

Pedestrian & Bicycle Roadway Design – Safe, Smart and Defendable

Connecting Communities & People with Trails
2010 Workshop Series

Ottawa County Parks & Recreation Commission
August 12, 2010

Josh DeBruyn, AICP

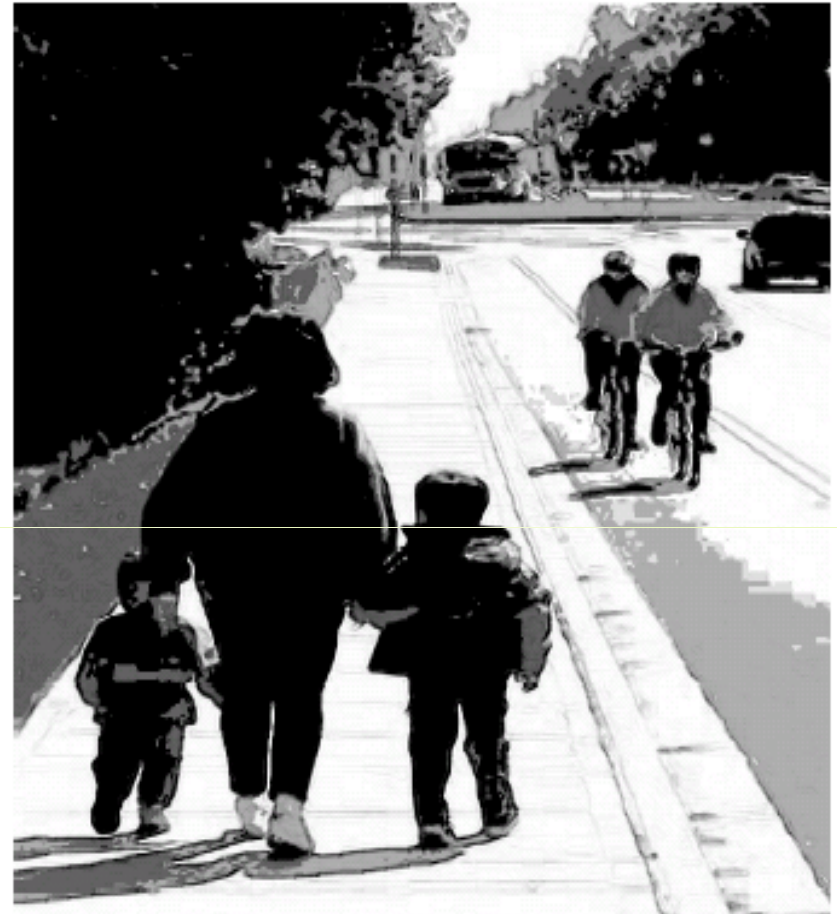
Pedestrian and Bicycle Coordinator

Michigan Department of Transportation

Developed in
Response to:



Michigan Pedestrian and Bicycle Safety Action Plan 2009-2012



Safety & Liability

Does pursuit of safety expose an agency to liability?

- **liability for action**
- **liability for inaction**
- **liability for trying something new**



Safety & Liability

Safety - Driven by Profession

Liability - Imposed by Law





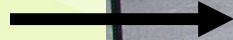
Safety

Professional best practice:

- AASHTO**
 - e.g. “The Green Book”**
- ITE / FHWA Guidelines and Research**
- MDOT Design Manuals**
- MMUTCD**
- What has worked elsewhere**

Bicyclists Belong on the Road

**Typical
crash
scenario**



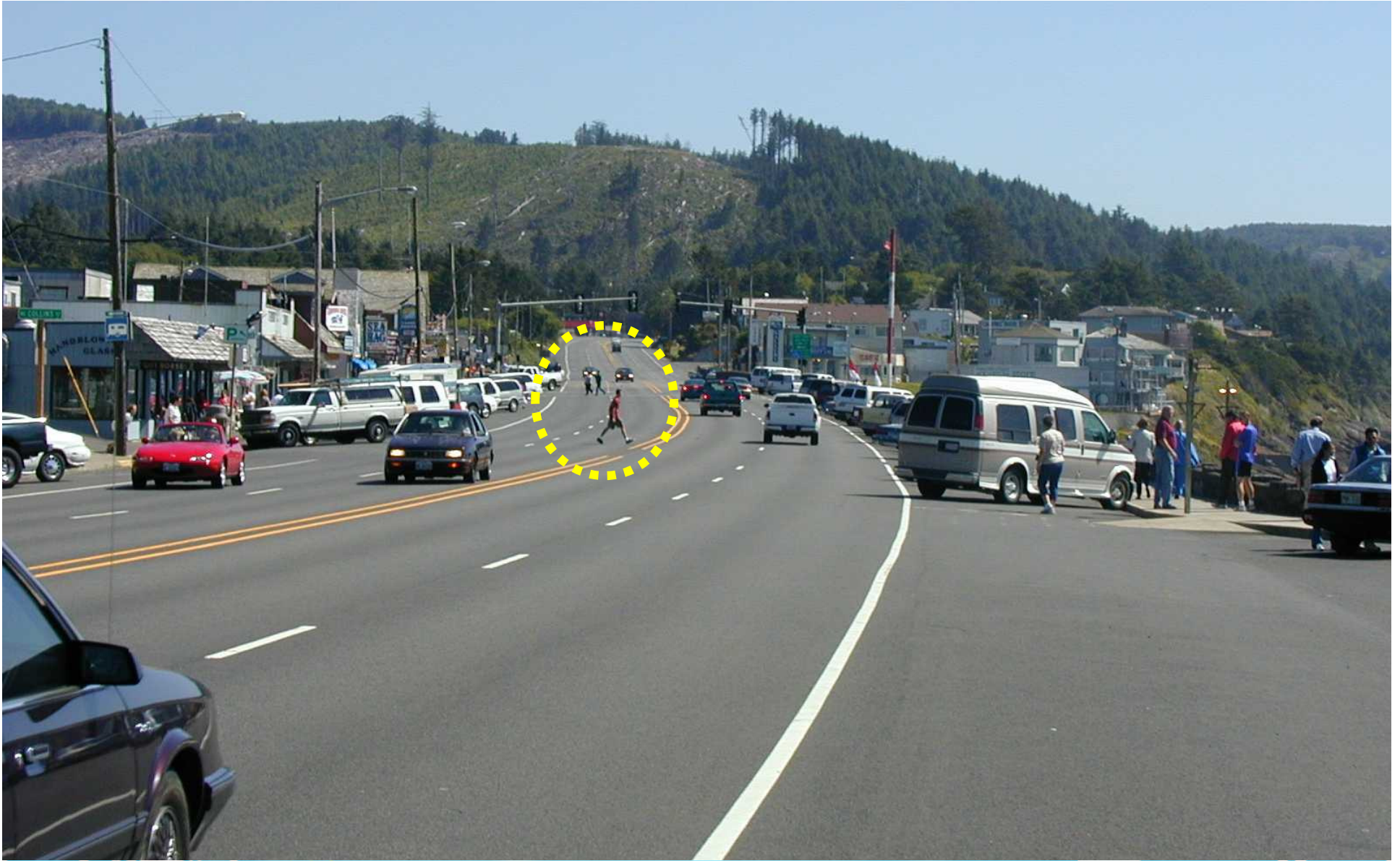
**Motorists scan roadway for vehicles,
don't often scan sidewalk**

Pedestrians won't go out of their way!



Ideally, pedestrians would cross at a controlled intersection





But the reality is quite different



When crossing opportunities are low,



Pedestrians take greater chances

Pedestrians: Safety in Numbers



More Pedestrians = Increased Driver Expectations of Encountering a Pedestrian = Increased Pedestrian Safety

What is a good pedestrian / bicycle design?

- put peds/bikes in logical travel paths
- put peds/bikes where they will be seen by motorists
- make clear to motorists where to expect peds/bikes
- calm traffic flow



Features that increase motorist expectation of bikes/peds:

- Conspicuous geometry
 - median refuge island
 - curb extensions
- Conspicuous markings/signs
 - crosswalk
 - bike lane
 - route designation



Four GOOD Design Ideas

to Enhance

Pedestrian and Bicycle
Safety



1.

BIKE LANES



They're safer than sidewalk

Bicyclist Danger Index

- Major Streets w/o Bike Lanes 1.28
 - Minor Streets w/o Bike Lanes 1.04*
 - Streets with Bike Lanes 0.50
 - Sidewalks 5.32
- (* = shared roadway) (1.0 = median)

Source: William Morita, U.W. – “Accident Rates for Various Bicycle Facilities” – based on 2,374 riders, 4.4 million miles

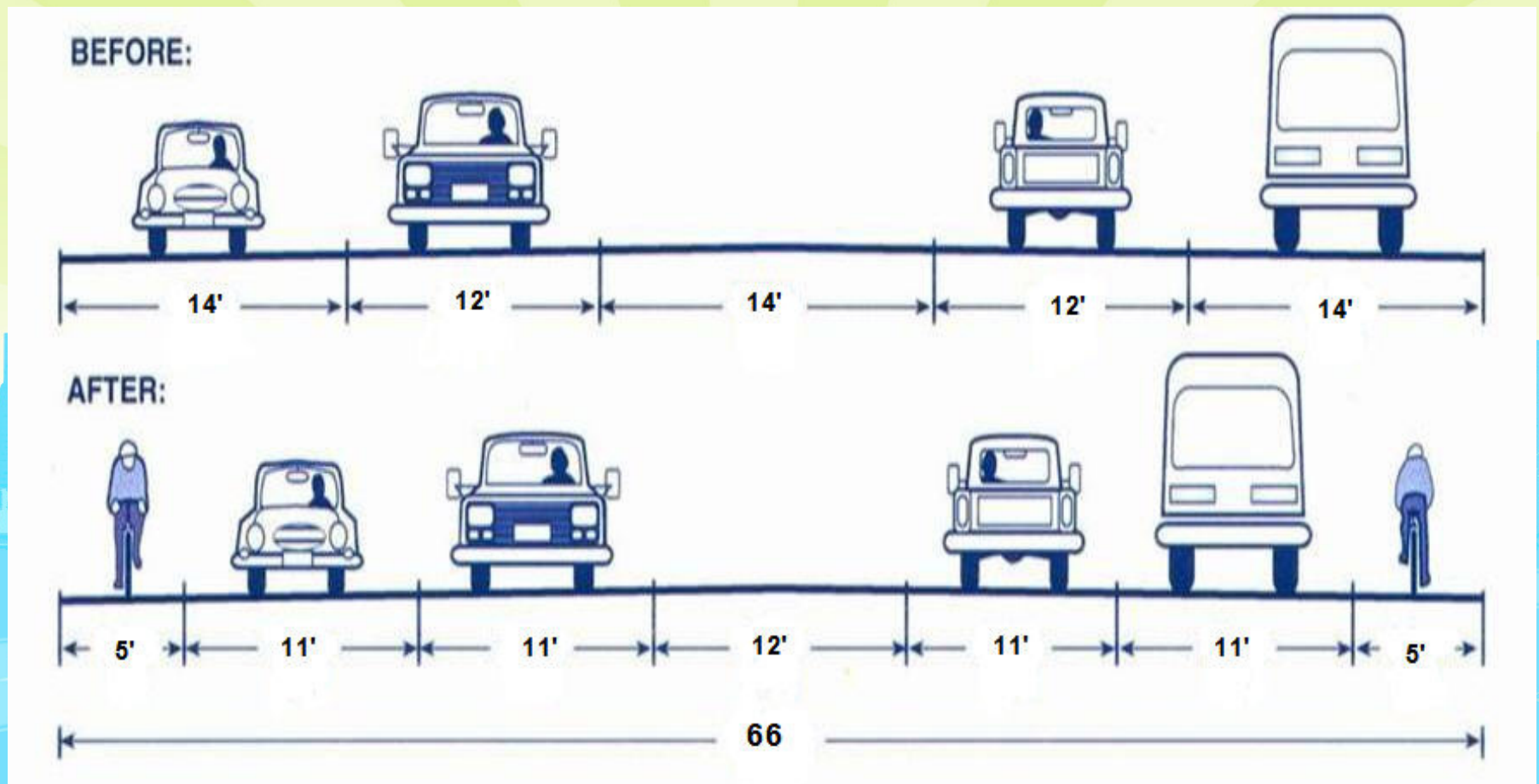


One strategy: Narrow Existing Lanes to Provide Bike Lanes

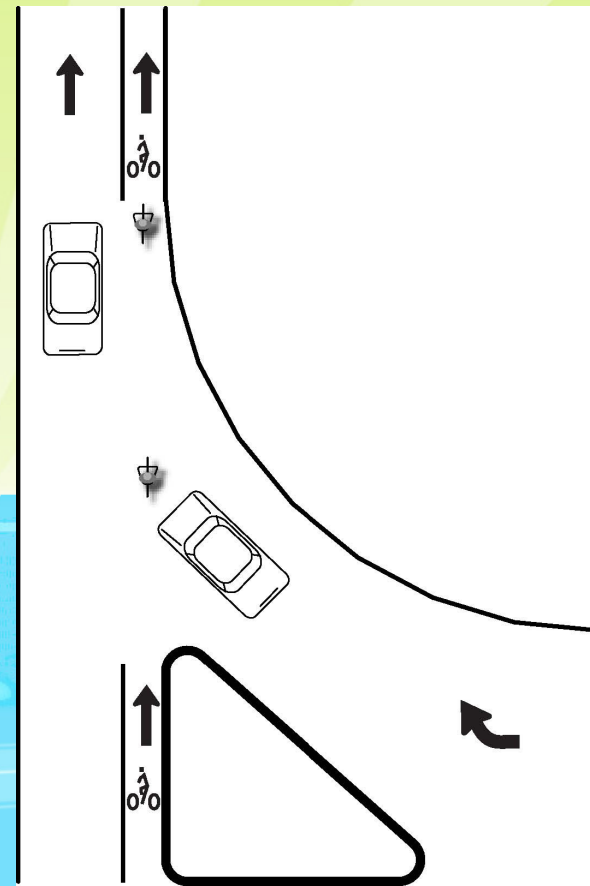
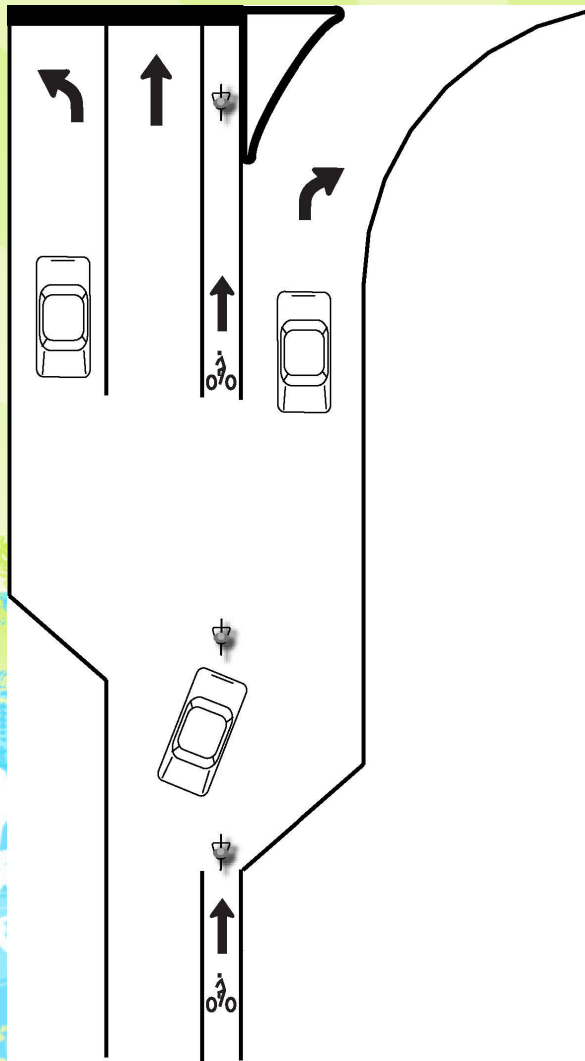


Striped Bicycle Lanes

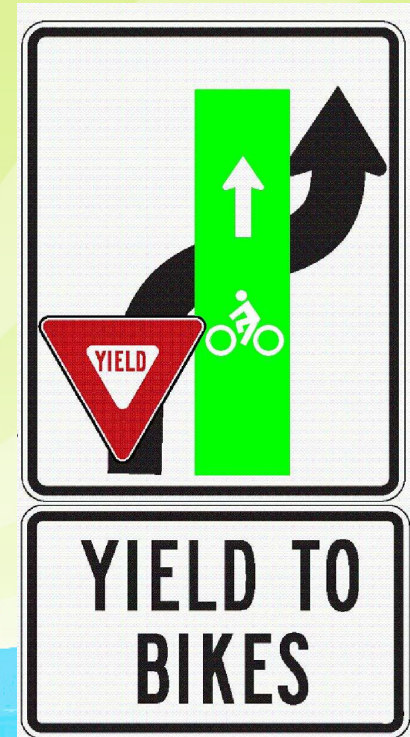
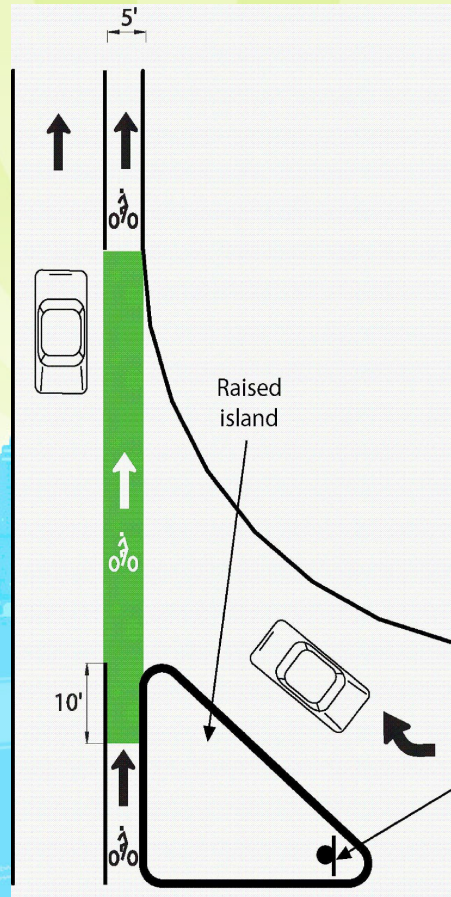
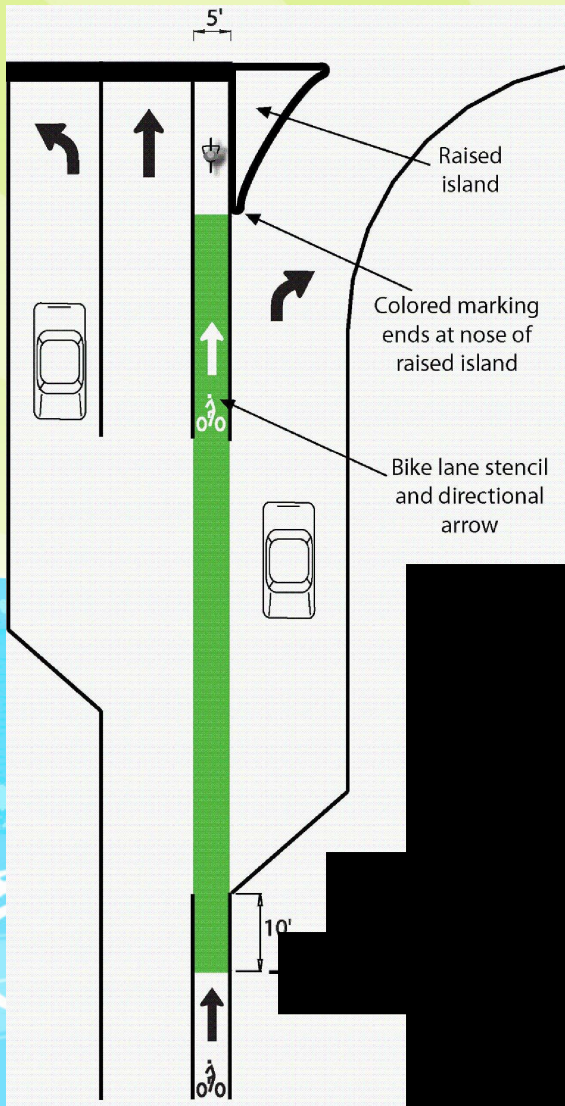
- Typically done during repaving
- Can have a traffic calming effect on multiple lane roads.



Challenge: Right Turn Lanes



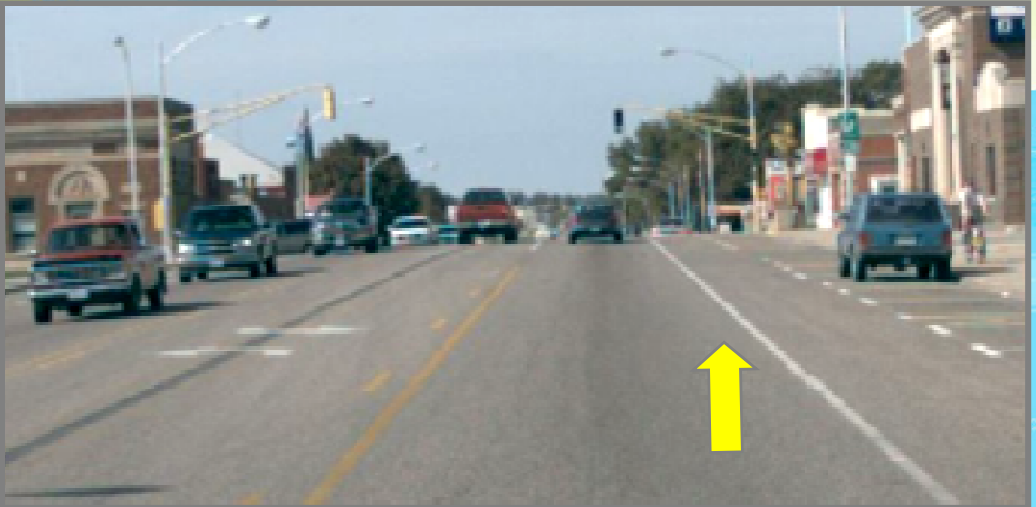
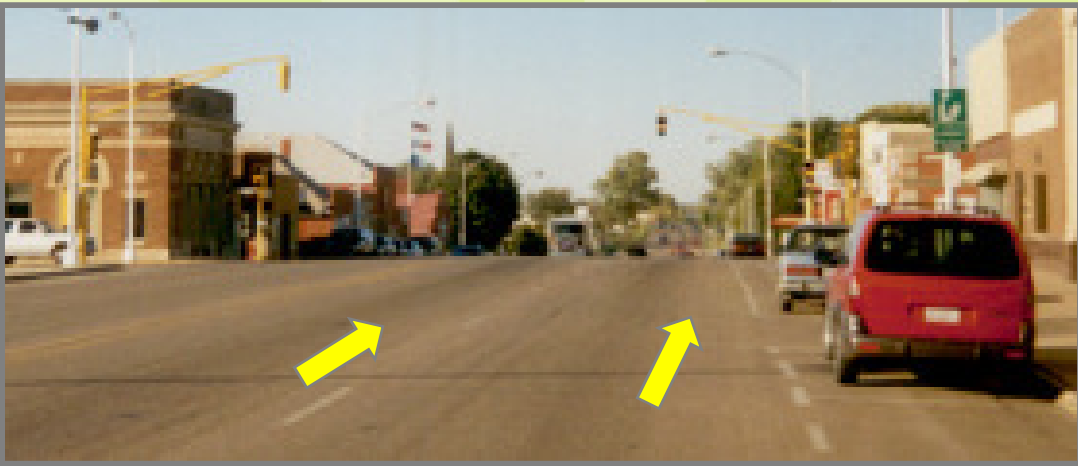
Challenge: Right Turn Lanes



Columbia, MO

2.

4-to-3 Lane Conversions - “Road Diets”



***ALL
left turns
cross one
lane only***

Michigan study – 8 corridors



E. Lansing M-43

Injury crashes

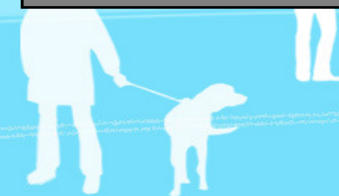


26%

Ped. Injuries



37%



Occasionally: 5-lane to 3-lane



Benefits of Road Diets for Pedestrians



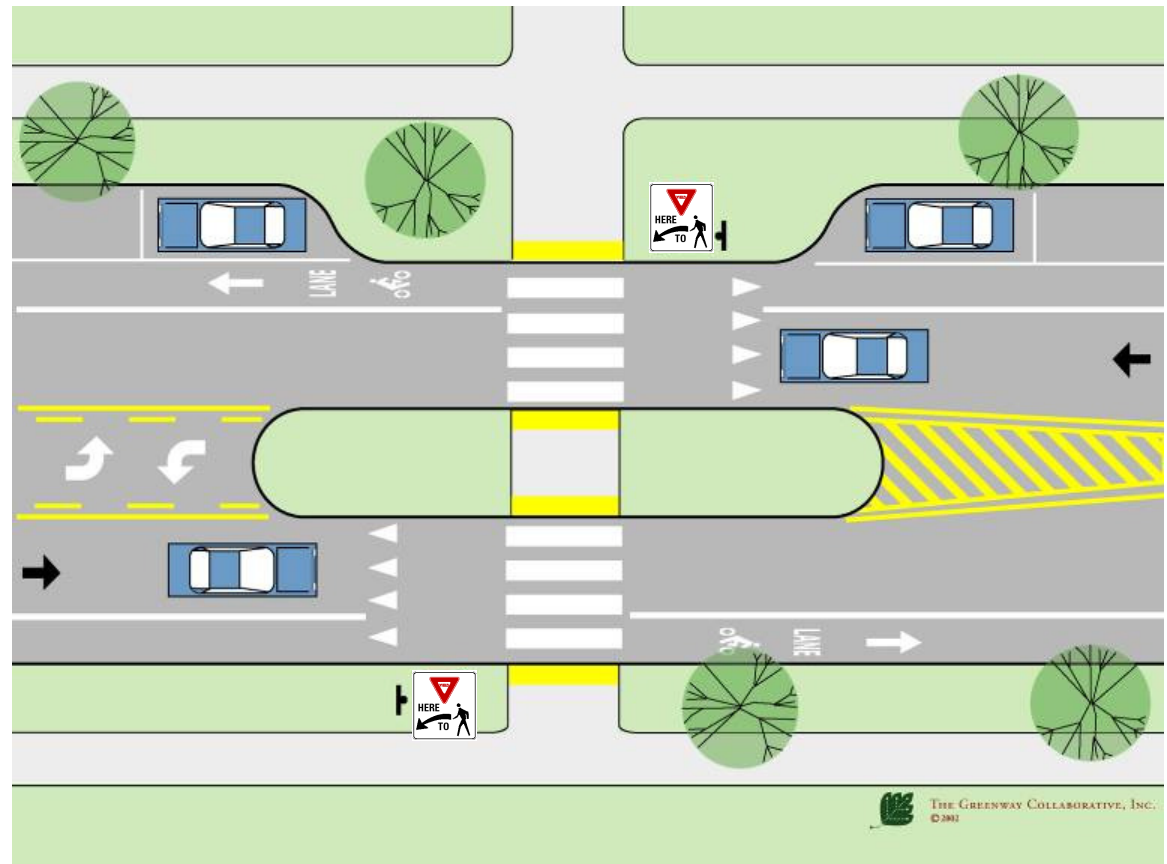
- Fewer travel lanes to cross
- With medians or crossing island: break a long crossing into 2 shorter crossings
- Reduce top end travel speeds

3.

MID-BLOCK CROSSINGS

With refuge island

- People Will Cross Anyway – Make it Safer
- No Turning Movements - No “right-hook”
- Crossing only One Direction of Travel at a Time



The alternative to mid-block crossings:

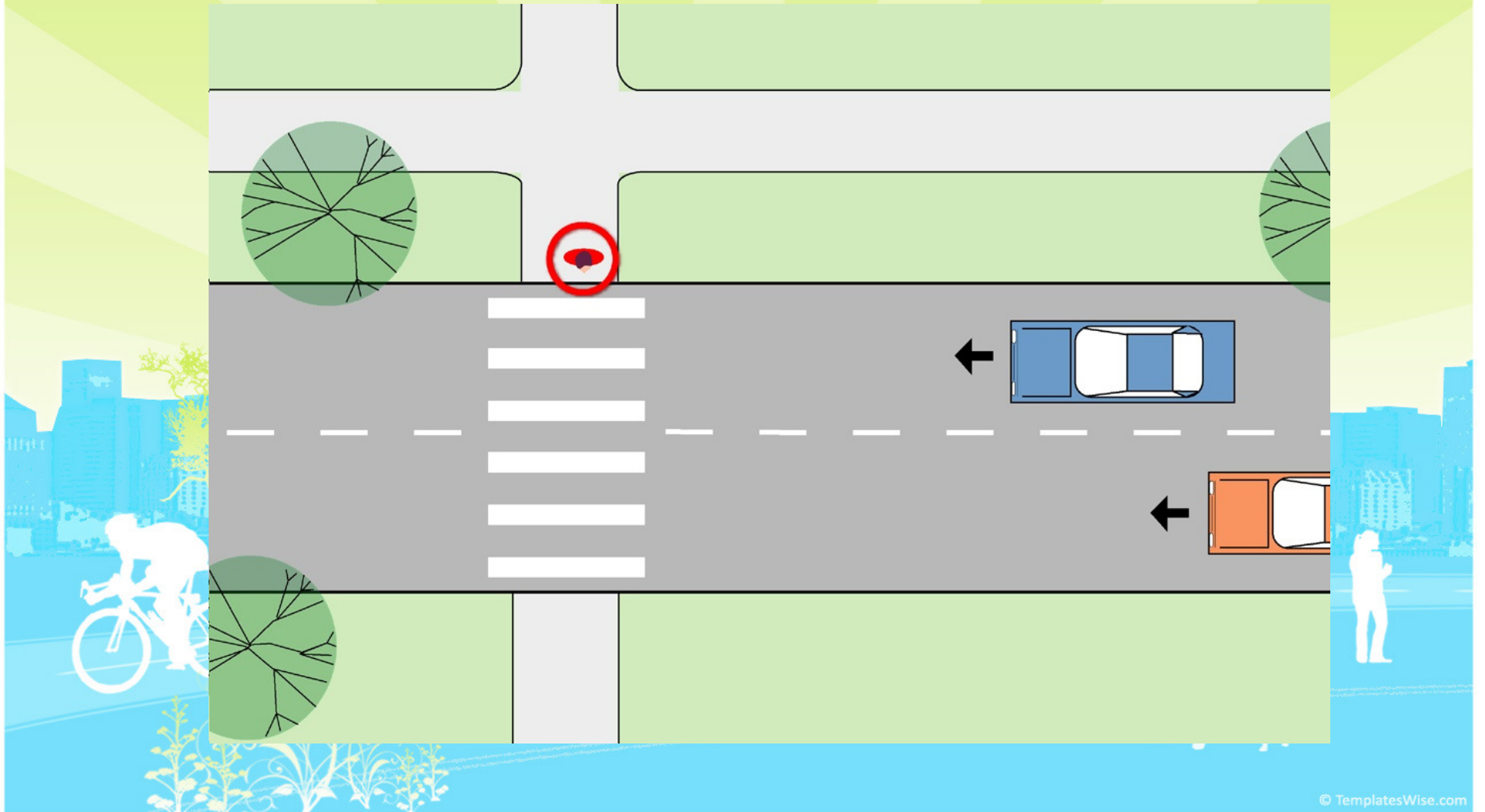


Median refuge islands — shorter and safer crossing

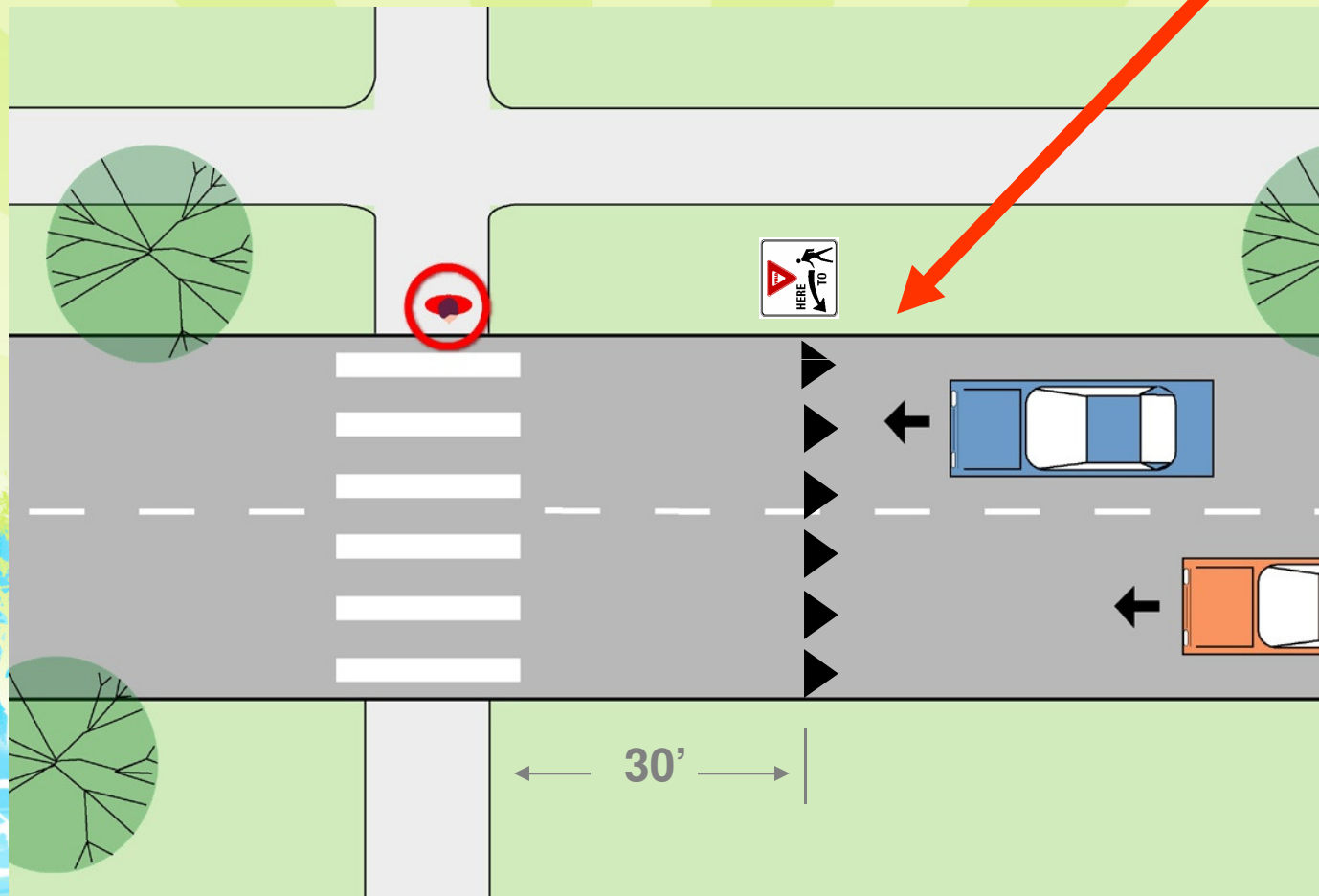


**National statistics: refuge islands reduce
pedestrian crashes by 40%**

Multiple Lanes Create a ISSUE. Multiple Threat Crash Scenario

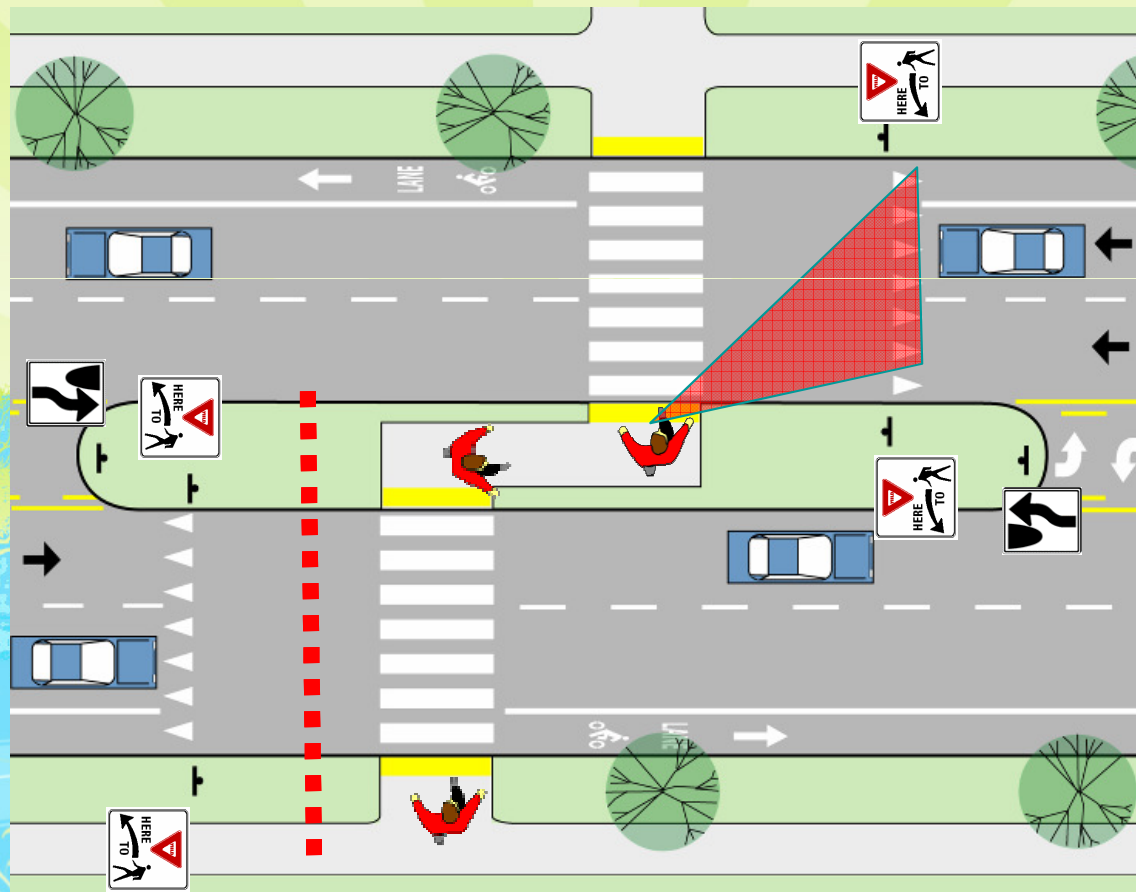


SOLUTION: Set Yield Lines Back



STAGGERED CROSSWALKS

- point pedestrians in right direction

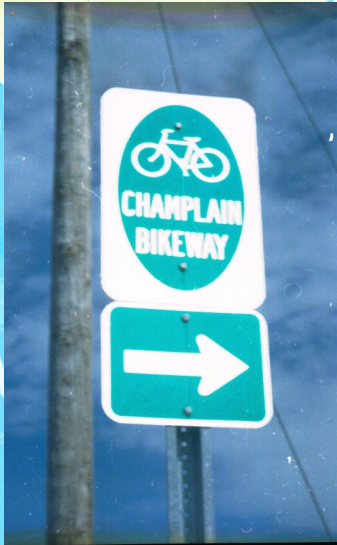


4.

Signing Rural Roads as Bike Routes



New York State Bikeway



Shoulders as Bicycle Facilities

AASHTO: Some rural highways are used by touring bicyclist for intercity and recreational travel.

Paved shoulders can significantly improve the safety and convenience of bicyclists and motorists along such routes.



Bike Routes

- Wayfinding tool - not a facility
 - Guide to specific destinations
 - Use strategically for less obvious routes



State – significant trails:

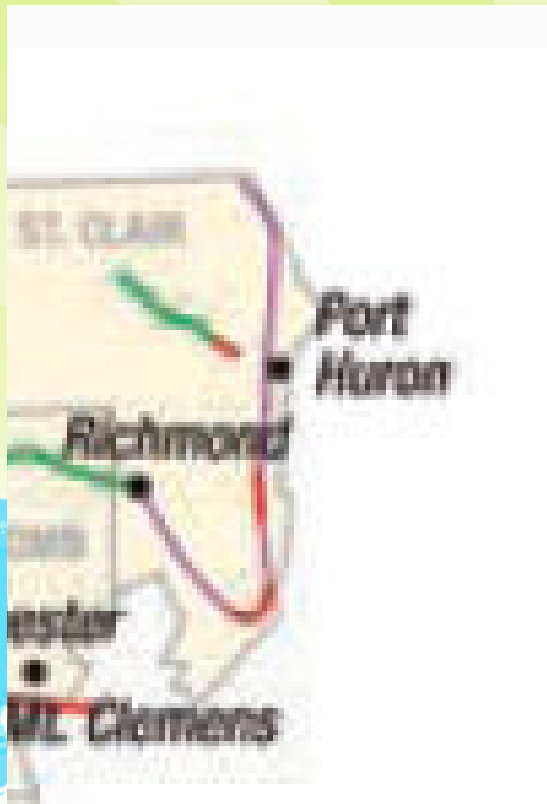
Michigan Airline Trail



Southern Michigan Cross State Trail

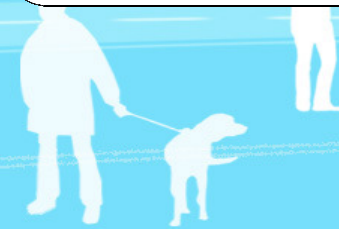
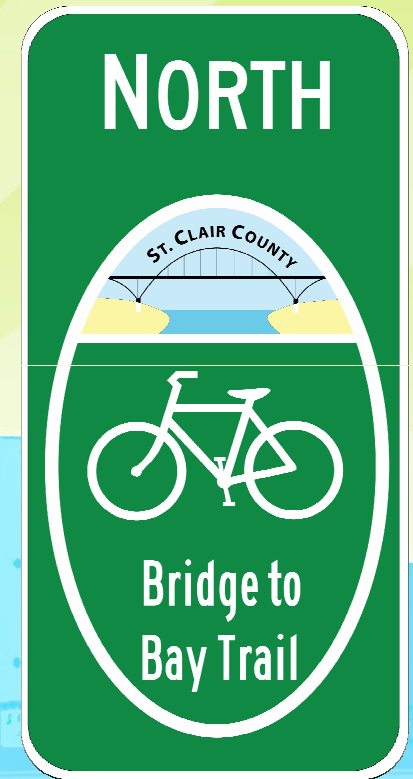


County routes:



Bridge-to-Bay trail

St. Clair county

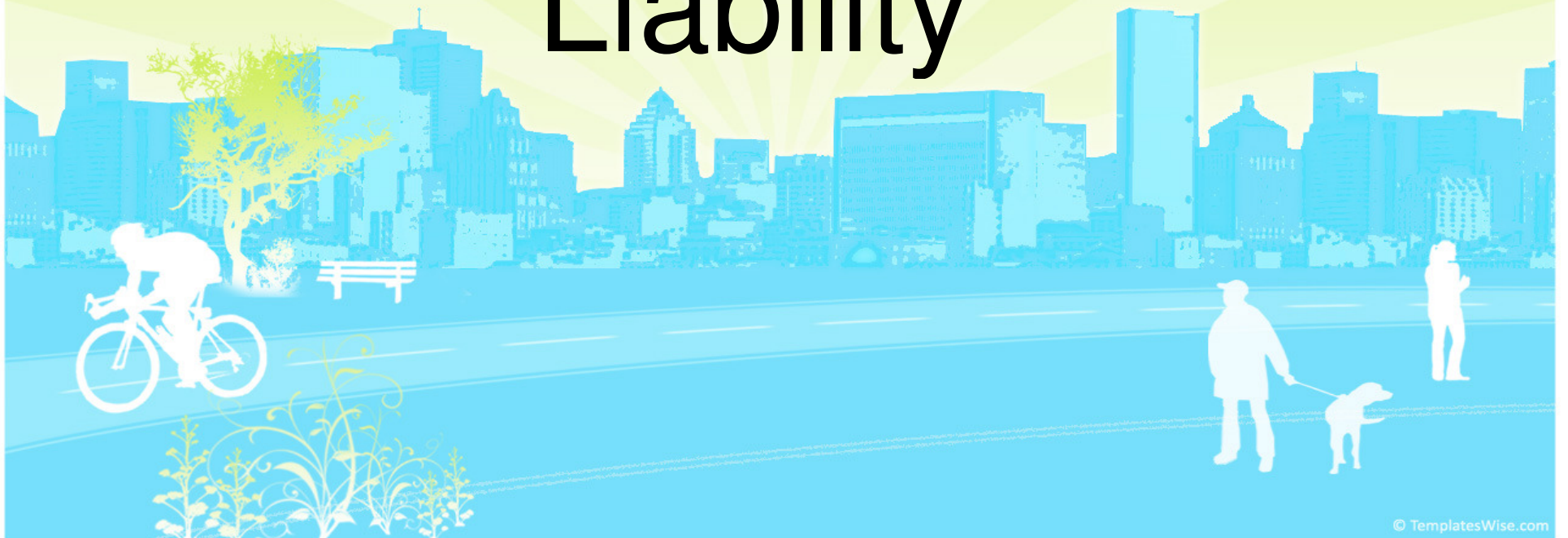


Are these legally defensible?

- Bike Lanes - ?
- 4 – 3 Lane Conversions (Road Diet) - ?
- Mid-Block Crossings - ?
- Signing Rural Bike Routes - ?



Road Agency Liability



Highway Exception:

The Highway Exception:

“...each governmental agency shall maintain the highway in reasonable repair so that it is reasonably safe and convenient for public travel.”



Governmental Tort Liability Act –

MCL 691.1402(1)

Highway Exception:

“The purpose of the highway exception is not ... an unrealistic duty to ensure that travel upon the highways will always be safe. ... [W]e discern that the true intent of the Legislature is to impose a duty to keep the physical portion of the traveled roadbed *in reasonable repair*.”

-Wilson v Alpena Co Rd Comm (2006)



Highway Exception:

“Repair and Maintain” only:

- **No general duty to make road “safe”**
- **Repair broken or dilapidated surface**
- **No requirement to “improve, augment or expand”**
- **Maintain what was originally built**



Nawrocki v Macomb Co Rd Comm (2000)

No liability for:

- **Design or redesign defects:**

“The plain language of the highway exception to governmental immunity provides that the road commission has a duty to repair and maintain, not a duty to design or redesign.”

*Hanson v Board of Rd Commissioners of
Mecosta County (2002)*



A stylized, blue-tinted city skyline with various skyscrapers and buildings, set against a light green background with diagonal rays of light. The text "No liability for:" is centered over the skyline.

No liability for:

- **Lane width**
- **Shoulder width**
- **Normal cross slope**
- **Horizontal curvature**
- **Super elevation**
- **Transition area**
- **Vertical curvature**
- **Vertical clearance**
- **Stopping sight distance**
- **Bridge width**
- **Horizontal clearance**
- **Structural capacity**

No liability for:

- **Traffic signs and signals:**

“...state or county road commissions have no duty, under the highway exception, to install, maintain, repair, or improve traffic control devices, including traffic signs.”

Nawrocki v Macomb Co Rd Comm (2000)

“The highway exception does not impose a duty on municipalities to install, maintain, repair, or improve traffic signals.”



Johnson-McIntosh v City of Detroit (2006)

No liability for:

- **Street light poles:**

“...streetlight poles, like “traffic signals and signs,” are not part of the definition of “highway”...(under the highway exception).”

Weaver v Detroit (2002)

[relying on Nawrocki]



No liability for:

- **Accumulations of ice and snow**

“...the accumulation ... of ice and snow on a sidewalk, regardless of whether it accumulated through natural causes or otherwise, does not constitute a "defect" in the sidewalk”

Estate of Buckner v. City of Lansing (2008)



Liability limited to:

Vehicular travel lanes:*

“The duty ...extends only to the improved portion of the highway designed for vehicular travel and does not include sidewalks, trail ways, crosswalks, or any other installation outside of the improved portion of the highway designed for vehicular travel.”



***Applies to state and county roads only**

Grimes v MDOT (2006)

Liability limited to:

- Road surface “defects”:

Maintenance conditions that “... a reasonable road commission would understand ...posed an unreasonable threat to safe public travel...”

Wilson v Alpena Co Rd Comm (2006)



Liability for road surface conditions:

- Rutting**
- Potholes**
- Manhole covers**
- Dilapidated road surface**
- Traveled (vehicle) lane edge drops**
- Missing storm sewer grates**



No liability for:

- Rough or uneven surfaces

“Nearly all highways have more or less rough and uneven places in them, over which it is unpleasant to ride; but because they have, it does not follow that they are unfit and unsafe for travel.”



Wilson v Alpena Co Rd Comm (2006)

Are these legally defensible?

- Bike Lanes - **YES**
- 4 – 3 Lane Conversions (Road Diet) - **YES**
- Mid-Block Crossings - **YES**
- Signing Rural Bike Routes - **YES**

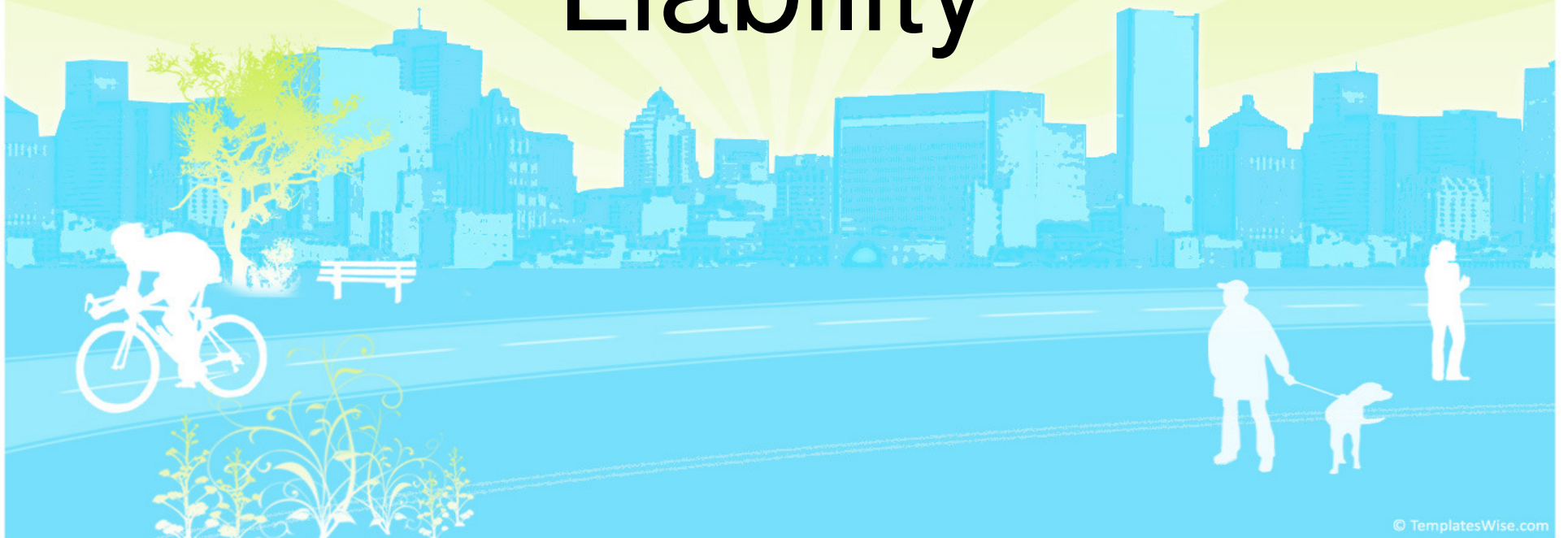


No Agency Liability Because:

- No Design liability
- All involve signs, signals, or features outside the road bed surface
- Recognized as a reasonable measure to address a specific safety problem
- Empirical evidence it promotes safer travel



Public Employee Liability



Public Employee Liability

- **Employee/agent immune from tort liability if all the following conditions are met:**
 - Employee acting within the scope of his or her authority.
 - Engaged in the exercise or discharge of a governmental function.
 - Conduct does not amount to **gross negligence** that is the **proximate cause** of the injury or damage.

MCL 691.1407 (2)



Public Employee Liability

Gross Negligence means conduct so reckless as to demonstrate a substantial lack of concern for whether an injury results.

- Examples:
 - Stop sign down or covered by vegetation
 - Employee running a stop sign or speeding while talking on cell phone



Public Employee Liability

“The” proximate cause of the injury or damage:

– **Supreme Court defined as “the most immediate, direct and efficient cause of “damage”**

– **Only one proximate cause**

Robinson v Detroit (2000)



Are these legally defensible?

- Bike Lanes - **YES**
- 4 – 3 Lane Conversions (Road Diet) - **YES**
- Mid-Block Crossings - **YES**
- Signing Rural Bike Routes - **YES**



Risk of public employee liability is slight because:

- No gross negligence:
 - Recognized as a reasonable measure to address a specific safety problem
 - Empirical evidence it promotes safer travel
- More than a single cause of the accident and injury
 - Injured driver error
 - Other driver error



LIABILITY SUMMARY:

- **AGENCY liability risk low:**
 - Repair and Maintain
 - No design liability
 - Road bed surface only
- **PUBLIC EMPLOYEE liability risk also low:**
 - Gross negligence standard
 - “The” proximate cause requirement



Thank You
Questions?



MDOT'S MISSION

Providing the highest quality integrated transportation service for economic benefit and improved quality of life.

