

Walking Along the Road



2-1

Calculating Reduction in Number of Crashes

Crash Modification Factor (CMF): factor used to compute the expected number of crashes after implementing a given countermeasure.

Crash Reduction Factor (CRF): % fewer crashes experienced on a road with a given countermeasure than on similar road without the countermeasure

Relationship between CMF and CRF:

$$\text{CMF} = 1 - (\text{CRF}/100)$$

$$\text{CRF} = 100 \times (1 - \text{CMF})$$

(Examples on next slide)

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2-2

Walking along the road accounts for 10-15% of fatal pedestrian crashes:

- Fewer in urban areas
- More in rural areas

They're easily preventable



Paved shoulders reduce pedestrian crashes by 70%

- CMF = 0.3 (CRF = 70%)

Sidewalks reduce pedestrian crashes by 88%

- CMF = 0.12 (CRF = 88%)

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2-3

Shoulders improve safety for all users



For pedestrians: a place to walk

CMF = 0.3
(CRF = 70%)

Benton Co. OR

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2-4



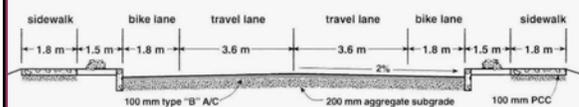
"Goat trail" indicates sidewalks are needed

Manitou Springs CO

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2-5

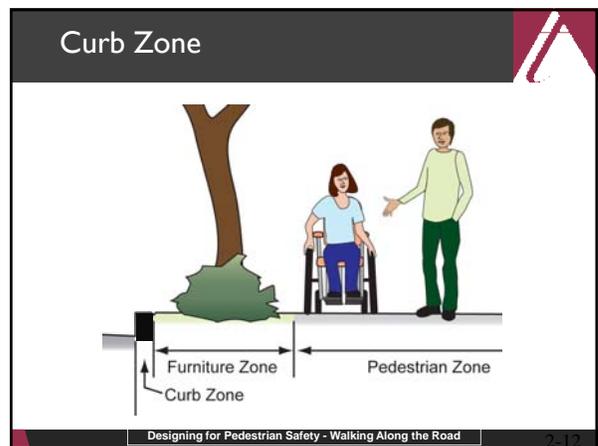
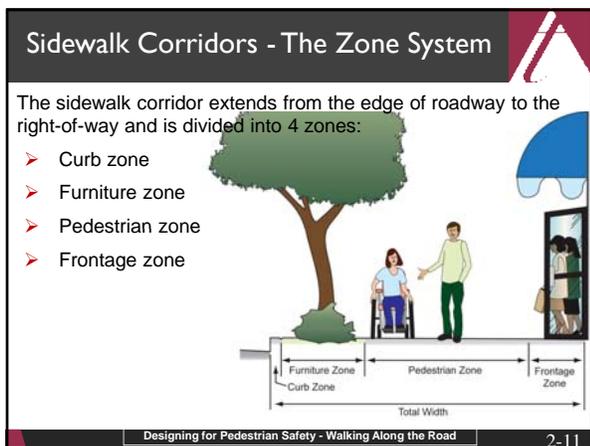
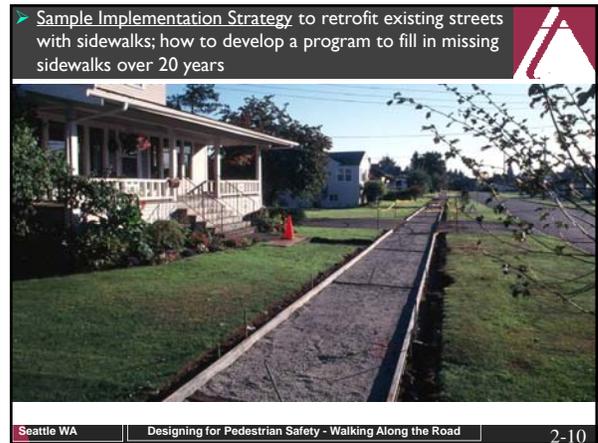
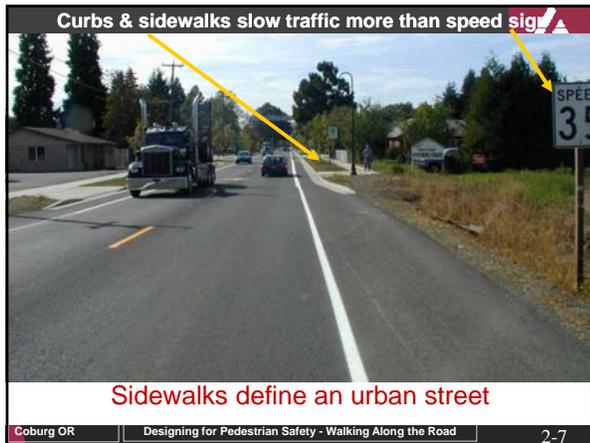
The AASHTO "Green Book" states:
"Sidewalks are integral parts of city streets"



Sidewalks are not added to streets, they are part of the street

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2-6





Why the curb zone matters:
Mountable curbs are inappropriate on local streets

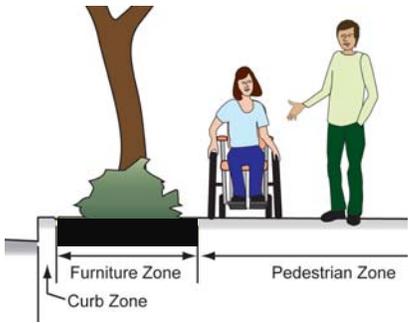
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Why the curb zone matters:
It's where pedestrians transition from/to the street

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Furniture Zone



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All these things go here!



All the "stuff" goes in the furniture zone

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Sidewalk with furniture zone is pleasant to walk on

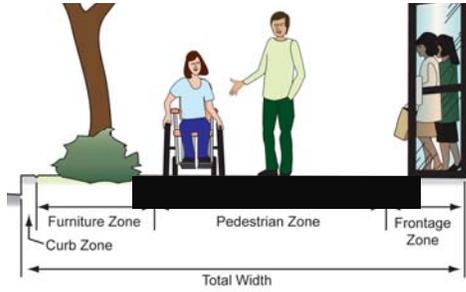
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Planter strip helps define driveways, it's easier for drivers to find them and they're more likely to yield to pedestrians

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Pedestrian Zone

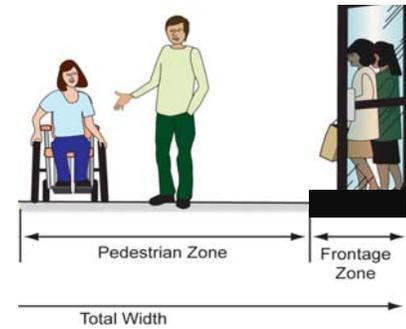


5 feet necessary for two people to walk comfortably side by side or to pass each other;



A sidewalk should be as wide as needed to serve anticipated pedestrian use (use HCM ped LOS)

Frontage Zone



Shy distance concept applies to pedestrians, who will shy away from a vertical face; extra width is needed



An interesting façade makes narrow sidewalks feel wider

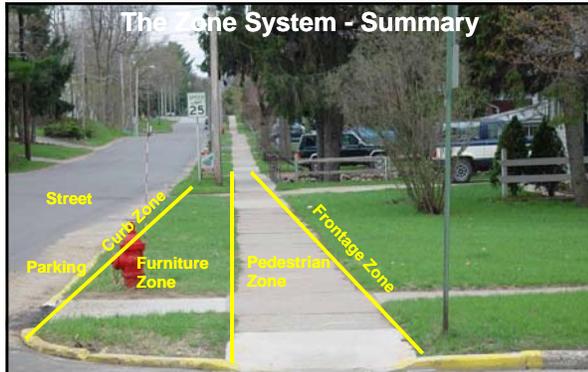


Fence placement and type impacts pedestrian comfort: the sidewalk on the left is wider, but feels narrow due to high and adjacent chain link fence



Before After

One foot of frontage zone between right-of-way line and sidewalk makes maintenance easier



The Zone System - Summary

Residential street



The Zone System - Summary

Commercial street



With Zone System

Street furniture arranged in zones leaves sidewalk clear



Without Zone System

Randomly placed street furniture clutters sidewalk



ADA requirements for sidewalks

- Well-designed sidewalks meet ADA:
- Sidewalks should be clear of obstructions:
 - 3' min clearance, 4' proposed
- Sidewalk should have smooth surface
- Sidewalk should be at 2% max cross-slope including at driveways

The zone system creates a safer and more pleasant place to walk, **and** makes it easier to meet ADA requirements.

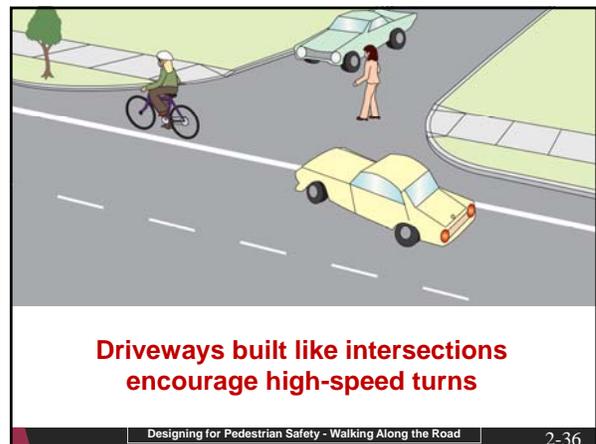
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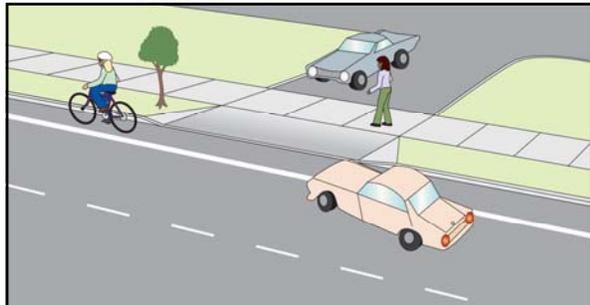


Driveways

Driveways are the source of most conflicts with motor vehicles on sidewalks

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Driveways built like driveways encourage slow-speed turns



This driveway was built like an intersection



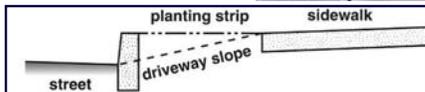
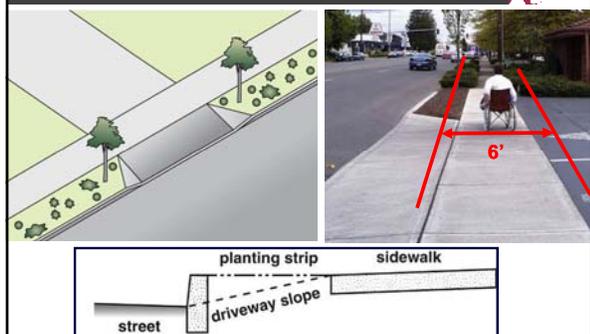
Driver exits at high speed, not looking at pedestrians

ADA requirements for driveways: minimum pedestrian access route of 3' (soon to be 4') at 2% max cross-slope

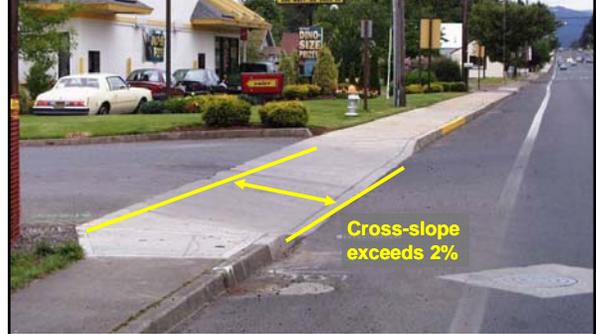


Steeper slope OK
4' min @ 2% max slope

Easier to maintain level access with separated sidewalks



Without zone system, curb (and sidewalk) hard to meet ADA



Cross-slope exceeds 2%



For narrow curbside sidewalks,
wrap sidewalk around apron

Questions?