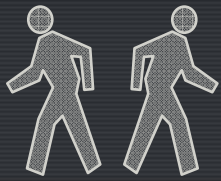




Taking a Step back, can
we make crossing the
street less chancy?

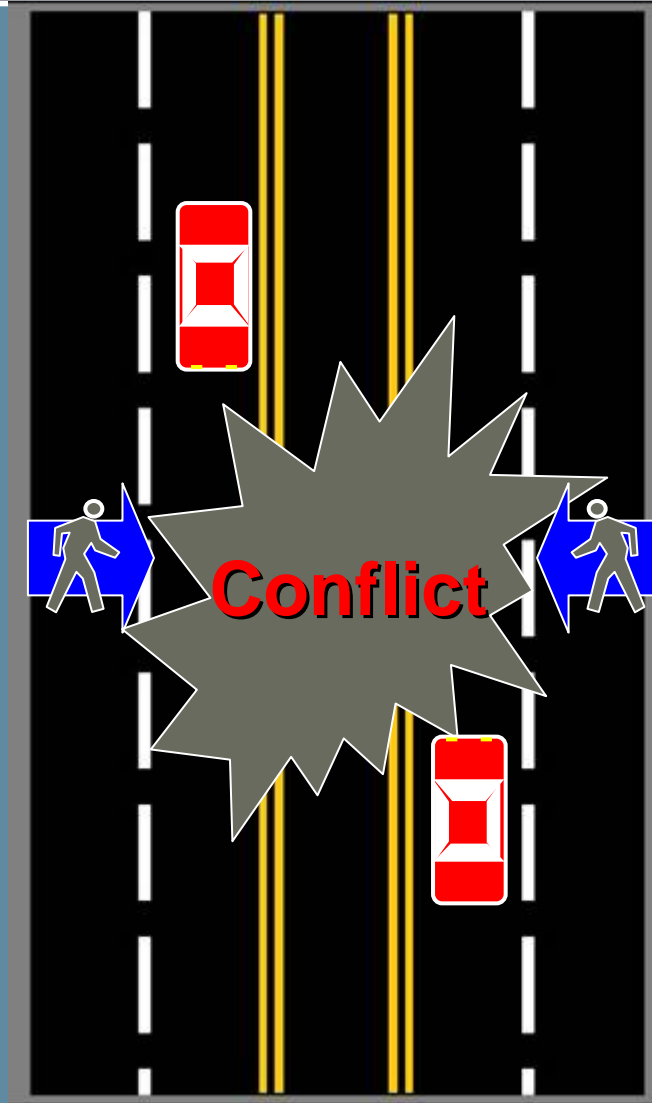
Kerry Wilcoxon
City of Phoenix
Street Transportation Department



What are the realities?

Pedestrian Source

- Neighborhood
- Bus Stop
- Business



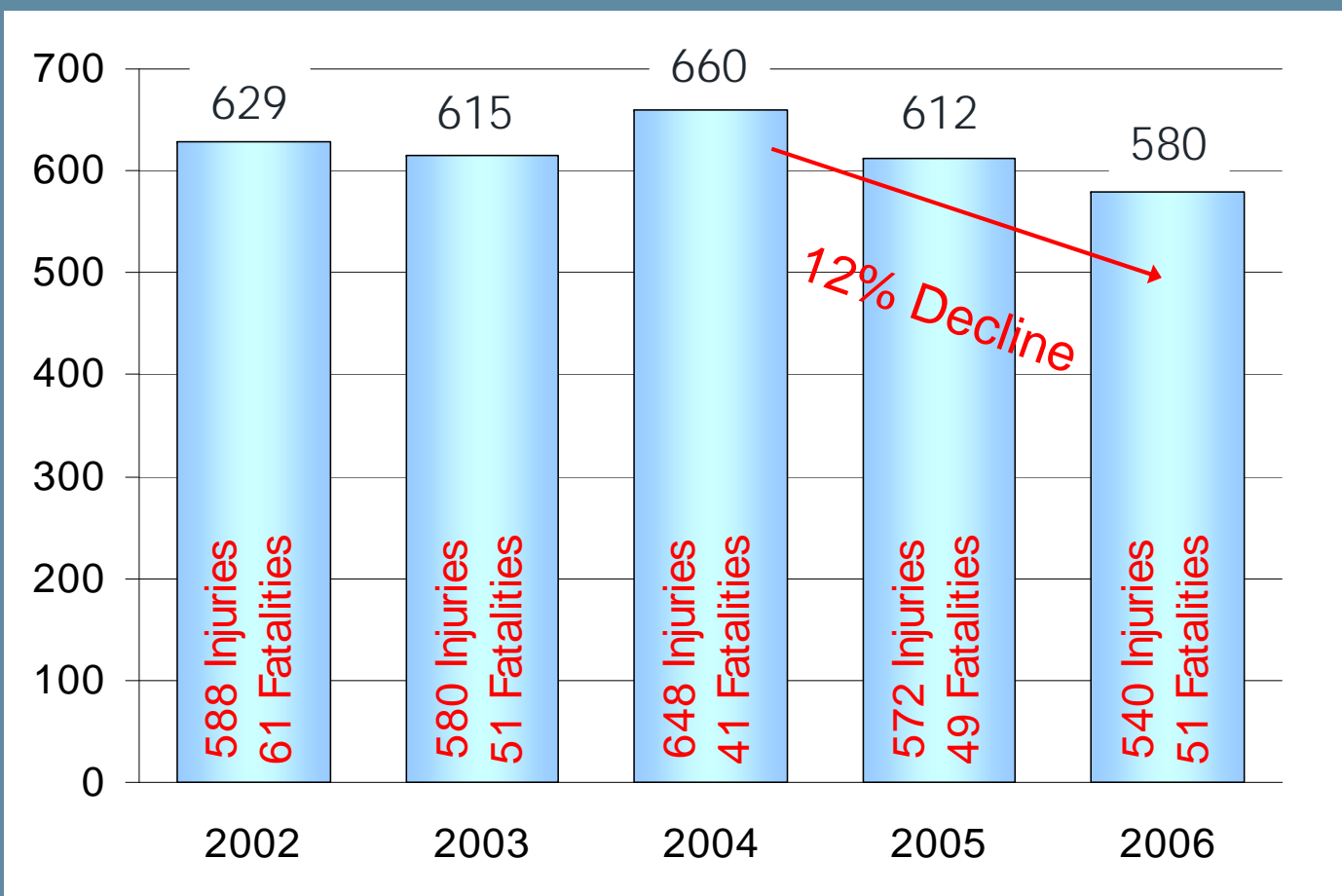
Pedestrian Attractor

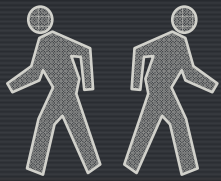
- School
- Shopping Center



Annual crash totals

5-Year Pedestrian Crash Trends





Basic approach

The 5 – E's

- Encouragement
- Education
- Enforcement
- Engineering
- Evaluation

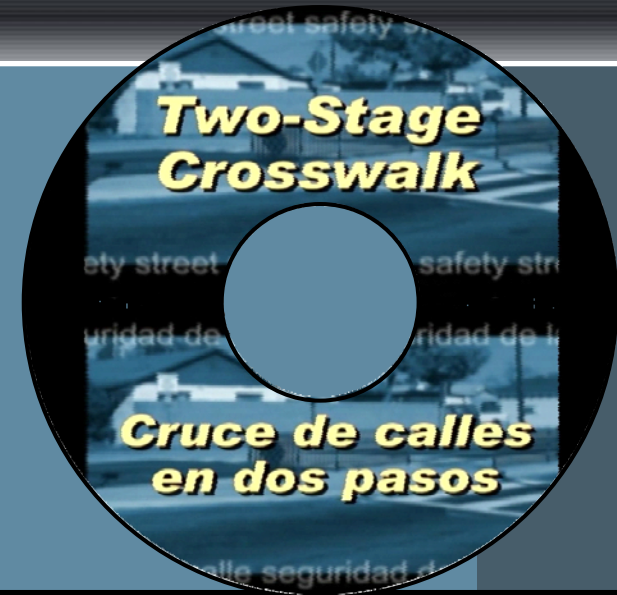


Encouragement





Education





Enforcement

Photo Speed Radar at
Schools

Laws Specific to
Pedestrians

Target Locations





Traffic pattern evaluation
Crash trend analysis
Pedestrian audits

[illegible]

8/29/05 4:00 pm
PED - Female, 10
Fault Unknown
Hit & Run

5

LOCATION SOUTHERN BLVD
Date of Notification: 8/29/05
INTERSECTION GEOMETRY: 4th Street SOUTHERN BLVD
COLLISION HISTORY: Pedestrian (Hit & Run)
Available Resources (Copyright): Insurance, Disability, etc.
Collision details table:
Personal Data: DOB 4-20-68, marked

[illegible]



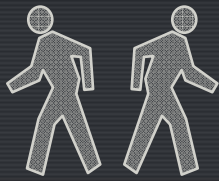
Engineering

Inform or Separate Rules



Applications





What are the rules?

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.

Crosswalk markings provide guidance for pedestrians ...

Standard:

When crosswalk lines are used, they shall 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 markings also serve to alert road users of a pedestrian crossing ...

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.

When diagonal markings are used to mark a crosswalk, they should be installed at locations away from highway traffic signals or STOP signs.

Guidance:

If used apart

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?

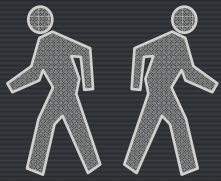
In 2006...

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



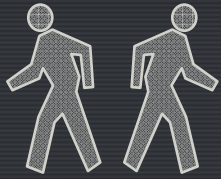
Flashing hand and
count down to yellow



Installing new signals

Annual Signal Warrant or SIGWAR

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



Un-signalized crossings



Standard style

Ladder style

Indian School & 20th Ave

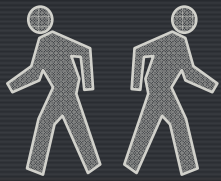




Un-signalized crossings

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



Overhead warning signs

Object markers



Pedestrian guidance signs



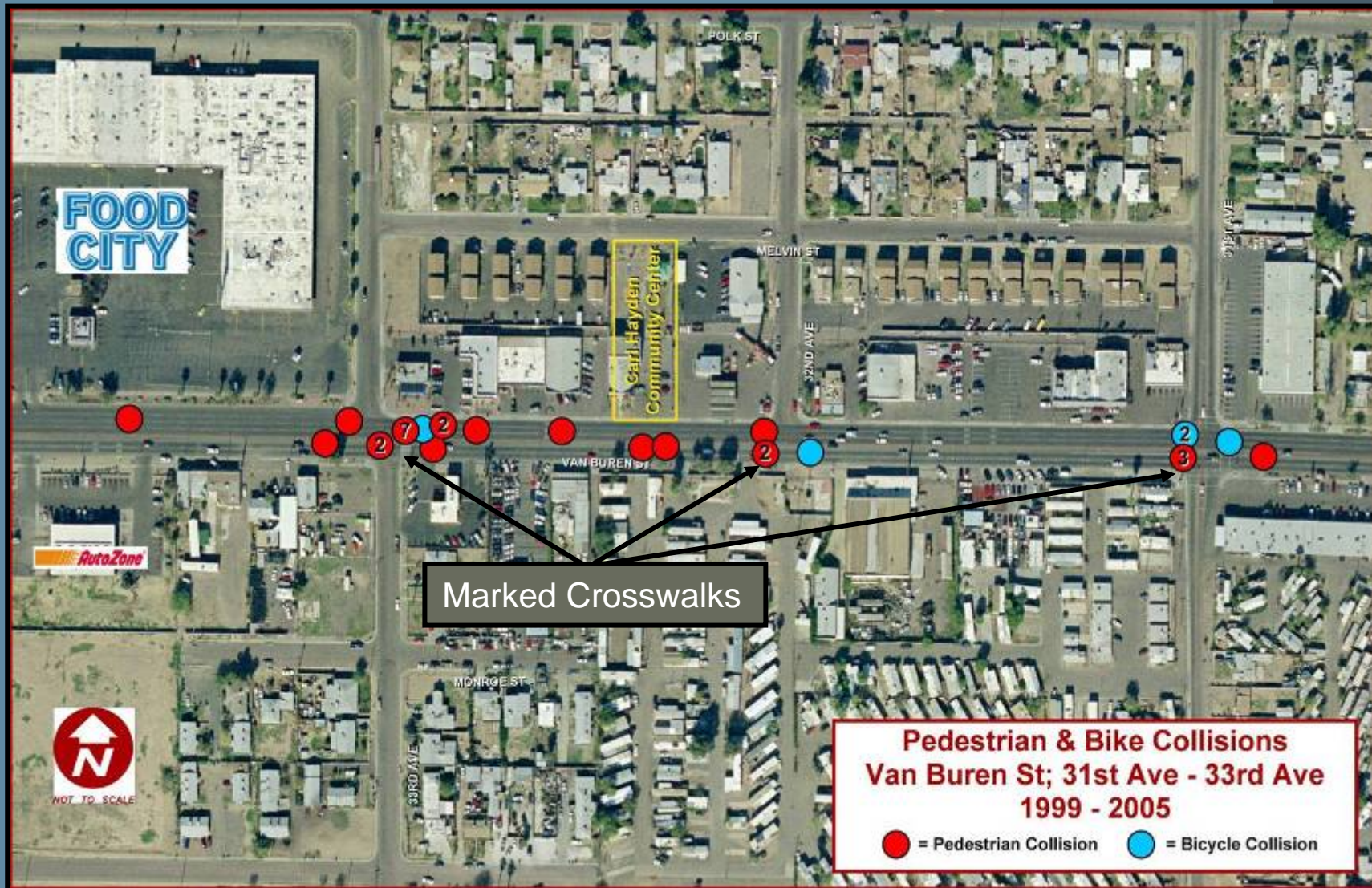
Street lighting



High pressure sodium lighting
Both sides of street
Staggered

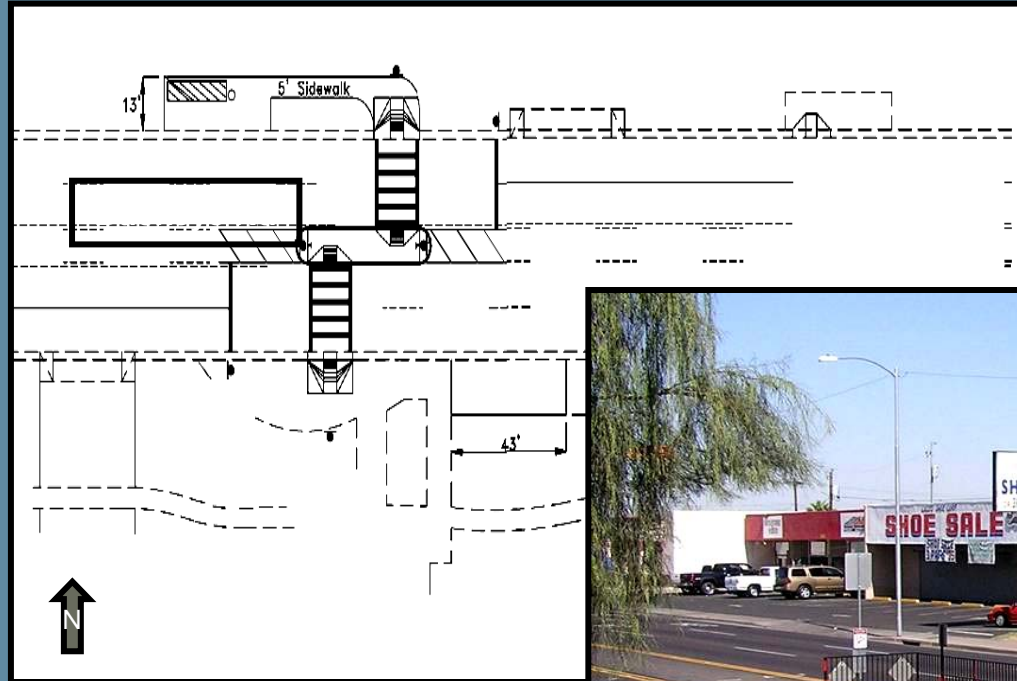


Special Structures





Two-stage crosswalks



Off-set ladder crosswalk
Raised center island

Two-stage crosswalk at
Carl Hayden Community
Center

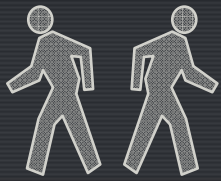




Two-stage crosswalk

Two-stage crosswalk at
Thunderbird High School





Pedestrian bridges

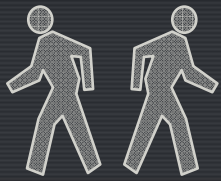
Isaac Pedestrian Bridge





Isaac Middle School Pedestrian Bridge



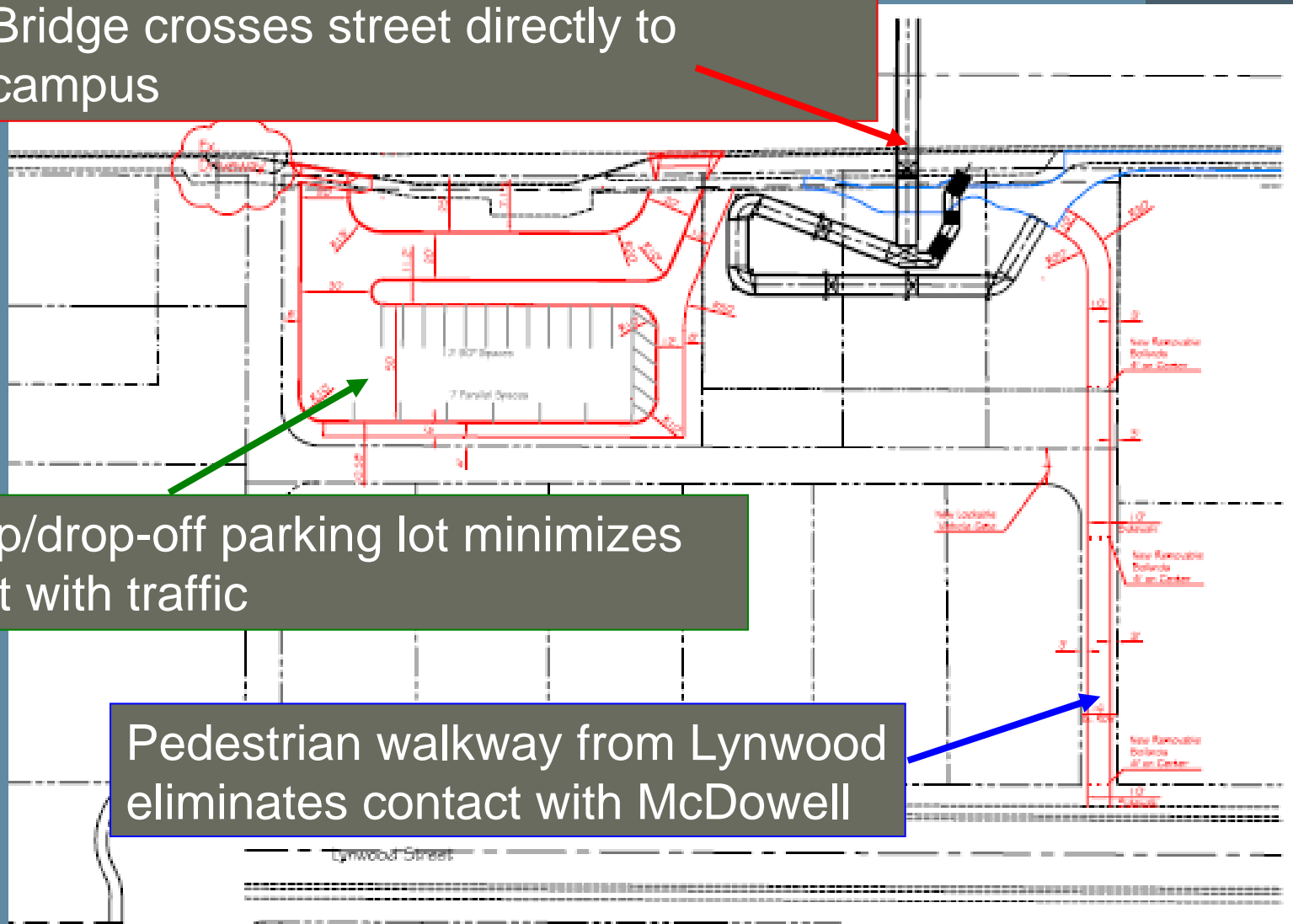


Isaac Middle School Pedestrian Bridge

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



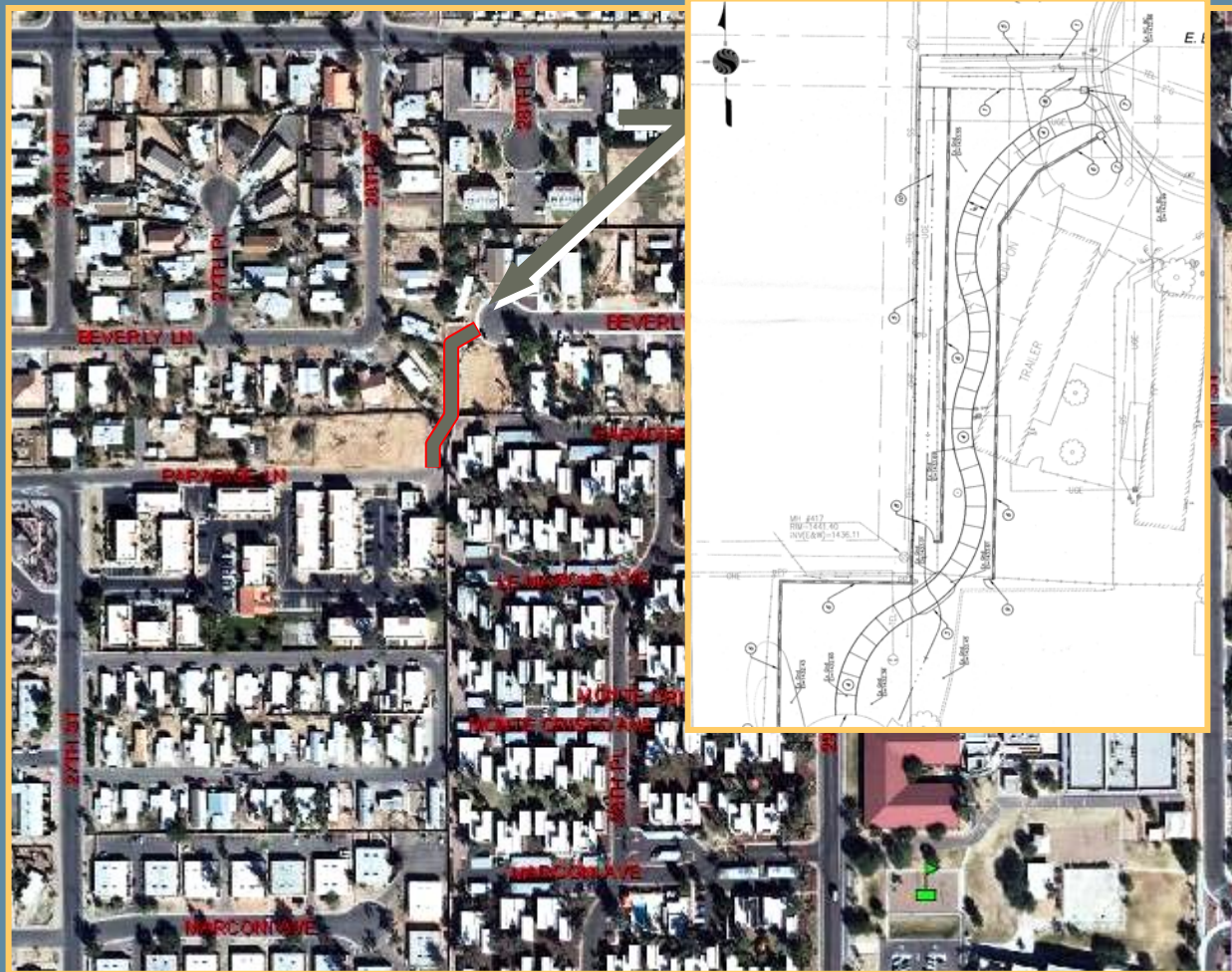
Pedestrian activated
in-ground lighting
system





Special Pathways

Palomino School Pathway





Palomino School

Safe Walking Pathway





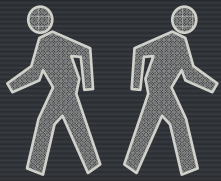
Special pathways



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



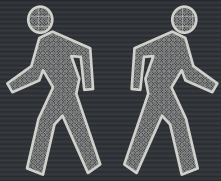
Pedestrian timing

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





LRT audible crossing signal

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?



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kerry.wilcoxon@phoenix.gov