Taking a Step back, can we make crossing the street less chancy?

Kerry Wilcoxon
City of Phoenix
Street Transportation Department
What are the realities?

Pedestrian Source:
- Neighborhood
- Bus Stop
- Business

Pedestrian Attractor:
- School
- Shopping Center

Conflicts
Annual crash totals

5-Year Pedestrian Crash Trends

- 2002: 629 Injuries, 61 Fatalities
- 2003: 615 Injuries, 51 Fatalities
- 2004: 660 Injuries, 41 Fatalities
- 2005: 612 Injuries, 51 Fatalities
- 2006: 580 Injuries, 51 Fatalities

12% Decline
Basic approach

The 5 - E’s

- Encouragement
- Education
- Enforcement
- Engineering
- Evaluation
Education

- Sharing Our Streets
  - Who has the Right-of-Way
  - Safety Tips for Kids

- This Halloween, Let’s Walk Safely!
  - Always remember to STOP, LOOK LEFT, RIGHT & LEFT AGAIN before crossing any street!

- Let’s Cross Streets Safely!

- Two-Stage Crosswalks

- Cruce de calles en dos pasos

- Image of people at a booth with a CD labeled "Two-Stage Crosswalk" and a poster for Traffic Safety Awareness.
Enforcement

Photo Speed Radar at Schools
Laws Specific to Pedestrians
Target Locations
Evaluation

Traffic pattern evaluation
Crash trend analysis
Pedestrian audits
Engineering

Inform or Separate

Rules

Applications
**Section 3B.17 Crosswalk Markings**

**Support:**
Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops.

**Standard:**
- Crosswalk markings consist of solid white lines that mark the crosswalk. They shall be not less than 150 mm (6 in) nor greater than 600 mm (24 in) in width.

**Guidance:**
- If transverse lines are used to mark a crosswalk, the gap between the lines should not be less than 1.8 m (6 ft). If diagonal or longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should not be less than 1.8 m (6 ft) wide.
- Crosswalk lines, if used on both sides of the crosswalk, should extend across the full width of pavement or to the edge of the intersecting crosswalk to discourage diagonal walking between crosswalks (see Figures 3B-15 and 3B-16).

**Figure 3B-16 Examples of Crosswalk Markings**

Crosswalk lines should not be used indiscriminately. An engineering study should be performed before they are installed at locations away from highway traffic signals or STOP signs.

Because nonintersection pedestrian crossings are generally unexpected by the road user, warning signs (see Section 2C.41) should be installed and adequate visibility should be provided by parking prohibitions.

**Support:**
- Section 3B.16 contains information regarding placement of stop line markings near crosswalk markings.

**Option:**
- For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45-degree angle to the line of the crosswalk or with white longitudinal lines parallel to traffic flow as shown in Figure 3B-16.

**Guidance:**
- Crosswalk lines should not be used indiscriminately. An engineering study should be performed before they are installed at locations away from highway traffic signals or STOP signs.

**Option:**
- When an exclusive pedestrian phase that permits diagonal crossing is provided at a traffic control signal, a marking as shown in Figure 3B-17 may be used for the crosswalk.
Where are pedestrians being hit?

In 2006...

Signalized crossings
- 33% of all pedestrian crashes
- 33% of all pedestrian injuries
- 16% of all pedestrian fatalities

Un-signalized crossings
- 55% of all crashes occurred mid-block
- 75% of all pedestrian fatalities occurred mid-block
What is being done?

**Signalized**
Typically major intersections with high volumes of vehicular traffic

**Non-signalized**
Typically mid-block or minor intersections with high volumes of pedestrian traffic
Signalized crossings
Signalized crossings

How are they made safer?

- Lighting
  - Street lights
  - LED Lamps
  - Pedestrian signals
  - Planning
Signalized crossings

Multiple 12” LED Signal Heads

15 Foot Wide Crosswalks – Arterial
10 FT (Collectors)
Pedestrian signals

- Steady Walk indication
- Flashing hand and count down to yellow
Installing new signals

Annual Signal Warrant or SIG WAR

- Traffic volume (major & minor streets)
- Hourly traffic volume
- Correctable crashes
  - Angle
  - Pedestrian (certain types)
- Pedestrian volume
- Spacing relative to other signals
Un-signalized crossings

Ladder style
Indian School & 20th Ave

Standard style
Un-signalized crossings

How are they made safer?

• Markings and signage
• Street lighting
• Special structures
  – Two-stage islands
  – Bridges/tunnels
• Alternative pathways
Markings

Advanced crossing stencils

Setback Stop Bar

High visibility ladder crosswalk
Signage

Object markers

Pedestrian guidance signs

Overhead warning signs
Street lighting

High pressure sodium lighting
Both sides of street
Staggered
Special Structures

Marked Crosswalks

Pedestrian & Bike Collisions
Van Buren St; 31st Ave - 33rd Ave
1999 - 2005

- Red = Pedestrian Collision
- Blue = Bicycle Collision
Two-stage crosswalks

Off-set ladder crosswalk
Raised center island

Two-stage crosswalk at Carl Hayden Community Center
Two-stage crosswalk at
Thunderbird High School
Pedestrian bridges

Isaac Pedestrian Bridge
Isaac Middle School
Pedestrian Bridge
Isaac Middle School

Pedestrian Bridge

Bridge crosses street directly to campus

Pick-up/drop-off parking lot minimizes conflict with traffic

Pedestrian walkway from Lynwood eliminates contact with McDowell
Driver feedback signs

Radar unit with digital speed display
In-pavement crosswalk lighting

Pedestrian activated in-ground lighting system
Special Pathways

Palomino School Pathway
Palomino School
Safe Walking Pathway
Special pathways

Pedestrian barriers

Pedestrian signs
What’s in the future?

• Increased pedestrian timing
  - Signal timing based on slower pedestrian walking speed
• Pedestrian activate signals
  - High Intensity Activated Crosswalk or HAWK Signals
**Pedestrian timing**

**Current MUTCD Standards**
- Signal clearance based on **4.0 ft/sec** walking speed
- Slower walking speeds should be considered where appropriate

**New MUTCD Standards**
- Signal clearance based on **3.5 ft/sec** walking speed
- Total WALK plus flashing DON’T WALK phase based on **3.0 ft/sec**
- Crossing distance - length of the crosswalk plus one curb ramp
HAWK signal

HAWK (High Intensity Activated Crosswalk)
HAWK signal operation

At rest, blank

Flashing then steady yellow

Steady red

Wig-wag red
At pedestrian light-rail crossings with flashing light signals or traffic control signals, using audible devices has been changed from an option to a requirement.
Questions?

Kerry Wilcoxon  602-262-4613
kerry.wilcoxon@phoenix.gov