II. Getting Across the Street
Intersections & Crosswalks
Up to 30% of Residents in Your Community Do Not Have Direct Access to an Automobile
Would you want to try crossing this road?
Crossing Major Streets

“They widened the road and made it impossible to cross”
People want a safe place to raise a family. This includes safe and convenient walking trips to schools.
There are Better Options - We Have Choices
Build More Roads
Good intersection characteristics:

- Tight
- Simple
- Slow speed
- Good visibility – maybe... ?
- Easy to understand
- If complex, break it up
A Tight Curb Radius Reduces Turning Speed

Pedestrian Exposure Time is Reduced
Effect of Large Radius on Drivers

They drive fast...
Keeping it Tight

Curb Radii

R₁ = Actual Curb Radius
R₂ = Effective Radius
Radius affects:

- Intersection geometry
- Crossing distance
- Crosswalk placement
- Ramp placement
Truck Turns an Issue
Consider the Design Vehicle
Acceptable Receiving Lane
Stop Bar Setback
Islands at intersection reduce crossing distance & separate conflicts
Which Crossing Island is Correctly Designed?
Long Approach Tail = Good Design
Design of Refuge Islands

Delineate with Curbs, Guideposts, Signs
Long Approach Tail = Good Design
RIGHT-TURN SLIP LANE DESIGN

**OLD Way**

- High speed, low visibility of pedestrians, a real head turner

**New proposal**

- Vehicle speeds 14 to 18 mph, good visibility of pedestrians

**Wide Angle**

- 55 to 60 degree angle between vehicle flows.

**Tighter angle**

- 20° 20°
RIGHT-TURN SLIP LANE

Cut through medians and islands for pedestrians

50 to 60 degree angle between vehicle flows.

25 to 40 feet radius depending on design vehicle

One car length back

150 to 275 feet radius

Long radius followed by short

Bicycle lane
Curb Extensions
Curb Bulbs Reduce the Crossing Distance
Maximum Width of a Curb Bulb: Six Feet

Curb Bulbs Improve Sight Distance
Paint Is Your Friend
Paint is your friend
Curb Realignment

Safer for Everyone
Avoid Double Right Turns
Double Left Turns

Poor Design Invites Wrong Behavior
Multiple Lane Threat
Advance Stop Bar – helps prevent “Multiple Threat” crashes

Problem: Car 1 stops to let pedestrian cross; car 1 masks car 2, which doesn't stop, and hits pedestrian at high speed.

Solution: place advance stop bar, so car 1 stops further back; car 1 no longer masks car 2, which can see and be seen by pedestrian.
Crossing Islands
Denmark – Lower Cost Solution
Crossing Islands
Medians Provide Refuge For Pedestrians
## Traffic signal goals

<table>
<thead>
<tr>
<th>Traffic Signal Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark all legs of an intersection where pedestrian crossings are desired</td>
</tr>
<tr>
<td>Pedestrian signals in all directions</td>
</tr>
<tr>
<td>Landings on all corners</td>
</tr>
<tr>
<td>Stop bars for vehicles on all approaches</td>
</tr>
<tr>
<td>Two curb ramps per corner; eight per four-way intersection</td>
</tr>
</tbody>
</table>
Signalized Intersections
Stop Bar Meets Standards, But Too Close
Concurrent Signal

Leading Pedestrian Interval
Too many instructions means something isn’t working
Countdown Signal
Blocked Intersections

The Overlooked Pedestrian Safety Issue
Pavers and bricks are hard on wheelchair users
Smooth Center for Wheelchairs and Strollers
What the pedestrian sees
What the driver sees
How colored crosswalks can be enhanced
ADA - Universal Design

It’s About All of Us
ADA - Universal Design

It’s About All of Us
ADA Requirements

The Access Board defined the regulations. Mandatory compliance by all communities.

American Disabilities Act (1990)
Wheelchair Accessible?

Apron Goes Through Sidewalk
Good Engineering Invites Right Use

Apron Does Not Go Through Sidewalk

Sidewalk Continues Across Driveway
Don’t build driveways like intersections
Build driveways like driveways
Bad Engineering Invites Wrong Behavior
Sidewalk Continues Across the Driveway

Apron Does Not Go Through Sidewalk
Okay When Other Options Don’t Work
Two Ramps Per Corner

Eight Ramps Per Intersection
Truncated Domes – 4’ x 2’
Truncated Domes – 4’ x 2’
Truncated domes provide tactile clues.
Oops!

Curbs Okay
Next to Landscaping
Americans favor spending more on sidewalks even if it means spending less on highways

Source: Belden Russonello & Stewart Poll, September 2000
Poor Design - Safety Compromised
II. Getting Across the Street
Intersections & Crosswalks
Up to 30% of Residents in Your Community Do Not Have Direct Access to an Automobile
Speed feedback signs
Would you want to try crossing this road?
Crossing Major Streets

“They widened the road and made it impossible to cross”
People want a safe place to raise a family. This includes safe and convenient walking trips to schools.
There are Better Options - We Have Choices
A Multiple Lane Intersection That Works
Build More Roads
Build More Roads
Good intersection characteristics:

- Tight
- Simple
- Slow speed
- Good visibility – maybe… ?
- Easy to understand
- If complex, break it up
A Tight Curb Radius Reduces Turning Speed

Pedestrian Exposure Time is Reduced
Pedestrian crossing signs

Old way:

Advance  At the xwalk
Pedestrian crossing signs

New way:

Advance

At the xwalk
New way
School crossing signs: new color increases visibility
RIGHT-TURN SLIP LANE

Cut through medians and islands for pedestrians

50 to 60 degree angle between vehicle flows.

25 to 40 feet radius depending on design vehicle

One car length back

150 to 275 feet radius

Bicycle lane

Long radius followed by short
Curb Extensions
Curb Bulbs Reduce the Crossing Distance

Seattle, Wa.

Kalamazoo, Mi.
Paint Is Your Friend
Multiple Lane Threat
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