

Pedestrian & Bicycle Roadway Design – Safe, Smart and Defendable



Josh DeBruyn

Bicycle and Pedestrian Coord.
Michigan Dept. of Transportation

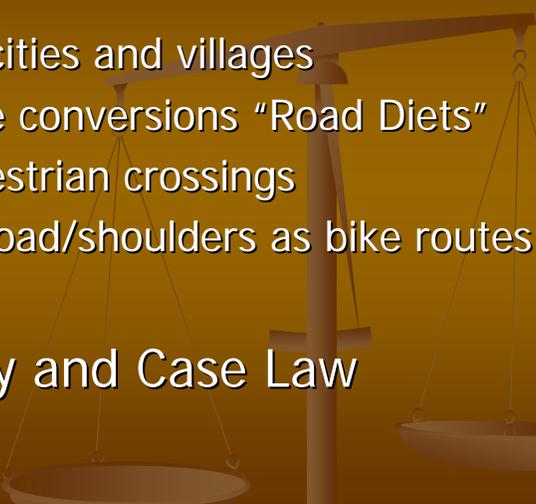
Ronald W. Emery

Transportation Division
Dept. of Attorney General

Deirdre Thompson

Bicycle and Pedestrian Safety Engineer
Michigan Dept. of Transportation

Part I: 4 – Safe Design Features

- a) Bike Lanes in cities and villages
 - b) 4 lane – 3 lane conversions “Road Diets”
 - c) Mid-block pedestrian crossings
 - d) Signing rural road/shoulders as bike routes
- 

Part II: Liability and Case Law

Developed in
Response to:

Michigan Pedestrian and Bicycle Safety
Action Plan 2009-2012



http://www.michigan.gov/documents/Ped-BicycleSafety3-7-06_162714_7.pdf

Developed with input from:

- Federal Highways Administration
- Michigan Department of Transportation
- Michigan Department of Attorney General
- Michigan State Police
- AAA
- The Greenways Collaborative

Safety & Liability

Does pursuit of safety expose an agency to liability?

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

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

What is good pedestrian/bicycle design?



A design that facilitates safe movements for all users, both motorized or non-motorized!

Features that increase motorist expectation of bikes/peds:



- Conspicuous geometry
 - * crossing island
 - * curb extensions
- Conspicuous markings/signs
 - * crosswalk
 - * bike lane
 - * route designation

Bicyclists Belong on the Road

Typical
crash
scenario



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

SOURCE: The Greenway Collaborative, Inc. www.greenwaycollab.com

Ideally, Pedestrians would cross at a controlled intersection





But the reality is quite different

PEDESTRIANS WON'T GO
OUT OF THEIR WAY!



Pedestrians: Safety in Numbers



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

The Greenway Collaborative, Inc. www.greenwaycobb.com

Pedestrians: When Numbers are Low



Just run like heck...

Four GOOD Design Ideas
to Enhance
Pedestrian and Bicycle Safety

1. BIKE LANES



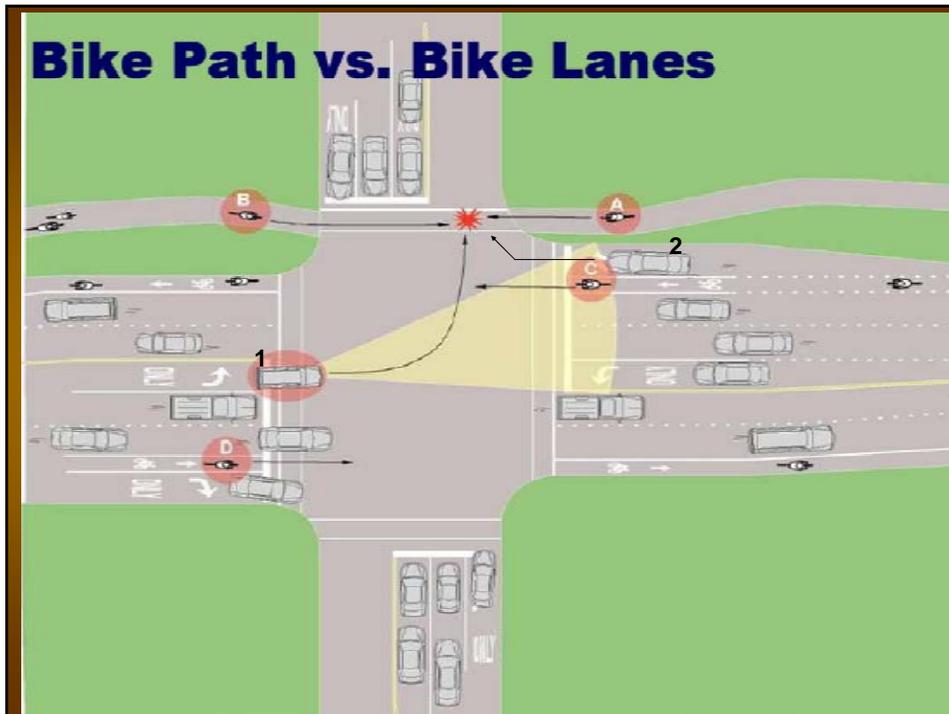
They're safer than sidewalk

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

Bike Path vs. Bike Lanes

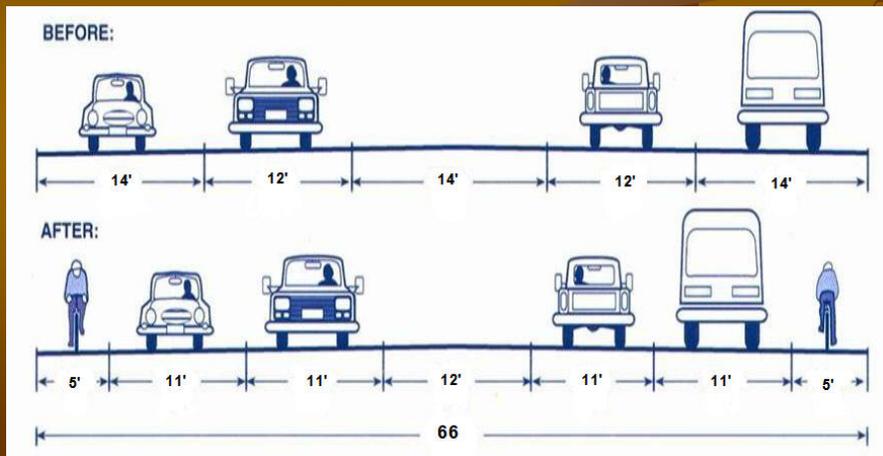


SOLUTION: Narrowing Existing Traffic Lanes to Provide Bike Lanes



Striped Bicycle Lanes

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



2.

4-to-3 Lane Conversions - "Road Diets"



Iowa study:
30 locations
14 corridors

24%
Crash
Reduction

Michigan study – 8 corridors



Injury crashes
↓ 26%

Ped. Injuries
↓ 37%

E. Lansing M-43

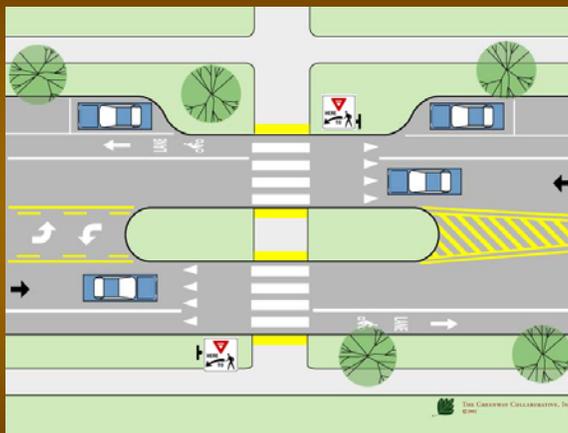


Benefits of Road Diets for Pedestrians

- Reduce the number of travel lanes to cross
- Eliminate or reduce “multiple threat” crash types
- Install medians or crossing island to break a long crossing into 2 shorter crossings
- Reduce top end travel speeds
- Increase sidewalk buffer from travel lanes (parking or bike lane)

3. MID-BLOCK CROSSINGS

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



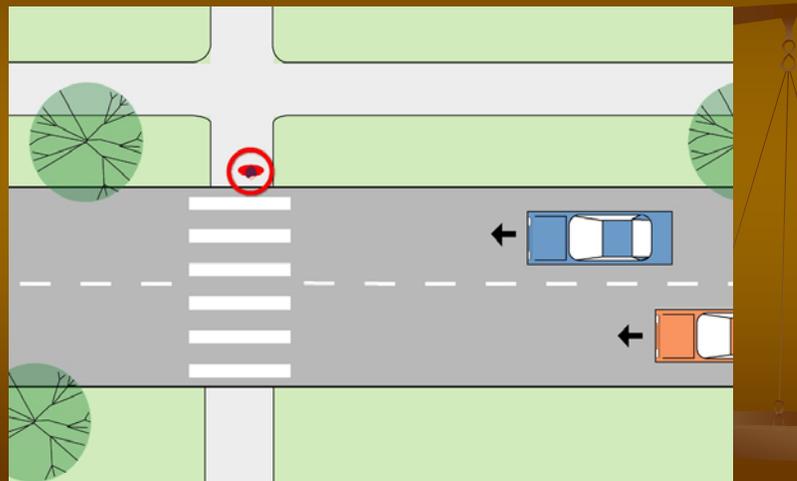
Crossing Islands are a Design Feature and Do Not Increase Liability for Road Agencies

Median refuge islands — shorter and safer crossing

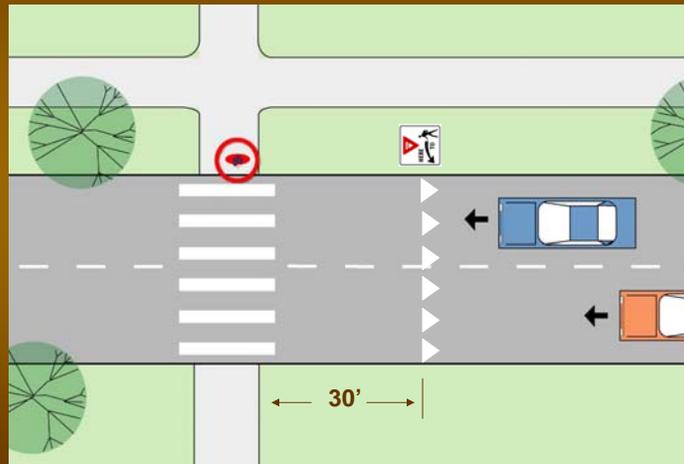


National statistics: refuge islands reduce ped. crashes by up to 40%

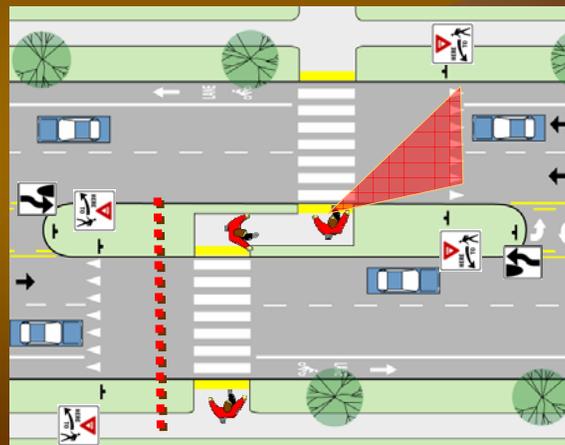
ISSUE: Multiple Lanes Create a Multiple Threat Crash Scenario



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
- Route should be appropriate for bicyclists
 - Low volume/speed road
 - Existence of bike lanes, paved shoulder



AASHTO / Adventure Cycling –
US Bicycle Route Vision

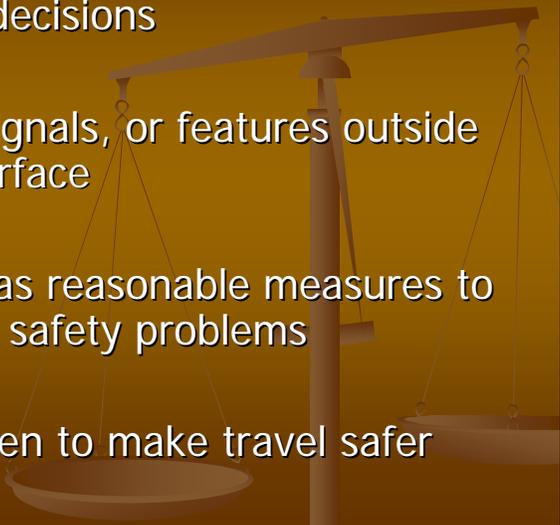
Southern Michigan Cross State Trail



Are these legally defensible?

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

Because they all...

- Involve design decisions
 - Involve signs, signals, or features outside the road bed surface
 - Are recognized as reasonable measures to address specific safety problems
 - Empirically proven to make travel safer
- 

Road Agency Liability

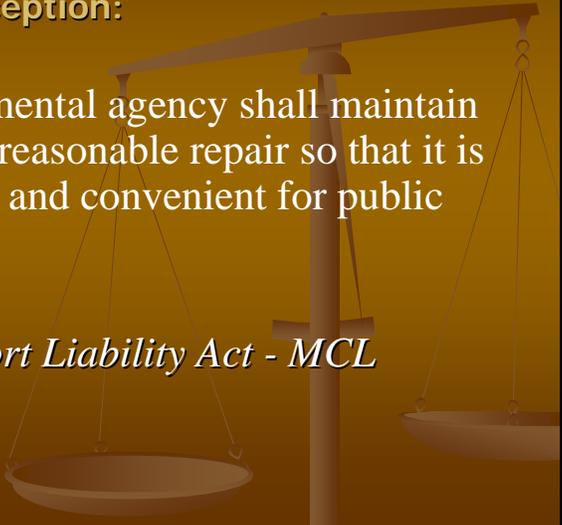
A faint, stylized illustration of a balance scale is visible in the background of the slide, positioned to the right of the text.

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)*

A faint, stylized illustration of a balance scale is visible in the background of the slide, positioned to the right of the text.

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:

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)

No liability for:

■ Traffic signs and signals:

“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:

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 Comm'rs of Mecosta County (2002)

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.”

Grimes v MDOT (2006)

*Applies to state and county roads only

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)

Highway Exception :

Risk is low because exception is limited:

- Only a duty to repair and maintain
- No design liability
- Excludes signs, signals and structures outside the road surface
- Liability for only unreasonably unsafe defects

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
- 

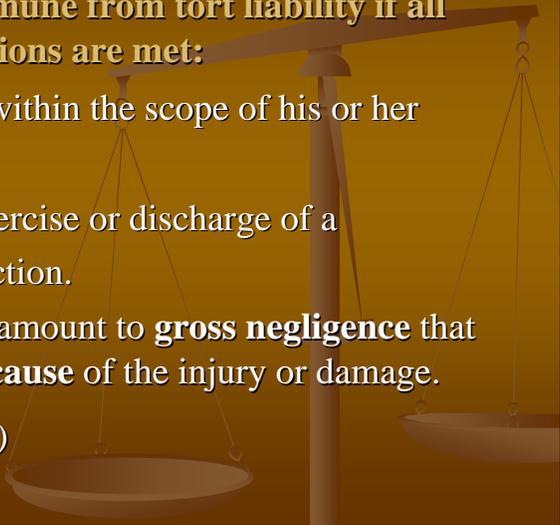
No liability for:

- 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
- 

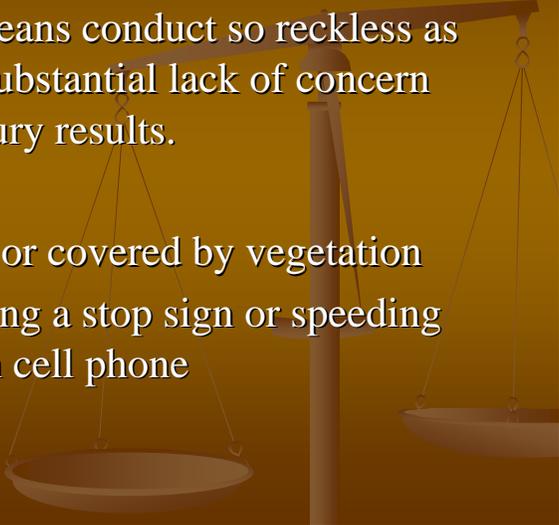
Individual Employee Liability

A faint, stylized image of a balance scale is visible in the background of the slide, positioned to the right of the text.

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)
- 
- A faint, stylized image of a balance scale is visible in the background of the slide, positioned to the right of the text.

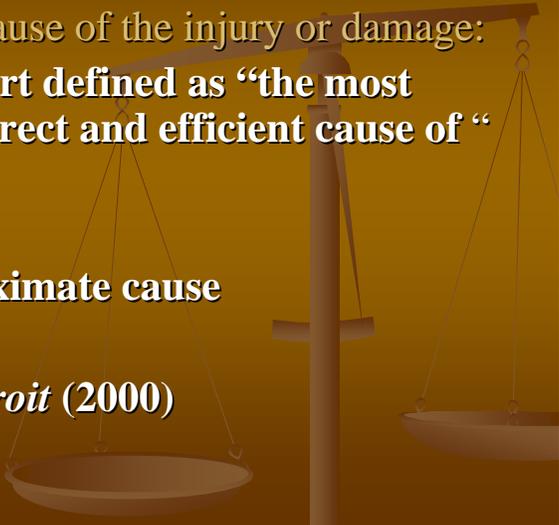
Public Employee Liability



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)

Risk of employee liability-slight

- No gross negligence:
 - Recognized as a reasonable measure to address a specific safety problem
 - Empirical evidence it promotes safer travel

Risk of employee liability-slight

- Proximate causation
- 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
 - **EMPLOYEE liability risk also low:**
 - Gross negligence standard
 - “The” proximate cause requirement
- 

Are these legally defensible?

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

Thank You
Questions?



MDOT'S MISSION

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



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)*