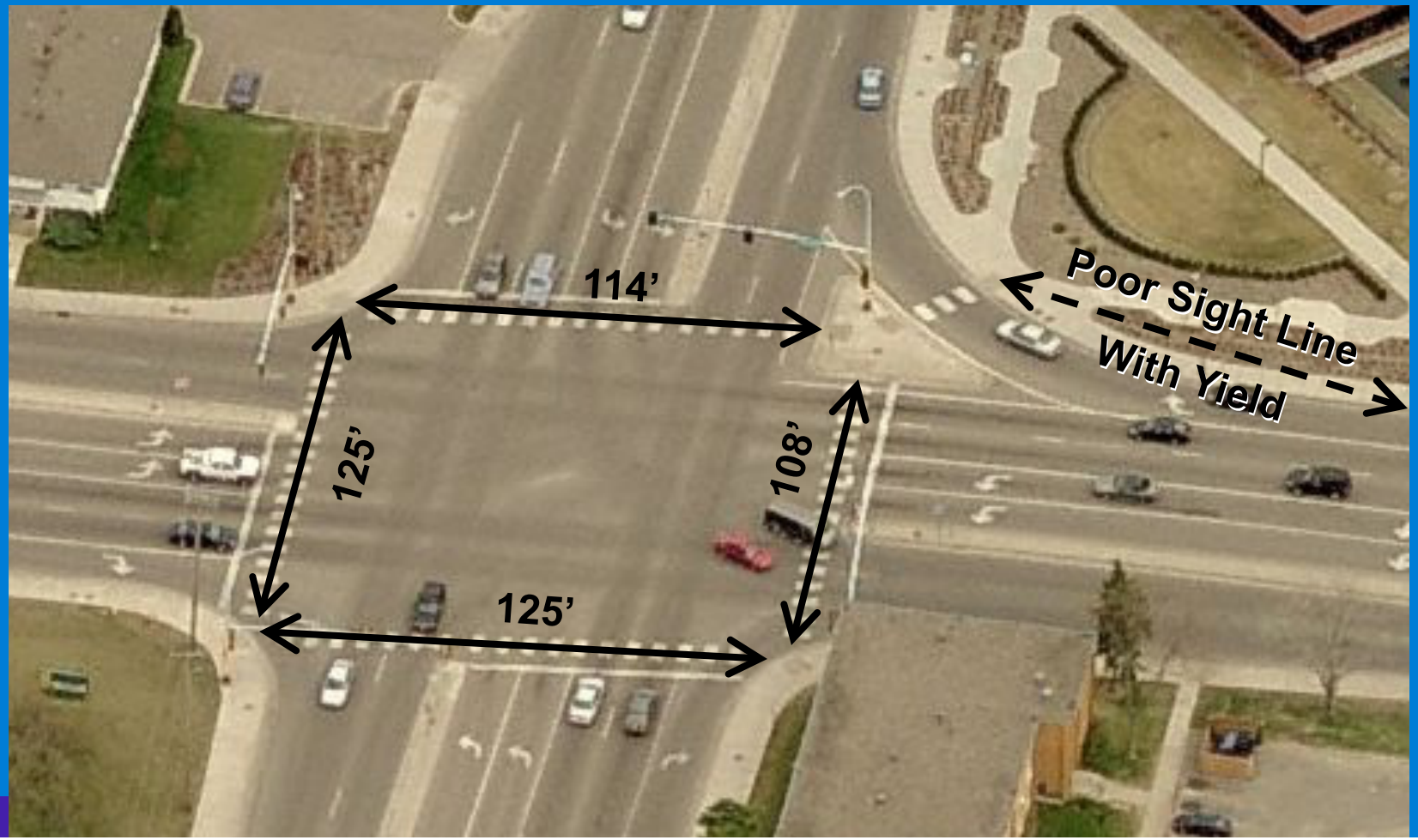
Peak Period Level of Service

Results in “open streets” for non-peak periods.



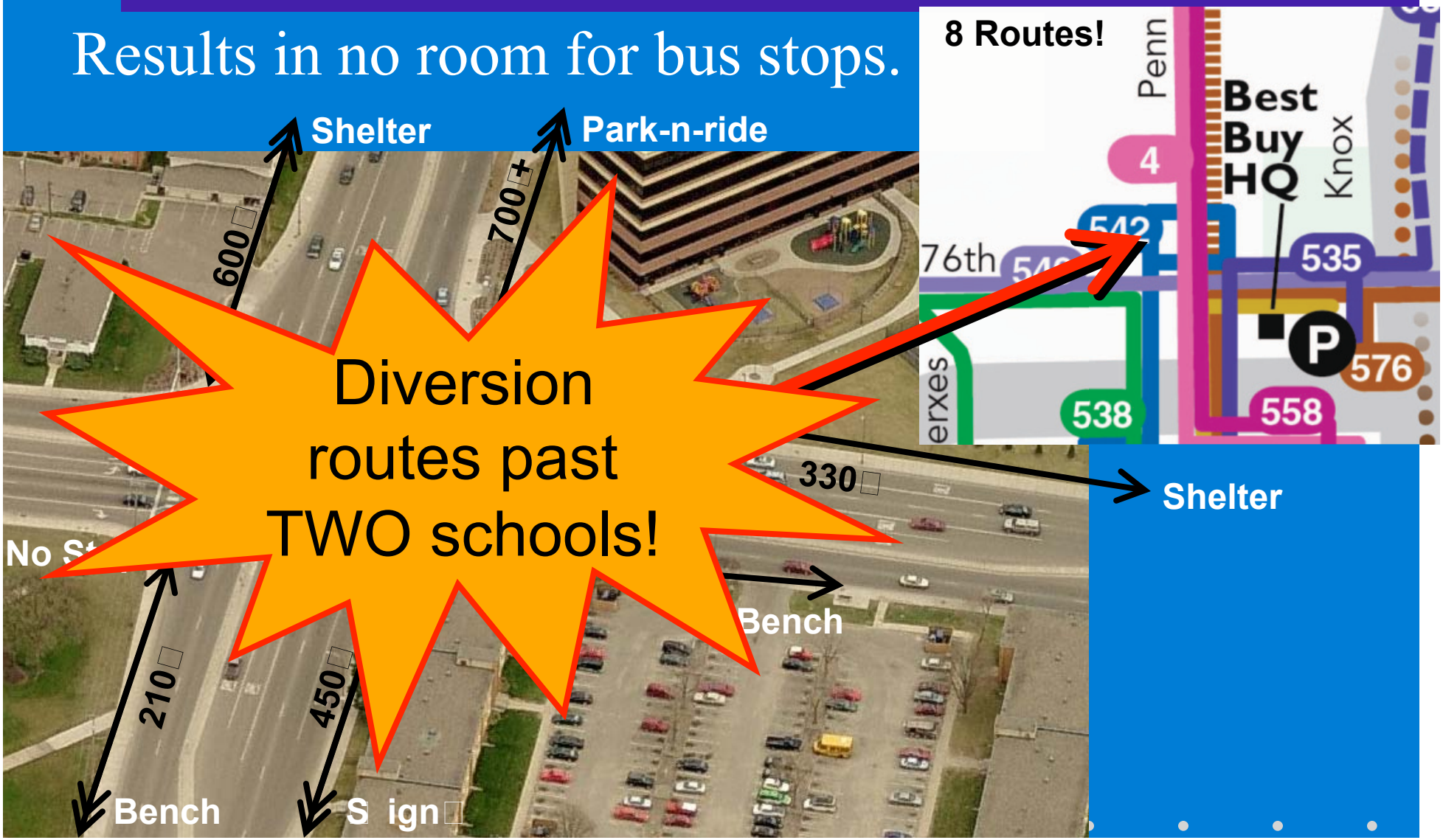
Peak Period Level of Service

Results in poor pedestrian crossings.



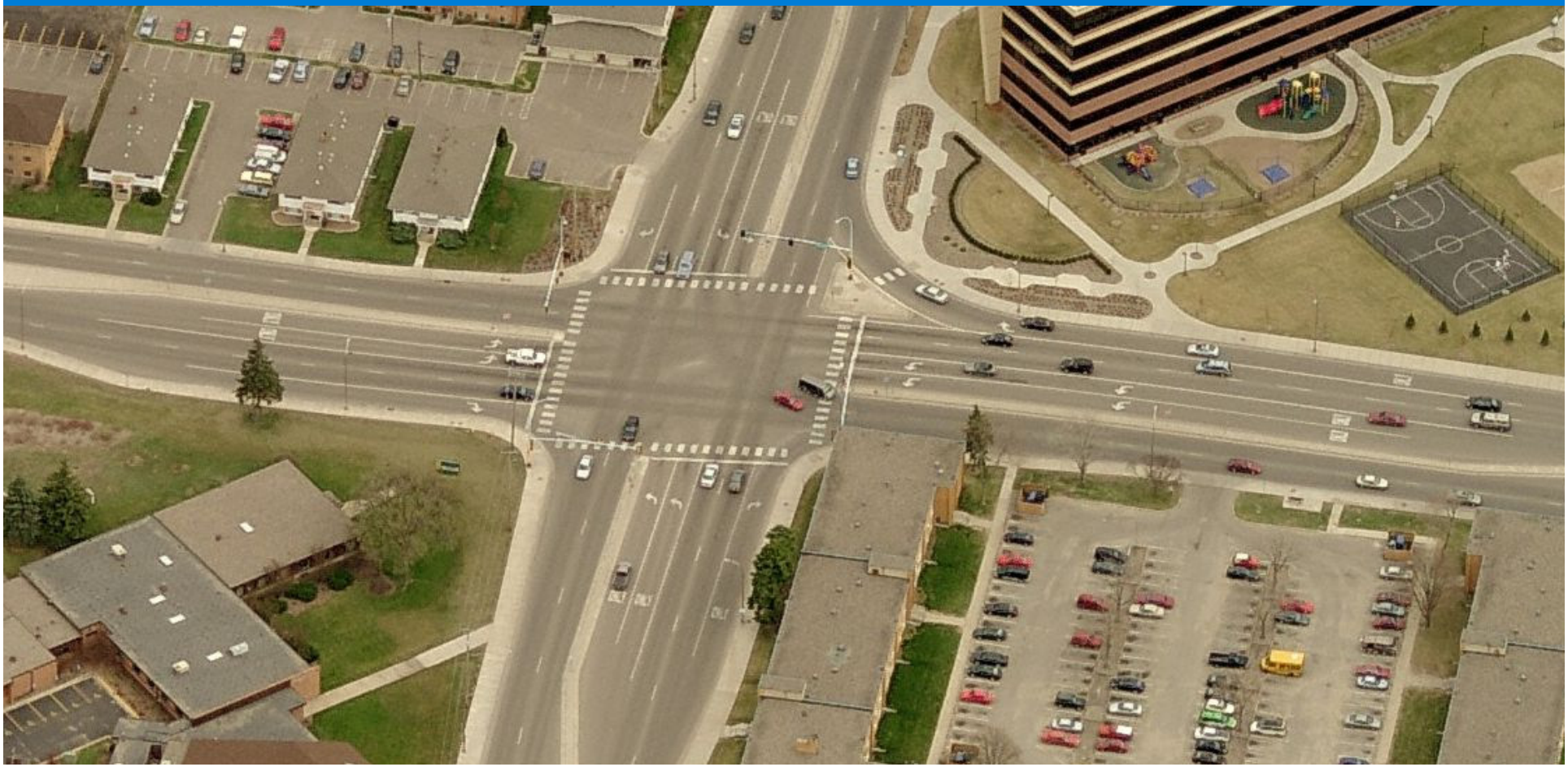
Peak Period Level of Service

Results in no room for bus stops.

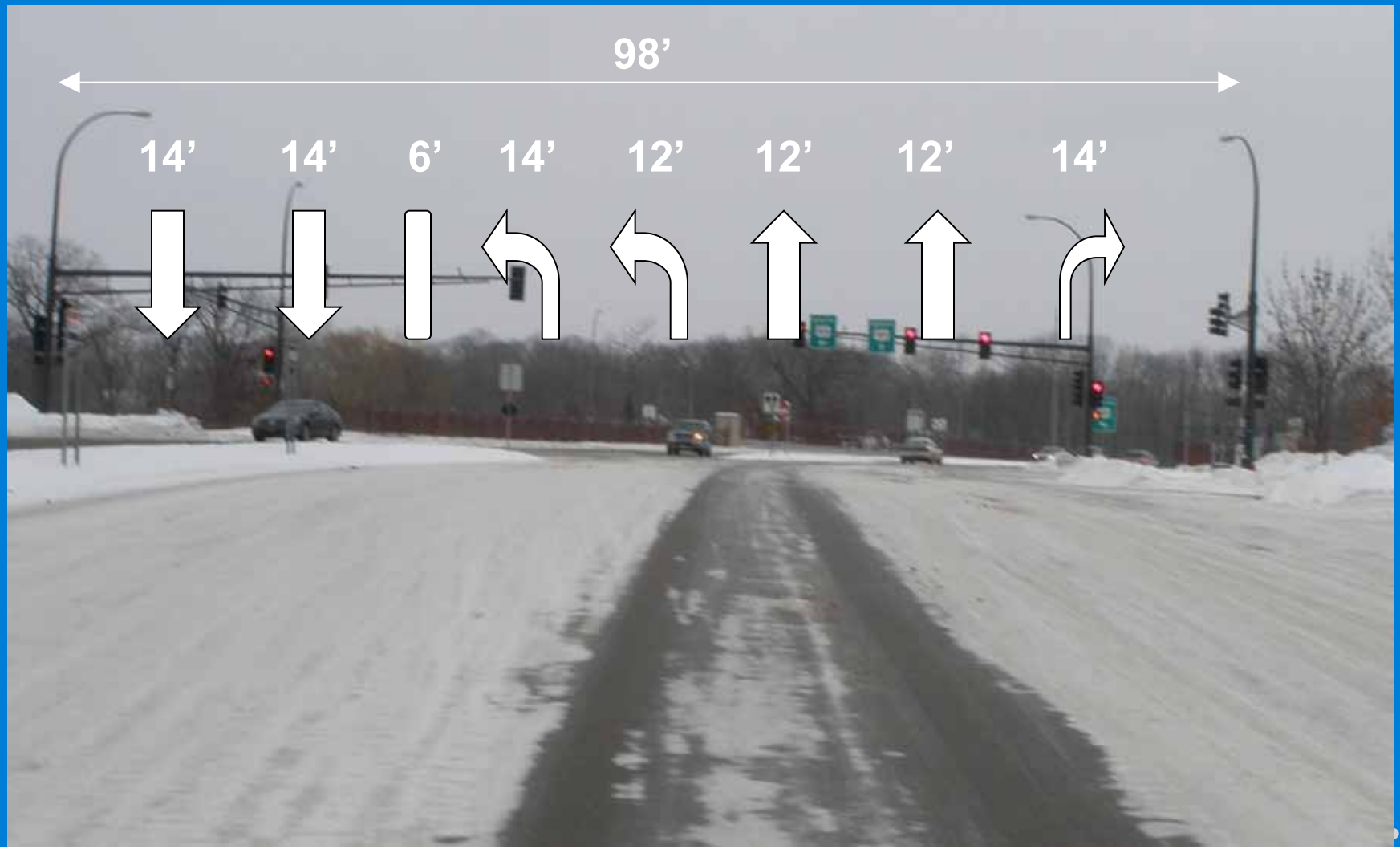


Peak Period Level of Service

Results in no space allocated for bicycles.



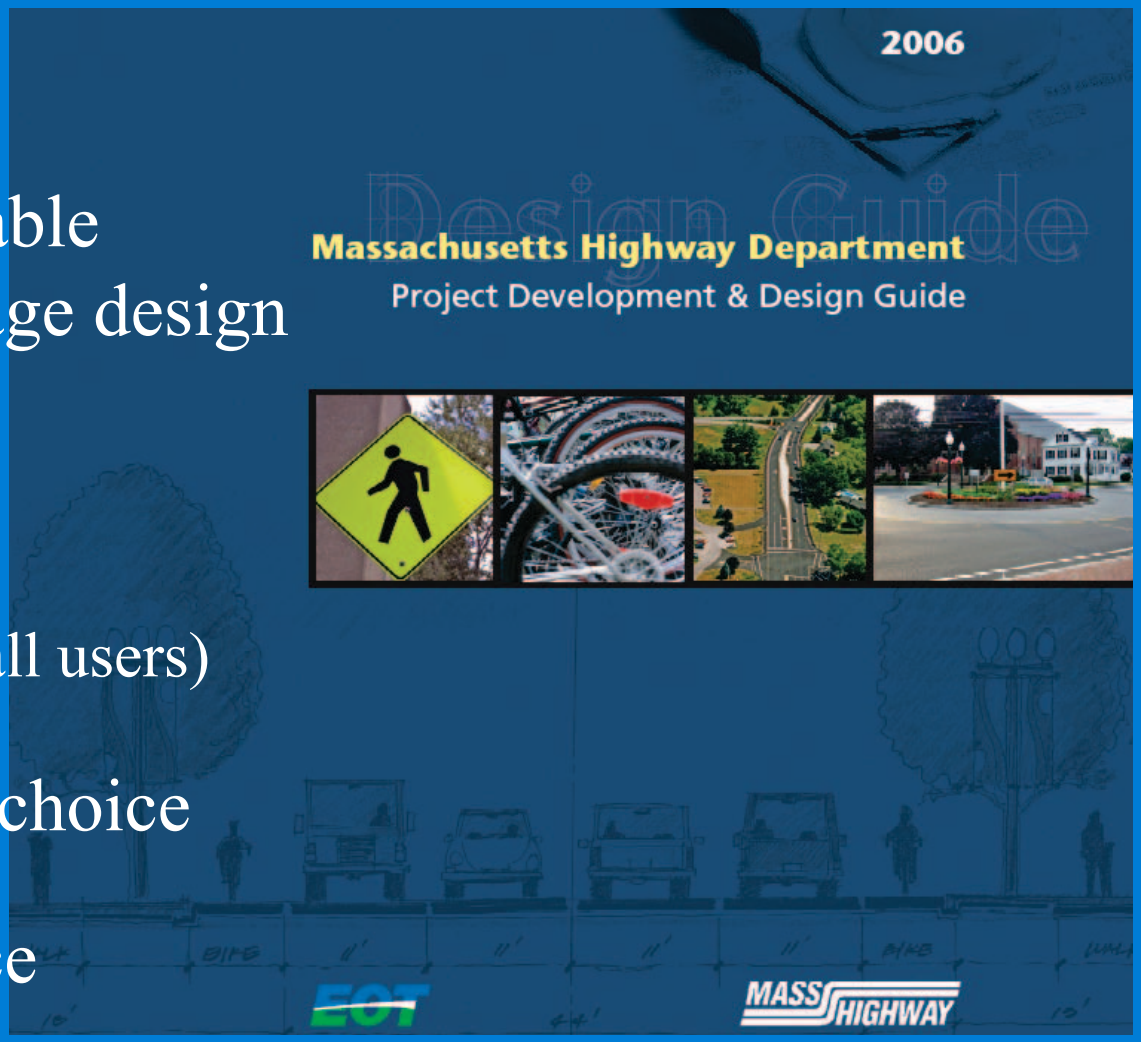
Safety/Maintenance Concerns



Other modes are secondary

MassHighway Design Guide

- Design Guidance
- Ranges of Acceptable Criteria to encourage design flexibility
- Measurements of Effectiveness (for all users)
- Design Speed is a choice
- Allocation of Space



Chapter 3: Enhancement -- Level of Service is one Measure of Effectiveness

Transportation MOE's

(for all users)

- Condition of facilities
- Safety and comfort
- Mode choice
- Network connectivity
- User population
- Traditional LOS
  - Travel time
  - Congestion
  - Specific measures elsewhere

"Other" MOE's

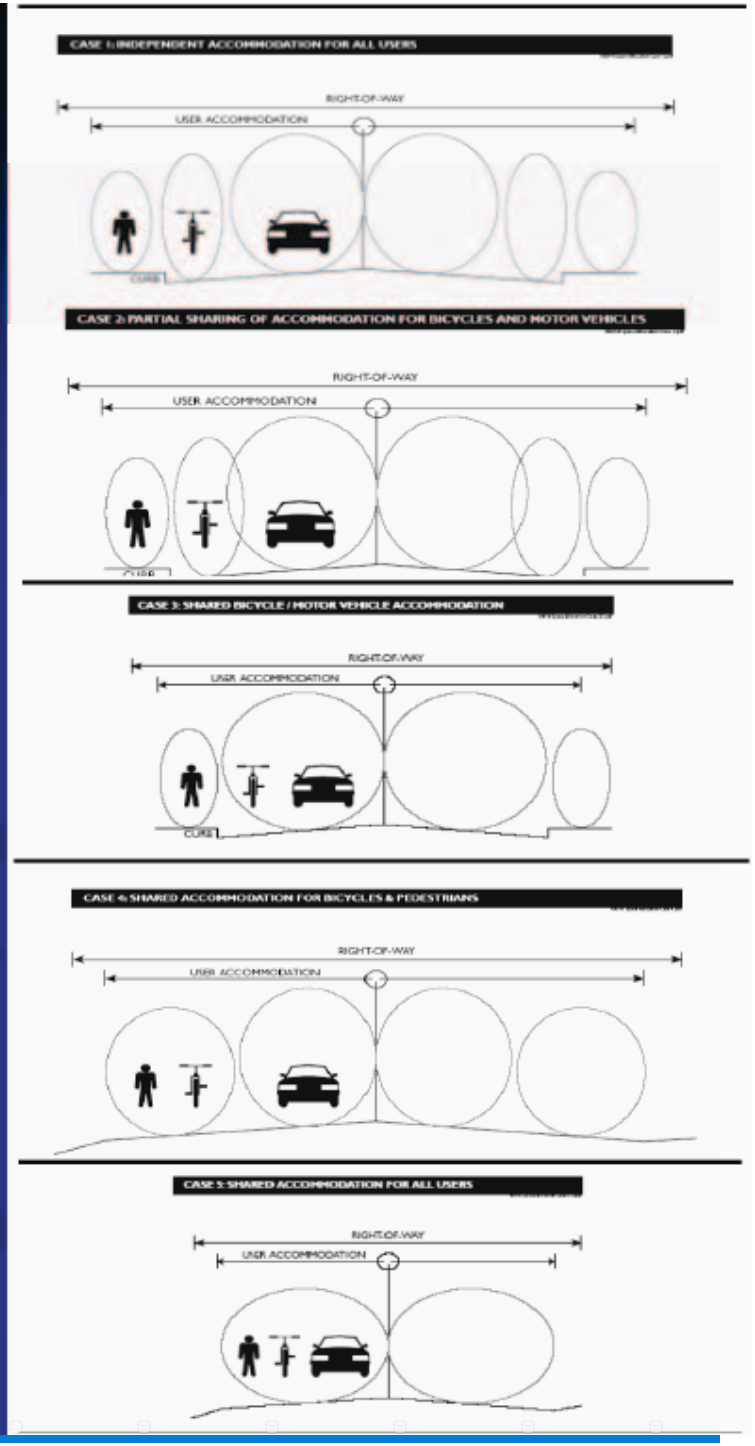
- Environment preservation
- Cultural resource preservation
- Community enhancement
- Economic development
- Aesthetics
- Environmental justice/equity
- Impact mitigation
  - Noise
  - Air Quality
  - Wildlife Habitat

Chapter 3: Revised Design Speed Approach

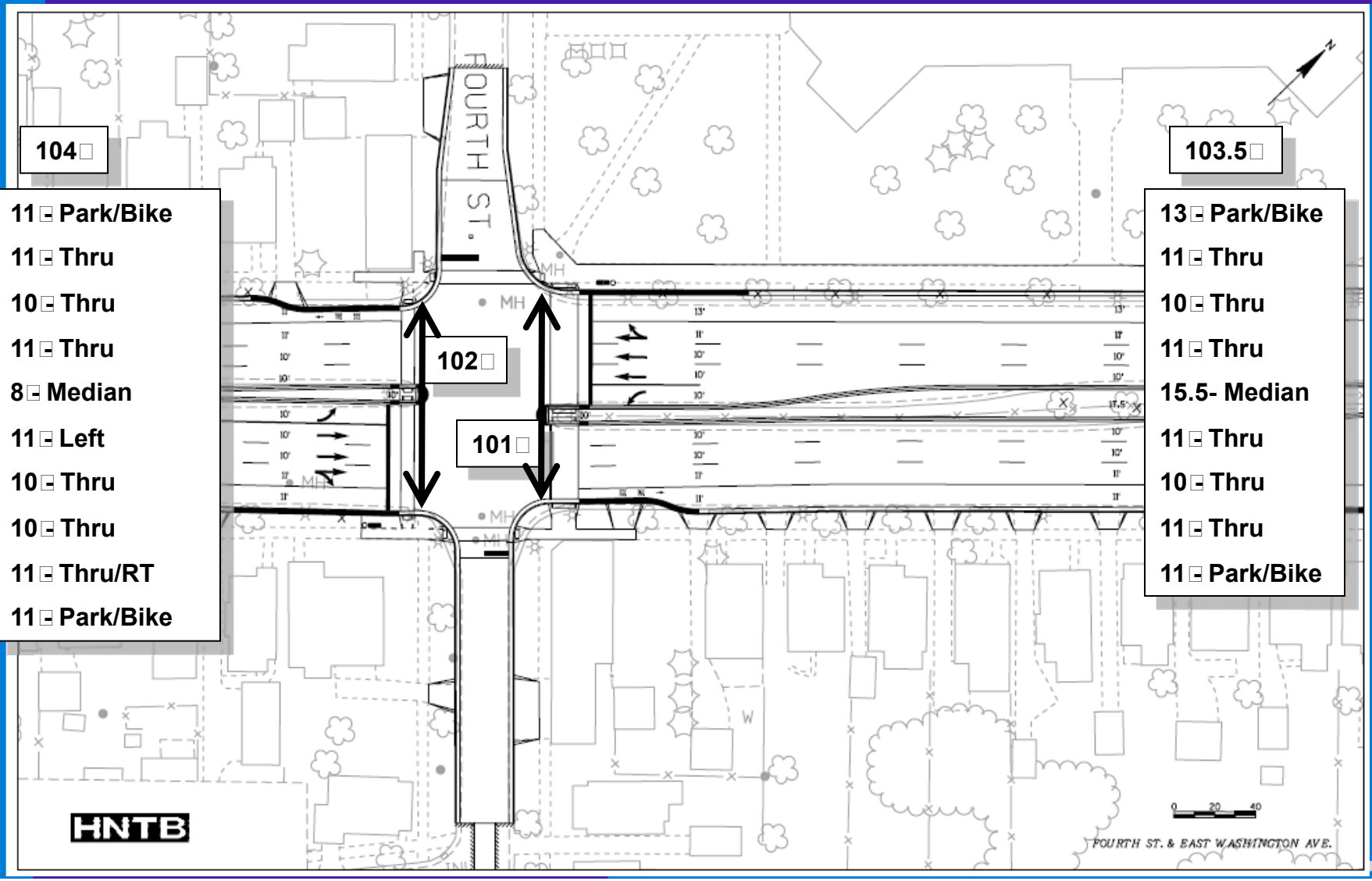
- Design speed is a choice
- Choice of design speed needs to consider:
  - *Roadway context*
  - *Implications for pedestrian and bicycle safety and comfort*
  - *Implications for regional mobility*
- To ensure safety, the choice of design speed needs to be informed by existing operating speed and the likelihood of change associated with the design
- Flexibility is provided to allow design speeds lower, the same, or higher than existing operating speeds, depending on the project's purpose

Chapter 5 Cross-Section: Flexible Multimodal Accommodation Approaches

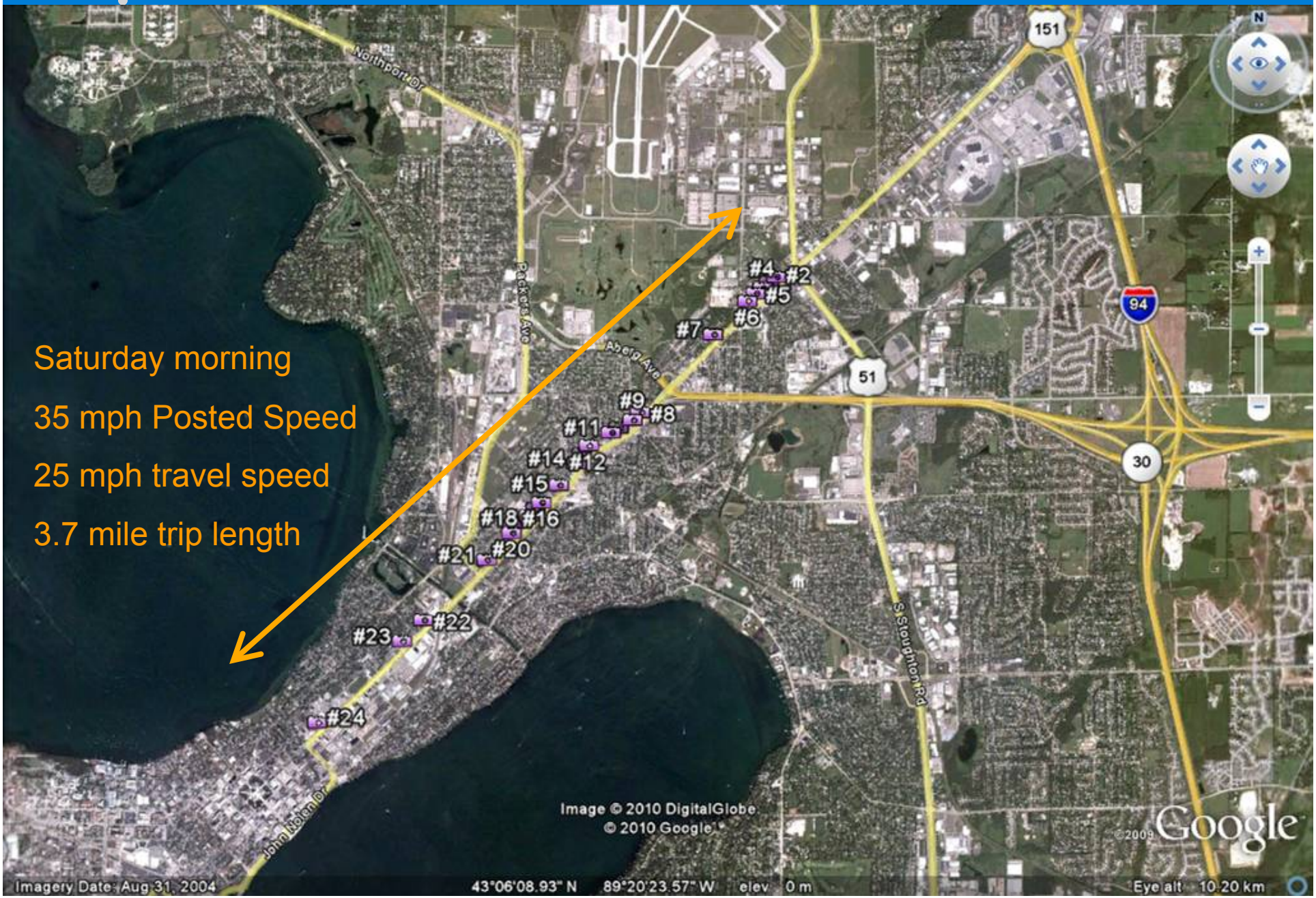
- Descriptions have been developed for the cases :
  - Case 1: Independent Accommodation
  - Case 2: Partial Bicycle/MV Sharing
  - Case 3: Bicycle/MV Sharing
  - Case 4: Pedestrian/Bicycle Sharing
  - Case 5: Shared by All Users



Case Study: US 151, Madison WI



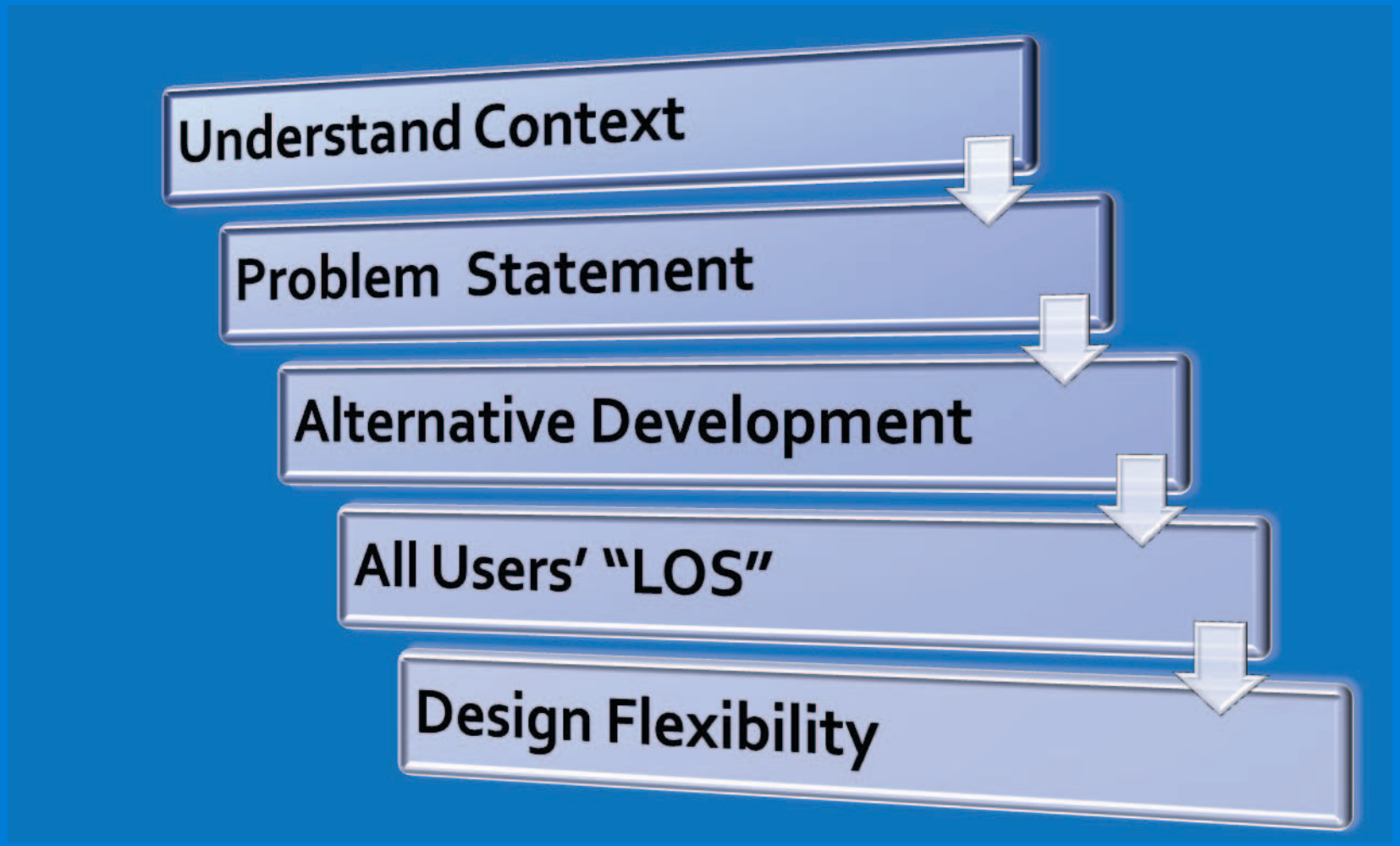
Case Study: US 151, WI


Saturday morning
35 mph Posted Speed
25 mph travel speed
3.7 mile trip length
Northport Dr
Packers Ave
Aberg Ave
John Nolen Dr
S Stoughton Rd
151
51
94
30
#2
#4
#5
#6
#7
#8
#9
#11
#12
#14
#15
#16
#18
#20
#21
#22
#23
#24
Image © 2010 DigitalGlobe
© 2010 Google
©2009 Google
Imagery Date: Aug 31, 2004
43°06'08.93" N 89°20'23.57" W elev 0 m
Eye alt 10.20 km


6 out of these 8 vehicles will
travel together for over 3 miles.

S 151 WI

Complete Street Design Process



Not all roads are the same

	Interstate	Rural Highway	Urban Arterial	Local Road
				
 	Peak Period LOS	Mobility	Mobility and Peak Period LOS	Local Access
	Overpass Crossings	Shoulder Operations	Sidewalks and Crosswalks	Sidewalks
	Shoulder Operations	Park-n-Ride Lots	Bus Shelter	Bus Stop
	Overpass Crossings	Shoulder Operations or Trail	On-Street Bike Lanes or Multi-Use Trail	Share the Road
  	Grade Separation	At- Grade or Grade Separation	At- Grade or Grade Separation	At- Grade

Bicyclist Characteristics

Urban Bikeway Design

Table 4-1: Bikeway Design Selection for Urban (Curb and Gutter) Cross Section – English Units							
Motor Vehicle ADT (2 Lane)		<500	500-1,000	1,000-2,000	2,000-5,000	5,000-10,000	>10,000
Motor Vehicle ADT (4 Lane)		N/A	N/A	2,000-4,000	4,000-10,000	10,000-20,000	>20,000
Motor Vehicle Speed	25 mph	SL	WOL	WOL	WOL	BL = 5 ft	Not Applicable
	30 mph	SL with sign	WOL	BL = 5 ft	BL = 5 ft	BL = 6 ft	BL = 6 ft
	35 - 40 mph	WOL	BL = 5 ft	BL = 5 ft	BL = 6 ft	BL = 6 ft	BL = 6 ft or PS = 8 ft
	45 mph and greater	BL = 5 ft	BL = 5 ft	BL = 6 ft	BL = 6 ft	BL = 6 ft or PS = 8 ft	SUP or PS= 10 ft
BL = Bicycle Lane, SL = Shared Lane, WOL = Wide Outside Lane, SUP = Shared-Use Path, PS = Paved Shoulder							

Source: Mn/DOT Bikeway Facility Design Manual

Pedestrian Characteristics

- Pedestrians
- Pedestrians with Walking Difficulty
  - Older or children
  - Persons with disabilities
    - Physical:
      - Wheelchair (manual, motorized or scooters)
      - Walkers, Crutches or Canes
    - Visual:
      - Low Vision
      - Blind (cane or guide dog)
    - Hearing:

Pedestrian Characteristics

- Mn/DOT's ADA Transition Plan

  http://www.dot.state.mn.us/ada/

- PROWAG: Public Right-of Way Accessibility Guidelines
- Many challenging and conflicting details
  - Accessible push button criteria
  - Slopes and landing areas
  - APS: Audible Pedestrian Signal "noise"

Pedestrian Design

- Pedestrian Crossing Time
- Pedestrian Waiting Time
- Poor/ Incomplete Sidewalks
- Safety
- Lighting

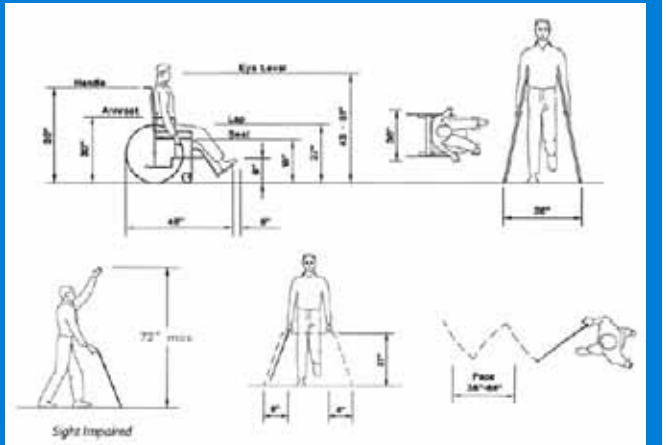


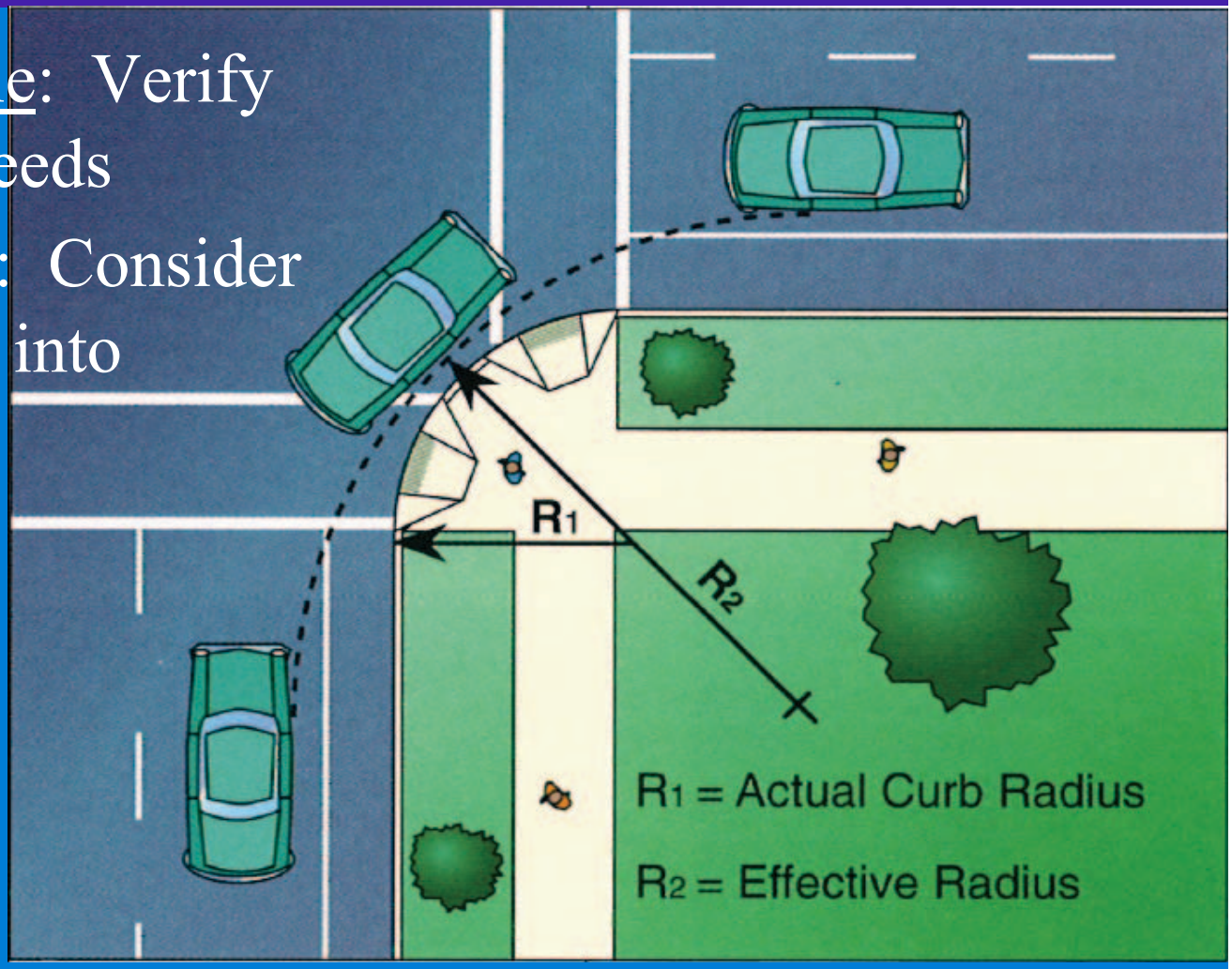
Figure 5. Spatial dimensions for people with disabilities (4).

Transit Design

- Frequency
- Access
- Safety
- Lighting
- Convenience
- Advantages

Intersection Design

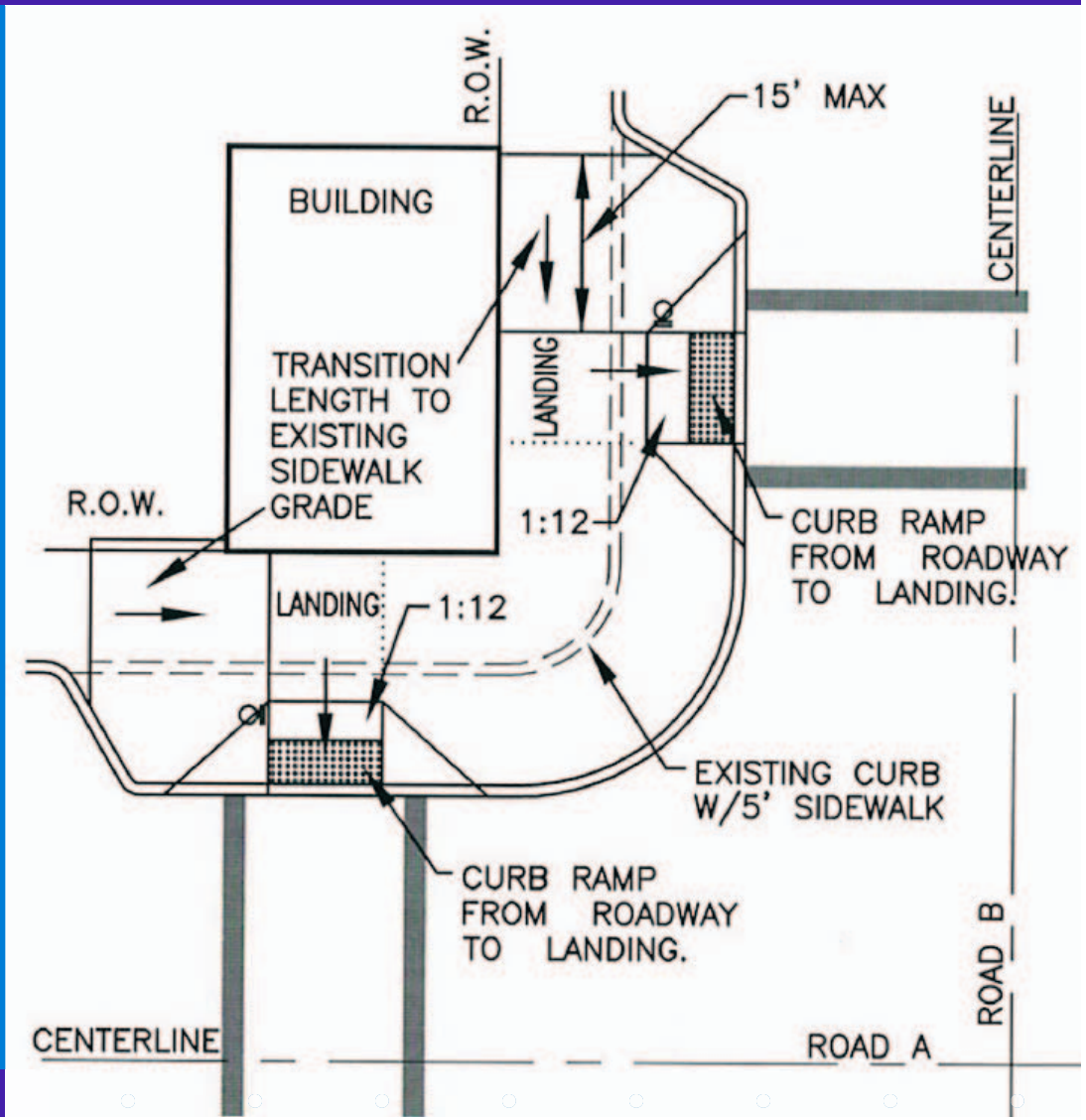
- Design Vehicle: Verify site specific needs
- Turning paths: Consider encroachment into other lanes



Source: Guide for the Planning, Design, and Operation of Pedestrian Facilities, AASHTO

Intersection Design

- Bump-outs
  - Shorten crosswalks
  - Improve pedestrian visibility
  - Provide easier ADA accessibility
  - Create maintenance concerns

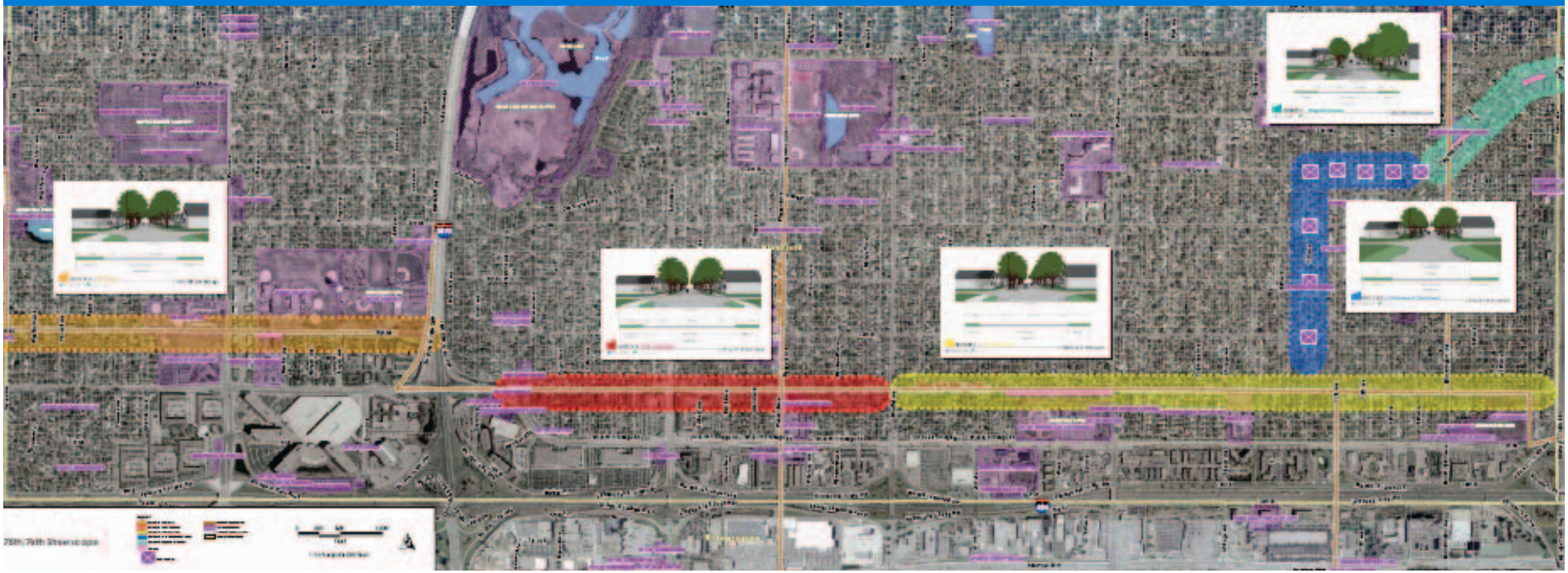


Maintenance

Maintenance

Design Example

- The project corridor is not homogeneous.
- Used a segmental approach.
- Different cross-sections were identified for each segment.



Existing 76th Street

- 7000 ADT - very straight flat street
- Neighborhood complaints of speeding
- Frequent driveways and cross streets

Design Flexibility

SECTION B | 76th Street (Alternative A)

75th/76th Streetscape

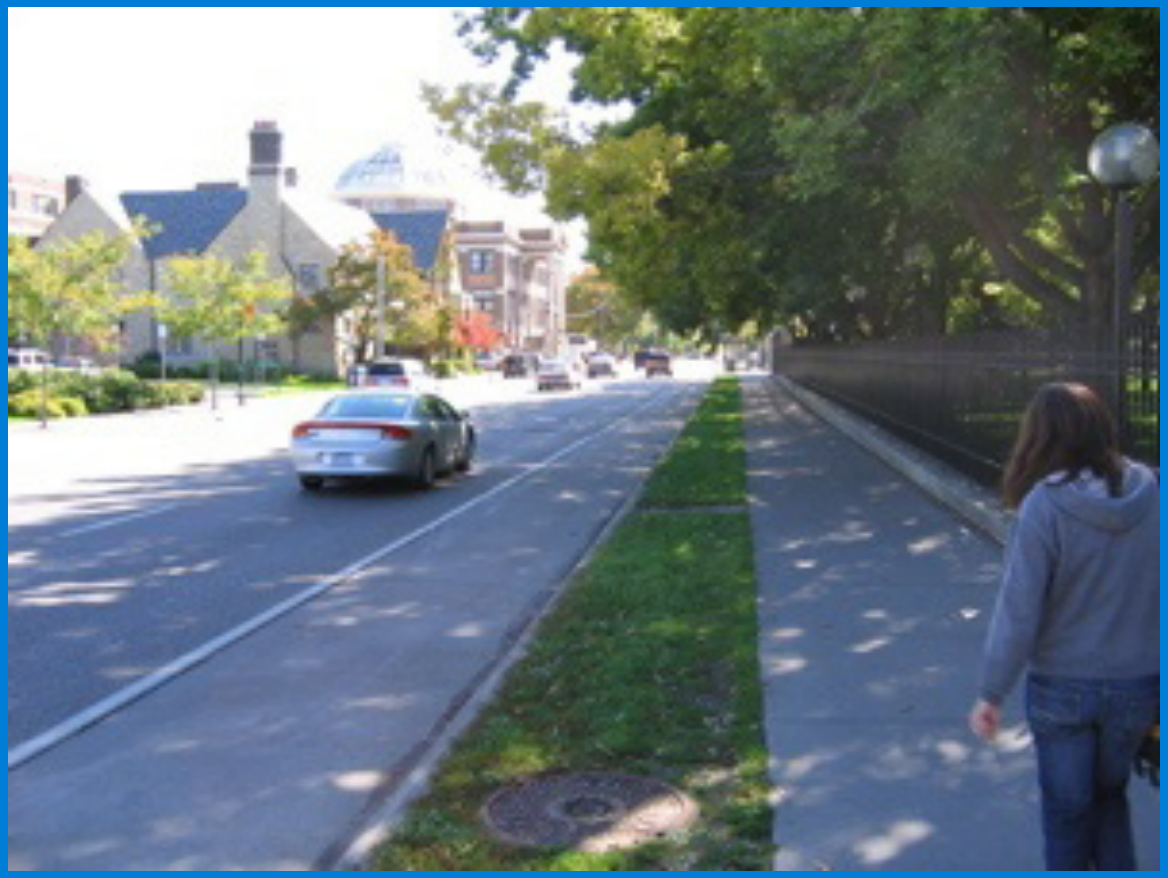
City of Richfield

Howard R. Green Company

76th Street Segment

- 2 lanes
- Off-street trail - On street bike lanes
- Narrowed lane widths

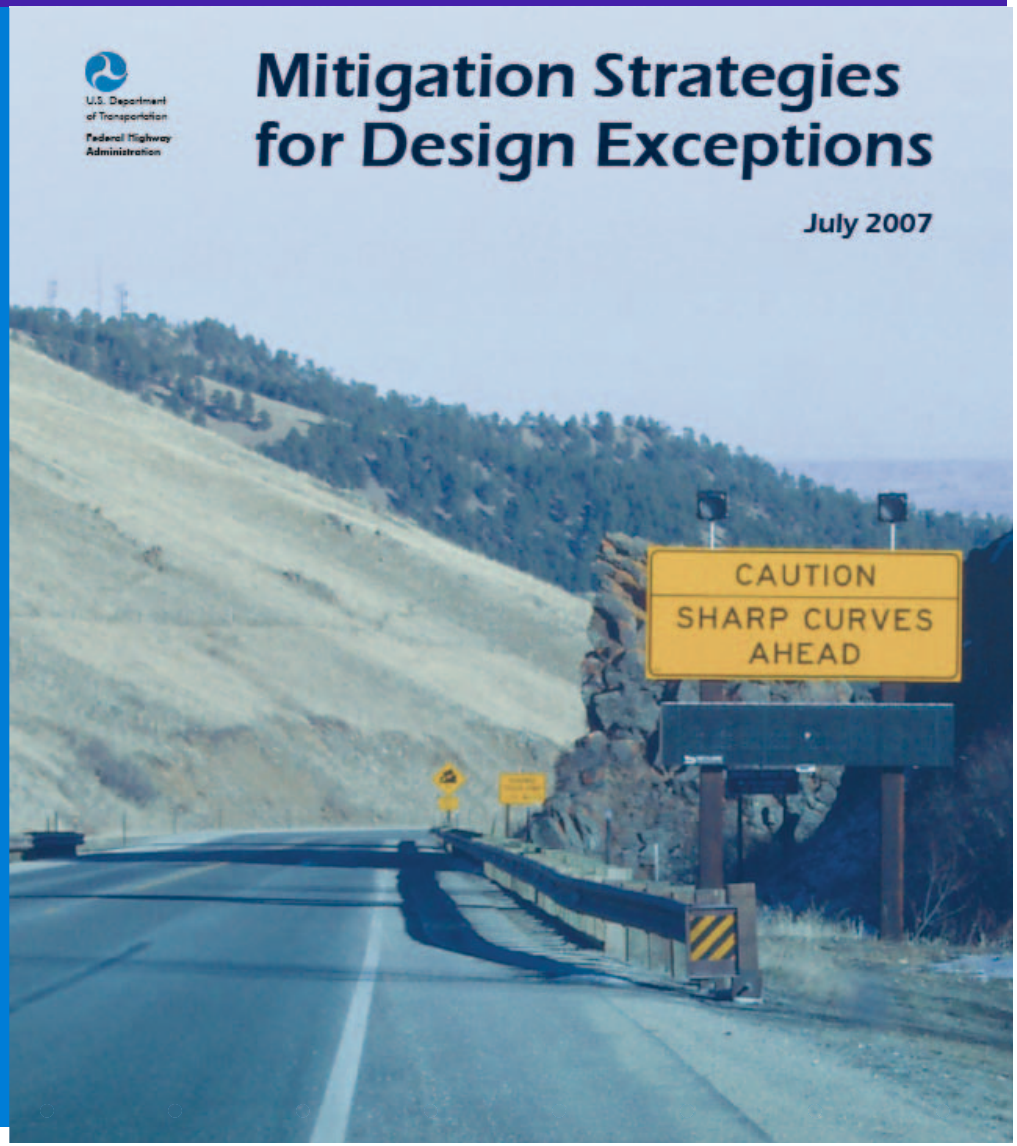
Design Details



Drainage Considerations

Design Exceptions

- Highly Recommended Resource



Design Exceptions

If the decision is made to go forward with a design exception, it is especially important that measures to reduce or eliminate the potential impacts be evaluated and, where appropriate, implemented. This guide presents and illustrates a variety of mitigation strategies, including real-world case studies from several States.

Tort Liability

1. Bring decisions you make under an umbrella of immunity
2. Document, document, document
3. Training – keep current
4. Think systematically
5. Maintain your system
6. Be more proactive about safety issues
7. Document decisions and the evaluation process
8. Consider interim measures
9. Be aware of, but not overly concerned about, tort liability

Tort Liability

- Document ALL critical design decision.
  - Why standard design was selected
  - How flexibility was used in a holistic context
  - Why Design Exception was justified

Session 8 Objectives

- What is a “Complete Street”

A street that is “acceptable” to ALL users

- Vehicles
- Transit
- Pedestrians
- Bicyclists
- Parking

Session 8 Objectives

- How we have been designing streets?

  Designed for vehicles and *if possible*, accommodated other modes

Session 8 Objectives

- How we can design “Complete Streets”
  - Measure effectiveness for all modes
  - Consider off-peak operations
  - Use design flexibility
    - Targeted Speed
    - Design Vehicles
    - Design Details