Countermeasure Strategies for Pedestrian Safety

Pedestrian Hybrid Beacons

Richard Nassi

Pima Association of Governments

November 12, 2015

Today's Presentation

- **Introduction and housekeeping**
- **Audio issues?**
  Dial into the phone line instead of using "mic & speakers"
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Countermeasure Strategies for Pedestrian Safety Webinar Series

Upcoming Webinars

Leading Pedestrian Interval

Wednesday, December 2 (1:00 – 2:30 PM Eastern Time)

Pedestrian Safety at Interchanges

Thursday, December 10 (4:00 – 5:30 PM Eastern Time)

Lighting Strategies for Pedestrian Safety

Tuesday, December 15 (1:00 – 2:30 PM Eastern Time)

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PEDESTRIAN HYBRID BEACON (PHB)

A.K.A.

HAWK

DPS 201

MODULE OBJECTIVES

- Understand why, when and where to use PHB
  - *Warrants*
  - *Data needs*
  - *PHB location/placement*
- Understand design and operation of PHB
  - *MUTCD Standards and Guidance*
- Understand who to educate & what messages to deliver
  - *Drivers*
  - *Pedestrians and Cyclists*
  - *Police*
- Describe unique PHB applications
  - *Bike Crossings/Roundabouts/Two-Stage PHBs/PUFFINs*

HAWK HISTORY

SIMPLIFICATION OF HIGHWAY TRAFFIC

WILLIAM PHELPS ENO

PUBLISHED BY
THE ENO FOUNDATION FOR HIGHWAY TRAFFIC REGULATION, INC.
1929

First PEDESTRIAN CROSSING warning sign part II

side roads. Cross roads and side roads, however, are often so far apart that it is unreasonable to expect those wishing to cross to go to them and therefore there should be intermediate crosswalks located at reasonable distances apart. Crosswalks in the country should be marked by the crosswalk sign given in Part II. Ordinary signs are, however, not very effective at night unless they are provided with reflectors or are lighted and therefore on important highways this matter should be attended to. It would be valuable if there were some means of signalling to drivers at crosswalks, especially when motors are following close behind one another. I am inclined to think that some sort of semaphore arrangement might be designed which could be operated by pedestrians to signal motorists. The attention of traffic students is called to this matter in hopes that some one will find a practical solution.

HAWK (PHB) HISTORY

- 1st HAWK was in Tucson, AZ
  - Year 2000
  - Pedestrian safety program **"Watching over the Pedestrian Like a HAWK"**
- 2009 MUTCD adopted HAWK as Pedestrian Hybrid Beacon (PHB)

REMINDER ON HOW IT WORKS

1

Blank for drivers

2

Flashing yellow

3

Steady yellow

4

Steady red

5

Wig-Wag

Return to 1

MUTCD Section 4F.02 option RED clearance and change, buffer intervals allowed at intervals 4 and 5

WHY?
IMPROVED SAFETY

CMF

Research

YIELD RATES EVEN HIGHER

Table 21. Summary of motorist yielding compliance from three sources for red signal or beacon and active when present.

Crossing Treatment	TCRP D-08/NCHRP 3-71 Study: Compliance – Staged Pedestrian Crossing # of Sites	Range (%)	Average (%)	TCRP D-08/NCHRP 3-71 Study: Compliance – General Population Pedestrian Crossing # of Sites	Range (%)	Average (%)	Other Studies: Compliance – Literature Review (from Table L-1) # of Sites	Range (%)	Average (%)
Red Signal or Beacon									
Midblock Signal	2	97 to 100	99%	4	91 to 98	95%	NA	NA	NA
Half Signal	6	94 to 100	97%	6	96 to 100	98%	1	99	99%
HAWK Signal Beacon	5	94 to 100	97%	5	98 to 100	99%	1	93	93%
Active When Present									
In-Roadway Warning Lights	NA	NA	NA	NA	NA	NA	11	8 to 100	66%
Overhead Flashing Beacon (Pushbutton Activation)	3	29 to 73	47%	4	38 to 62	49%	10	13 to 91	52%
Overhead Flashing Beacon (Passive Activation)	3	25 to 43	31%	3	61 to 73	67%	NA	NA	74%

YIELD RATES EVEN HIGHER

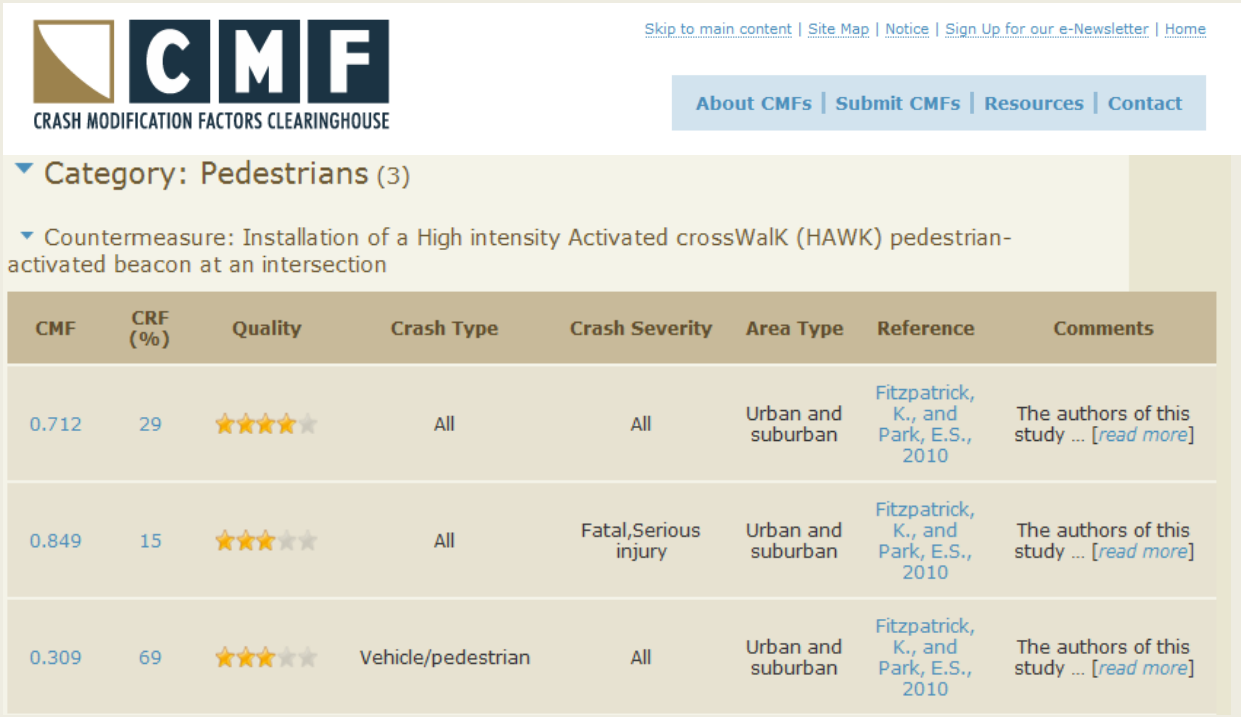
Obedience of the HAWK

- **97%** Driver Compliance to RED
- **69%** Pedestrian Crash Reduction
- **29%** Total Crash Reduction
- **15%** Reduction in Serious Crash Levels
- One of the Most Effective Pedestrian Crossing Devices

FHWA July 2010 study

CMF (CRF)

- CRF 69% pedestrian crashes
- CRF 29% all crash types
- CRF 15% all serious injury & fatal crashes



CRASH MODIFICATION FACTORS CLEARINGHOUSE

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Category: Pedestrians (3)

Countermeasure: Installation of a High intensity Activated crossWalK (HAWK) pedestrian-activated beacon at an intersection

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.712	29	★★★★☆	All	All	Urban and suburban	Fitzpatrick, K., and Park, E.S., 2010	The authors of this study ... [read more]
0.849	15	★★★☆☆	All	Fatal,Serious injury	Urban and suburban	Fitzpatrick, K., and Park, E.S., 2010	The authors of this study ... [read more]
0.309	69	★★★☆☆	Vehicle/pedestrian	All	Urban and suburban	Fitzpatrick, K., and Park, E.S., 2010	The authors of this study ... [read more]

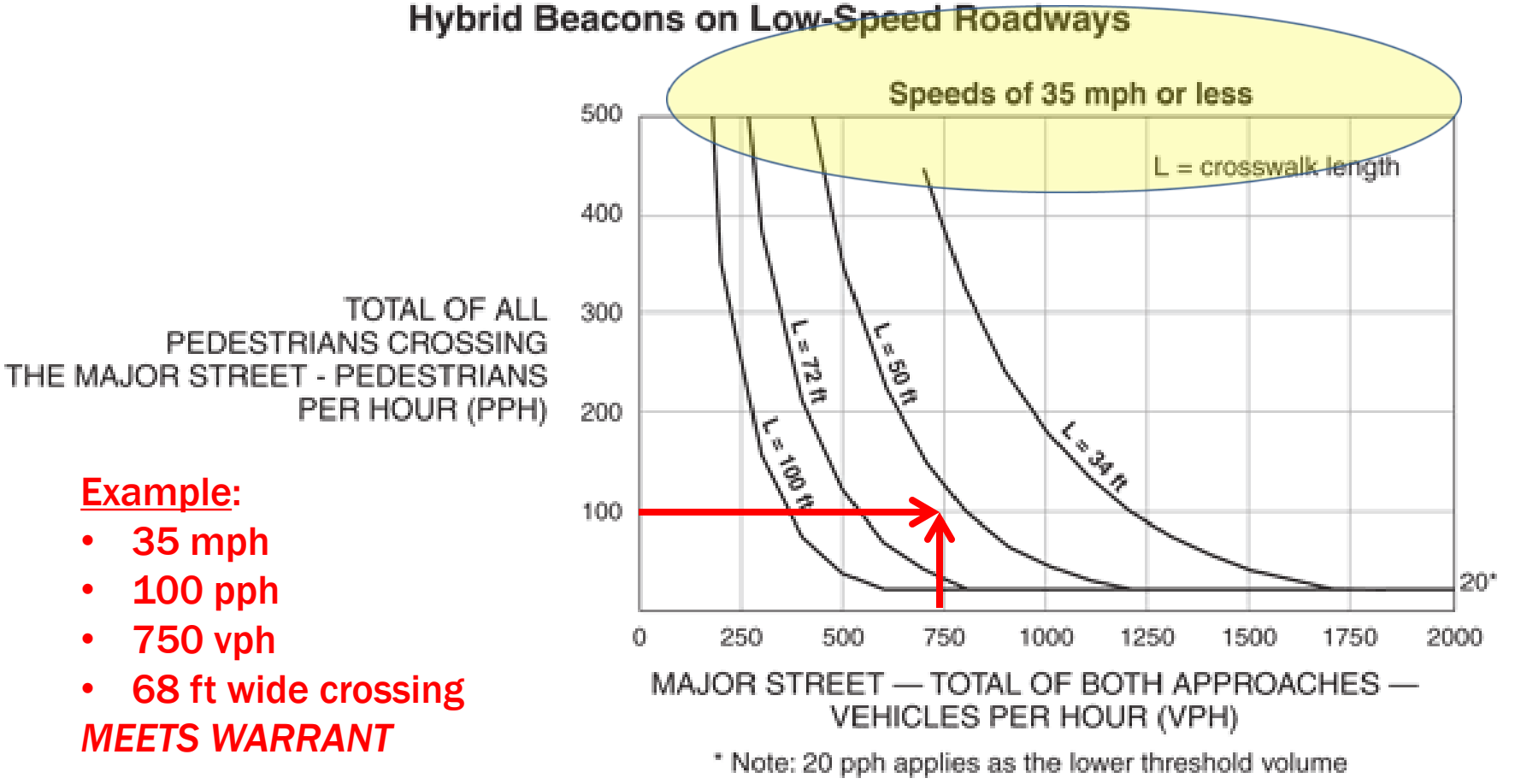
Fitzpatrick, K. and E. S. Park. (2010). Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. Publication FHWA-HRT-10-042. FHWA, U.S. Department of Transportation.

WHEN

- Pedestrians cross high speed, multilane roadways
- Crossing doesn't meet signal warrants
- Crosswalk markings/ signs just won't do
  - if there are any at all
- Pedestrians complain or crash data shows a problem

MUTCD PHB WARRANT – 35 MPH OR LESS

Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways



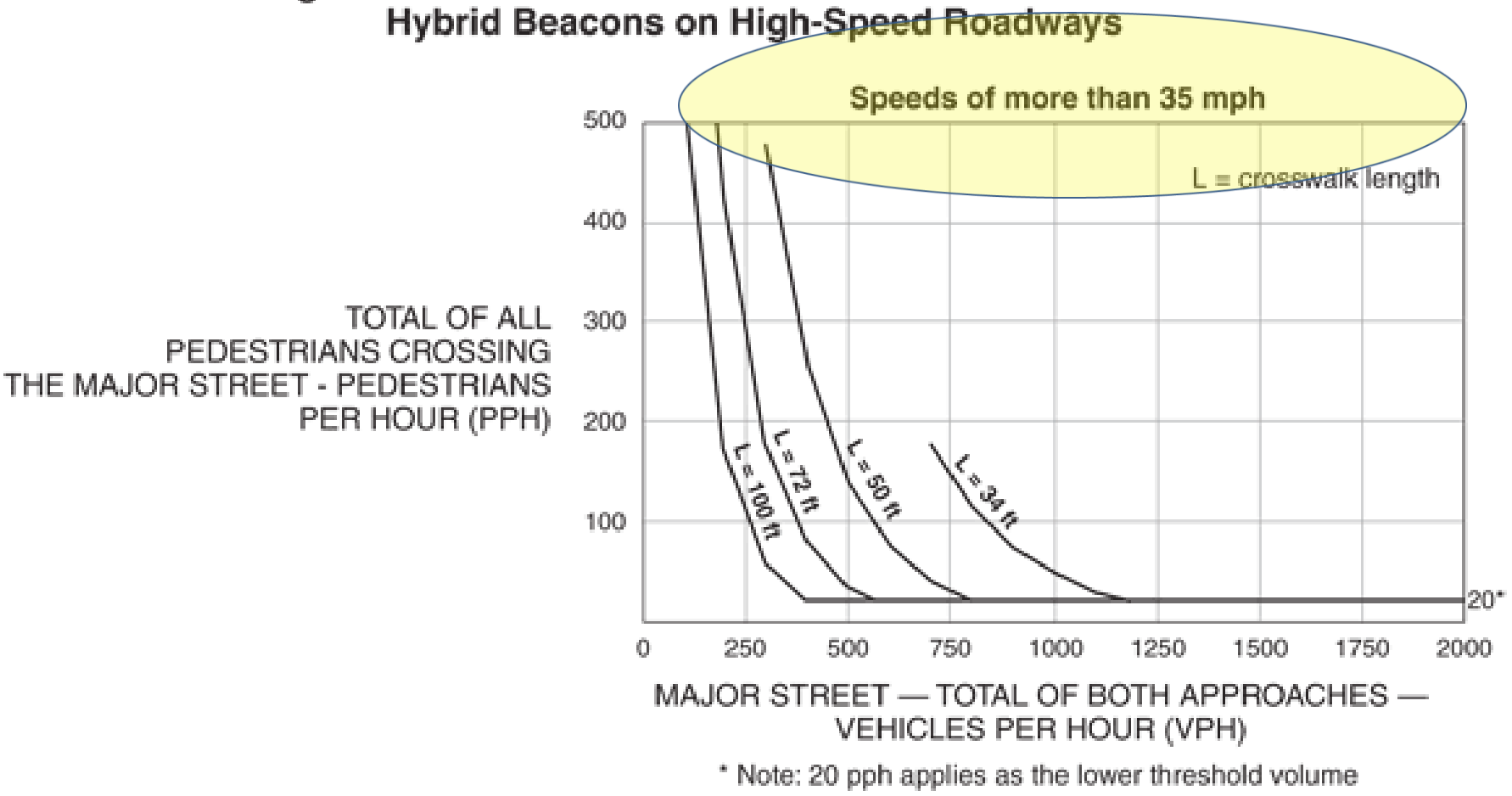
Example:

- 35 mph
- 100 pph
- 750 vph
- 68 ft wide crossing

MEETS WARRANT

MUTCD PHB WARRANT >35 MPH

Figure 4F-2. Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways



* Note: 20 pph applies as the lower threshold volume

WHERE
MUTCD SECTION 4F.01

Standard:

- If used, PHBs shall be used in conjunction with signs and pavement markings to warn and control traffic.
- A PHB shall only be installed at a marked crosswalk.

MUTCD – PHB & INTERSECTIONS

- Section 4F.02, paragraph 04

  Guidance:

  "When an engineering study finds that installation of a pedestrian hybrid beacon is justified, then the PHB should be installed at least 100 feet from side streets or driveways controlled by STOP or YIELD signs."

- "Guidance" not a "**Standard**"
- NCUTCD voted to remove that Guidance.
- Standard recommended for next MUTCD by NCUTCD:

  "*If a pedestrian hybrid beacon is installed at or immediately adjacent to an intersection with a side road, vehicular traffic on the side road shall be controlled by STOP signs.*"

SELECTION OF PHB LOCATIONS

- Prioritize warranted for consideration locations using a point system based upon:
  - Traffic volume during the peak pedestrian crossing time
  - Peak hour pedestrian volume
  - Pedestrian crashes
  - Crossing width (number of lanes)
  - Distance to nearest controlled crossing
  - Posted speed
  - Presence of a raised median
  - Crossing is a designated trail, school crossing, or SRTS walking route
  - Presence of elderly or disabled pedestrians
  - Others (lighting, curved roads, other unusual road conditions, etc.)

SELECTION OF PHB LOCATIONS

- Requires extensive data collection
  - Pedestrian counts can be time consuming
- Point weights and factors may vary from city to city
- Point weights and factors may be adjusted from year to year to fine-tune the process
- Ultimate selection of location(s) should be based on Engineering Judgment, not merely on points alone

ARIZONA DOT

TEGP 640
June 2015

- Ped crashes (5 yrs)
- Ped volume
- Distance to nearest signal
- Posted speed
- AADT
- Raised median
- Path/sidewalk
- Ped generator
- Crossing width

Exhibit 640-A. PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

PEDESTRIAN HYBRID BEACON (PHB) EVALUATION

Location: _____ Date: _____

1. Motor vehicle crashes correctable by installation of PHB – Award 5 points for each crash (for the most recent 5 years of data) involving pedestrians, bicyclists, wheel chairs, skateboards, motorized scooters, or golf carts crossing within 500 feet on either side of the proposed PHB locations, or half the distance to the nearest signal (whichever is less): _____

2. Peak hour pedestrian crossing volume – Award points if the average peak hour pedestrian crossing volume within 500 feet on either side of the proposed PHB location, or half the distance to the nearest traffic signal (whichever is less): _____
   - 0 points ➔ 0 – 10 pedestrians per peak hour (average)
   - 2 points ➔ 11 – 20 pedestrians per peak hour (average)
   - 4 points ➔ 21 – 39 pedestrians per peak hour (average)
   - 6 points ➔ 40* pedestrians per peak hour (average)

3. Location of nearest existing traffic signal or existing PHB – Award points: _____
   - - 5 points ➔ Less than 500 feet
   - 0 points ➔ 500 – 1,000 feet
   - 5 points ➔ Over 1,000 feet

4. Posted speed limit – Award points: _____
   - 0 points ➔ Under 30 mph
   - 2 points ➔ 30 – 35 mph
   - 4 points ➔ 40 – 45 mph

5. Roadway traffic volume (AADT) – Award points: _____
   - 0 points ➔ Less than 5,000
   - 2 points ➔ 5,000 – 9,999
   - 4 points ➔ 10,000 – 14,999
   - 6 points ➔ 15,000*

6. Raised median – Award 5 points if the roadway does not have a raised median with a minimum width of 6 feet. _____

7. Shared-use path or walkway – Award 5 points if a designated, maintained, and permitted shared-use path or walkway crosses the road at the proposed PHB location. _____

8. Pedestrian activity generator – Award 5 points if the proposed PHB location is within 500 feet of a senior center, medical facility, community center, school, or other pedestrian activity generator. _____

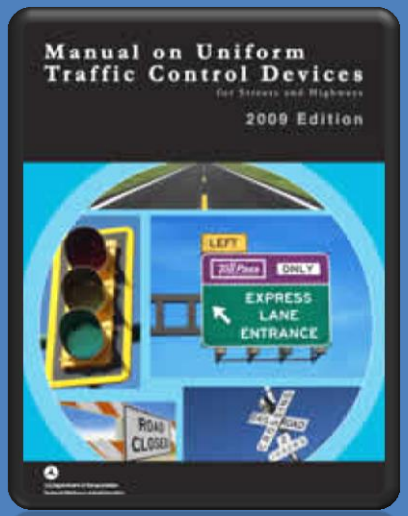
9. Roadway illumination – Award 5 points if the proposed PHB location does not have roadway illumination. _____

10. Crossing distance – Award 5 points if the crossing distance is greater than 36 feet. (If a raised median with a minimum width of 6 feet is present, the crossing distance is measured to the median). _____

GRAND TOTAL 0

SELECTION OF PHB LOCATIONS

- **Vehicle volumes should be obtained for the same peak crossing hours and need not be collected at the same time.**
  - Historic vehicle counts may be used if conditions are relatively unchanged.
- **Manual pedestrian counts are labor-intensive**
  - Consider using interns
  - May be a high school or university class project
  - Consider video data collection equipment



DESIGN CRITERIA

MUTCD

Design & Operation Issues

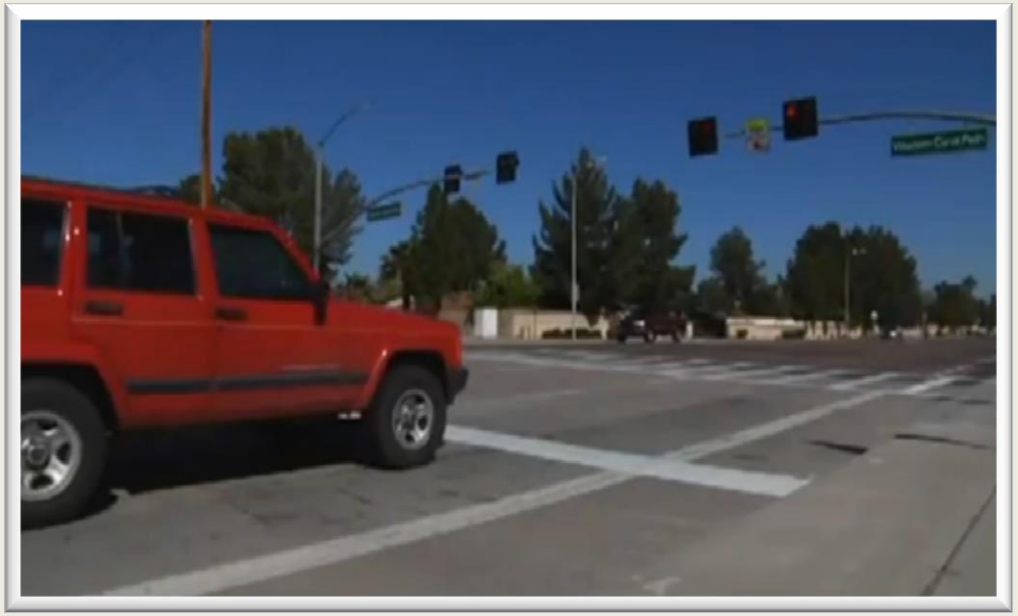
Special Provisions

MUTCD 4F.02

When an engineering study finds that installation of a PHB is justified, then:

A. Install at least two PHB faces for each major street approach

B. Install a stop line for each approach to the crosswalk



MUTCD 4F.02 CONT.

C. Install a pedestrian signal head at each end of the marked crosswalk, and
D. The PHB shall be pedestrian actuated

2009 MUTCD MANDATED SIGN

- **Standard:**
  A CROSSWALK STOP ON RED (symbolic circular red) (R10-23) sign shall be mounted adjacent to a PHB face on each major street approach.

MUTCD SECTION 4F.03

Standard:
PHB indications shall be dark (not illuminated) during periods between actuations.

Upon actuation by a pedestrian, a pedestrian hybrid beacon face shall display a flashing CIRCULAR yellow signal indication, followed by a steady CIRCULAR yellow signal indication, followed by both steady CIRCULAR RED signal indications during the pedestrian walk interval, followed by alternating flashing CIRCULAR RED signal indications during the pedestrian clearance interval (see Figure 4F-3). Upon termination of the pedestrian clearance interval, the pedestrian hybrid beacon faces shall revert to a dark (not illuminated) condition.

New anticipated proposed language in green:

Upon actuation by a pedestrian, a pedestrian hybrid beacon face shall remain dark until the display of a flashing CIRCULAR yellow signal indication, just before being followed by a steady CIRCULAR yellow signal indication, followed by both steady CIRCULAR RED signal indications during the pedestrian walk interval, followed by alternating flashing CIRCULAR RED signal indications during the pedestrian clearance interval (see Figure 4F-3). Upon termination of the pedestrian clearance interval, the pedestrian hybrid beacon faces shall revert to a dark (not illuminated) condition. The PHB may remain in the dark condition for a short period of time before servicing the next actuation to allow for coordinated operation with nearby signals or to allow queued traffic to pass.

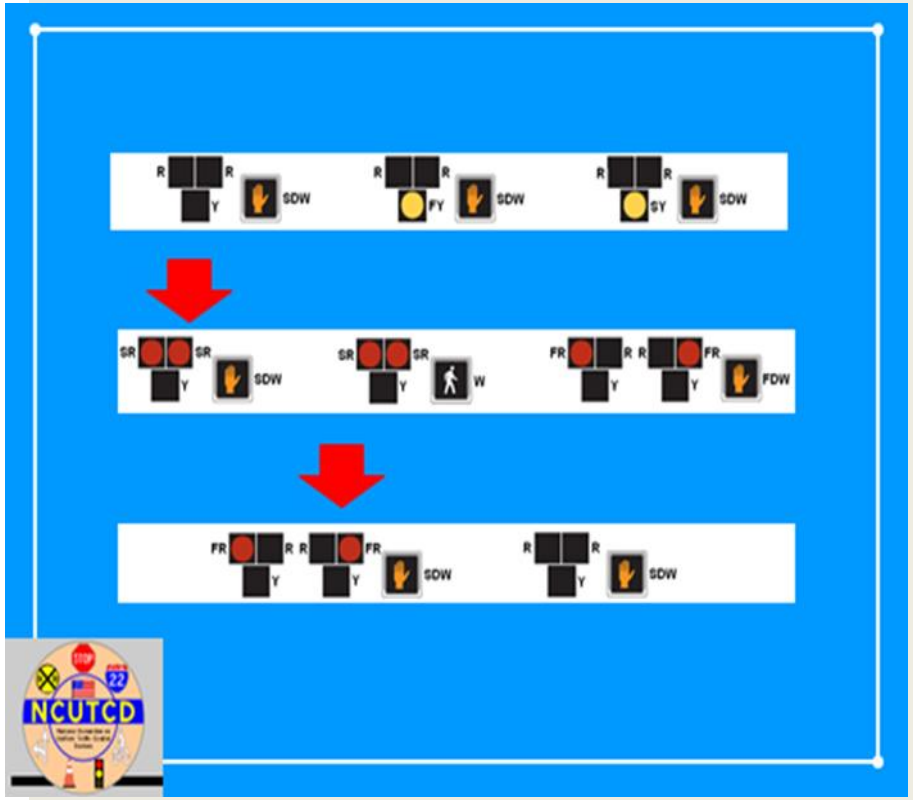
Avoid overly long flashing YELLOW intervals – Allow queued traffic to pass before reactivation

MUTCD 4F.03 CONT.

Except at roundabouts:

- Steady DON'T WALK shall be displayed:
  - ✓ During PHB Blank-out
  - ✓ During Flashing or Steady CIRCULAR yellow
- Steady WALK shall be displayed during Steady CIRCULAR RED indications
- Flashing DON'T WALK shall be displayed during ALTERNATING FLASHINGCIRCULAR RED

FHWA INTERPRETATION



FHWA August 2011 Official Interpretation:

A steady RED clearance interval, in which the faces for the major street are Steady RED and the pedestrian signal faces are steady ORANGE UPRAISED HAND, may be inserted in the sequence of a PHB between the end of the steady YELLOW change interval and the start of the WALK interval for the pedestrian crosswalk

The alternating flashing RED display on the PHB faces for the major street may be extended beyond the end of the flashing ORANGE UPRAISED HAND pedestrian change interval for a brief buffer interval before the major street faces return to the dark (non-illuminated) condition

ONE OR TWO CROSSING(S) AT INTERSECTIONS

- If used at an intersection or driveway, the PHB crossing and signal equipment should only control <u>one</u> crossing
  - ITE Traffic Control Devices Handbook

DESIGN AND OPERATION ISSUES

- Vehicle signal indications only face major street
- STOP signs face the minor road.
- Side street indications are **NOT** recommended. Experience suggests that drivers will most likely abuse a dynamic sign/ signal's indication (such as a RED signal or illuminated no turn sign) to push their way into the major street. (TCDH 2nd Edition)

RETROREFLECTIVE BORDERS ON BACKPLATES

- 2009 MUTCD - 4D.12, Paragraph 21 Option
  http://mutcd.fhwa.dot.gov/htm/2009/part4/part4d.htm#section4D12
- FHWA 9 Proven Countermeasures
  http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_007.htm
- CRF 15%

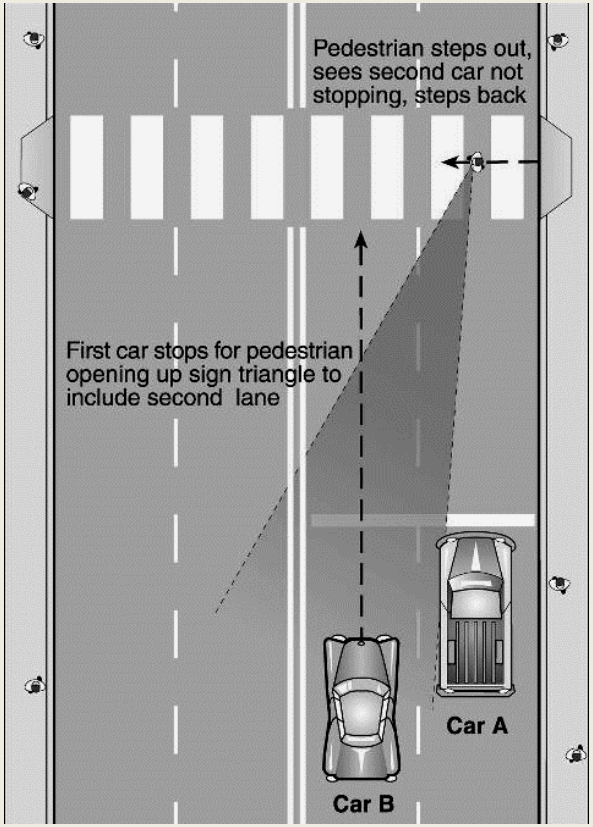
HIGH VISIBILITY MARKINGS

Use Ladder or Continental crosswalk markings (more visible)

- Consider advance PED XING pavement stencils
- Consider advance Ped warning signs (W11-2 or W11-15)
- Consider advance solid lane line on approach to stop line (approx. 250 ft)

DESIGN AND OPERATION ISSUES

- Place advance stop lines generally 50 to 65 feet in advance of the PHB mast arms and consider STOP HERE ON RED sign at stopbar
- Consider Removing broken lane lines between advance stop line & crosswalk
  - May Improve conspicuity of stop line & crosswalk



DESIGN AND OPERATION ISSUES

- Non-primary signs should not block driver's view of the primary signs or signal heads.
- MUTCD states they are optional "May" be used to clarify stopping location
- STOP HERE ON RED sign is encouraged, but placement must be carefully selected

DESIGN AND OPERATION ISSUES
LIGHTING BOTH SIDES OF CROSSING

Informational Report on Lighting Design for Midblock Crosswalks FHWA-HRT-08-053 April 2008

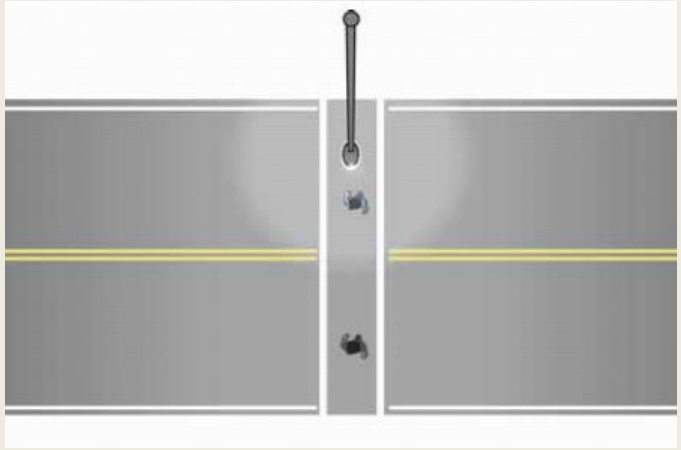


Fig 11. Traditional midblock crosswalk lighting layout

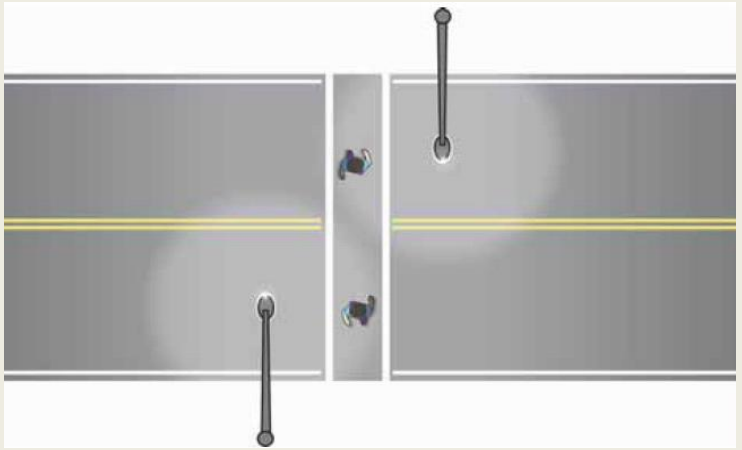


Fig 12. New design for midblock crosswalk lighting layout

Recommended lighting level: 20 lux at 5' above pavement

FHWA Report http://www.tfhrc.gov/safety/pubs/08053/08053.pdf

ADA

Use APS buttons for universal accessibility (PROWAG-compliant)

- Make sure ramps exist and crossing is fully accessible

Click to play 3 sample locator tones

Click to play crossing message

DESIGN AND OPERATION ISSUES

- Minimum Desirable WALK 5-7 seconds:
  - Consider longer WALK interval during school arrival & dismissal times if used at a school crossing
- Provide minimum vehicle “Go” time between PHB activations
  - Some agencies use up to 50 seconds of “blank-out” time between PHB activations (Background cycle)
  - 2013 ITE TCDH: recommends 15 to 45 seconds
  - Minimum “blank-out” time between activations can be shorter during peak crossing times
    - Example - school arrival & dismissal times

DESIGN AND OPERATION ISSUES

Consider multiple timing plans if used at schools or other facilities with:

UNIQUE CROSSING PATTERNS, PEAK PEDESTRIAN Times

PHB AS A PUFFIN: PEDESTRIAN USER FRIENDLY INTERSECTION

- PUFFIN is newer version of PHB in Tucson, AZ
- Flashing RED can be held longer to allow slower pedestrians to cross
- Sensors connected into the system monitor pedestrian crossing movements in crosswalk area
- Pedestrian clearance time for PHB based on 3.5 fps walking speed. PUFFIN timing allows the controller to extend the clearance time up to 3.0 fps crossing time

FLASHING ALTERNATING RED

Some jurisdictions have reported drivers remain standing during the FLASHING RED indication. How to encourage drivers to proceed on FLASHING RED after pedestrians have crossed:

- Public education
  - Media (newspapers, traffic PSAs)
  - Pamphlets distributed or posted on websites
  - Video (PSAs or posted on agency websites)
- Special signs posted on PHB

ENCOURAGING DRIVERS TO PROCEED

Phoenix Sign*

*No Longer Needed in Tucson after many years of Service

MUTCD EXPERIMENTAL PROCESS

- **MUTCD Experimental Process**
  - http://mutcd.fhwa.dot.gov/condexper.htm

*Signs used around the Nation– No Longer Needed in City of Tucson after so many years of Service

COORDINATION WITH ADJACENT SIGNALS

- Long delays for WALK signal most likely create pedestrian compliance issues, especially if natural gaps occur
- Relatively quick WALK increases pedestrian compliance & encourages use of PHB
- If the pedestrian crosses “early”, the motorist will be stopped for no reason, & will diminish respect for PHB
- FLASHING RED interval keeps the delay to a minimum

DESIGN AND OPERATION ISSUES

Decide what the beacon will display if a 'conflict' is detected:

- 2013, *ITE Traffic Control Device Handbook* - FLASHING YELLOW for "fail-safe" operation
- Some Cities use - Flashing RED to provides "fail-safe" operation
- Pedestrian signal should go 'dark' during conflict detection

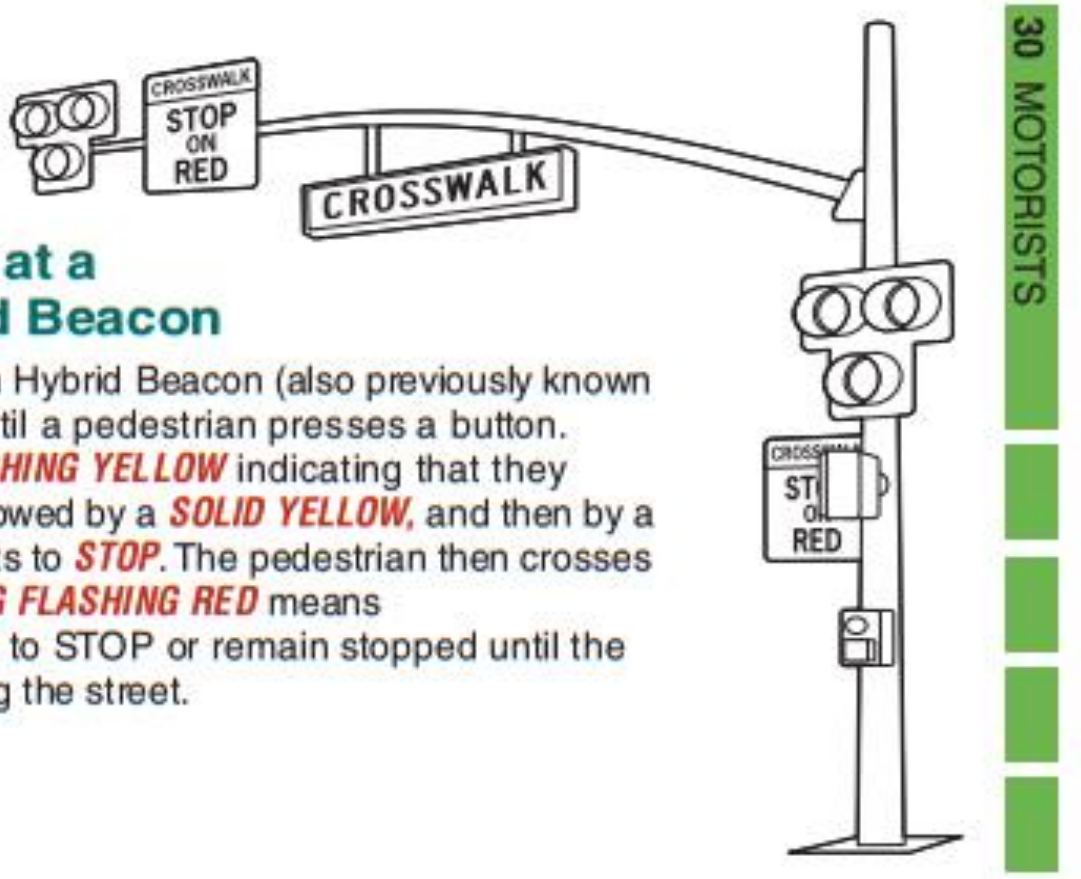
EDUCATION

WISDOT - HOW TO USE A PEDESTRIAN HYBRID BEACON – LIVE ACTION

SPECIAL PROVISIONS PRIOR TO ACTIVATING THE PHB

- Educate Police
  - Most have never seen a PHB before & may not understand how they work
  - Police must know what constitutes a violation and relevant ordinance/law
  - Invite Police to activation for training
  - Use traffic police to train other officers

SPECIAL PROVISIONS PRIOR TO ACTIVATING THE PHB: ADOT

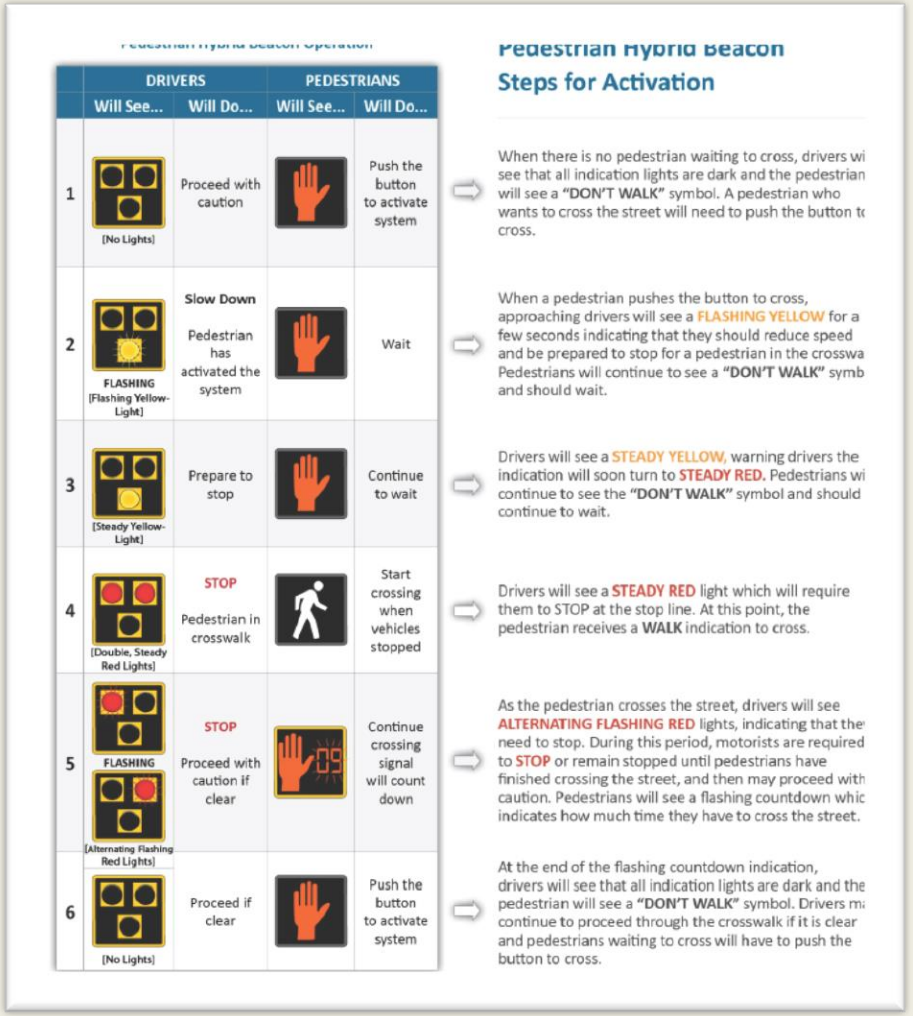


Obey the Signals at a Pedestrian Hybrid Beacon

The signals at a Pedestrian Hybrid Beacon (also previously known as a HAWK) remain off until a pedestrian presses a button. Motorists then see a ***FLASHING YELLOW*** indicating that they should prepare to stop, followed by a ***SOLID YELLOW,*** and then by a solid ***RED*** requiring motorists to ***STOP***. The pedestrian then crosses the street. An ***ALTERNATING FLASHING RED*** means that motorists are required to STOP or remain stopped until the pedestrian finishes crossing the street.

SPECIAL PROVISIONS PRIOR TO ACTIVATING THE PHB

- Educational tools
  - Agency websites
  - School websites (if installed at a school)
  - Pamphlets, News Media



Pedestrian Hybrid Beacon Operation

Pedestrian Hybrid Beacon Steps for Activation

	DRIVERS		PEDESTRIANS		
	Will See...	Will Do...	Will See...	Will Do...	
1	[No Lights]	Proceed with caution		Push the button to activate system	When there is no pedestrian waiting to cross, drivers wi see that all indication lights are dark and the pedestrian will see a **"DON'T WALK"** symbol. A pedestrian who wants to cross the street will need to push the button t cross.
2	FLASHING [Flashing Yellow-Light]	**Slow Down** Pedestrian has activated the system		Wait	When a pedestrian pushes the button to cross, approaching drivers will see a FLASHING YELLOW for a few seconds indicating that they should reduce speed and be prepared to stop for a pedestrian in the crosswa Pedestrians will continue to see a **"DON'T WALK"** symb and should wait.
3	[Steady Yellow-Light]	Prepare to stop		Continue to wait	Drivers will see a STEADY YELLOW, warning drivers the indication will soon turn to STEADY RED. Pedestrians wi continue to see the **"DON'T WALK"** symbol and should continue to wait.
4	[Double, Steady Red Lights]	STOP Pedestrian in crosswalk		Start crossing when vehicles stopped	Drivers will see a STEADY RED light which will require them to STOP at the stop line. At this point, the pedestrian receives a **WALK** indication to cross.
5	FLASHING [Alternating Flashing Red Lights]	STOP Proceed with caution if clear		Continue crossing signal will count down	As the pedestrian crosses the street, drivers will see ALTERNATING FLASHING RED lights, indicating that the need to stop. During this period, motorists are required to STOP or remain stopped until pedestrians have finished crossing the street, and then may proceed with caution. Pedestrians will see a flashing countdown whic indicates how much time they have to cross the street.
6	[No Lights]	Proceed if clear		Push the button to activate system	At the end of the flashing countdown indication, drivers will see that all indication lights are dark and the pedestrian will see a **"DON'T WALK"** symbol. Drivers m continue to proceed through the crosswalk if it is clear and pedestrians waiting to cross will have to push the button to cross.

SPECIAL PROVISIONS PRIOR TO ACTIVATING THE PHB

- Use local media - reporters always love a good story or breaking issue
- Videos played on agency websites or TV PSAs - mostly local cable
- Engage students and community groups in education effort
  - School class project

COST

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	No. of Observations
Pedestrian Hybrid Beacon	Pedestrian Hybrid Beacon	$51,460	$57,680	$21,440	$128,660	Each	9 (9)

Source: *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public,* October 2013

TWO-STAGE PHB

DOUBLE HAWK PEDESTRIAN CROSSING

SCOTTSDALE CASE STUDY
TWO-STAGE PHB

- Two-stage PHB used to reduced overall stopped time for crossing a wide street.
- Each crossing requires a far shorter clearance
- Can coordinate with two-direction traffic
- Requires fencing in the median to corral/guide pedestrians to both crossings

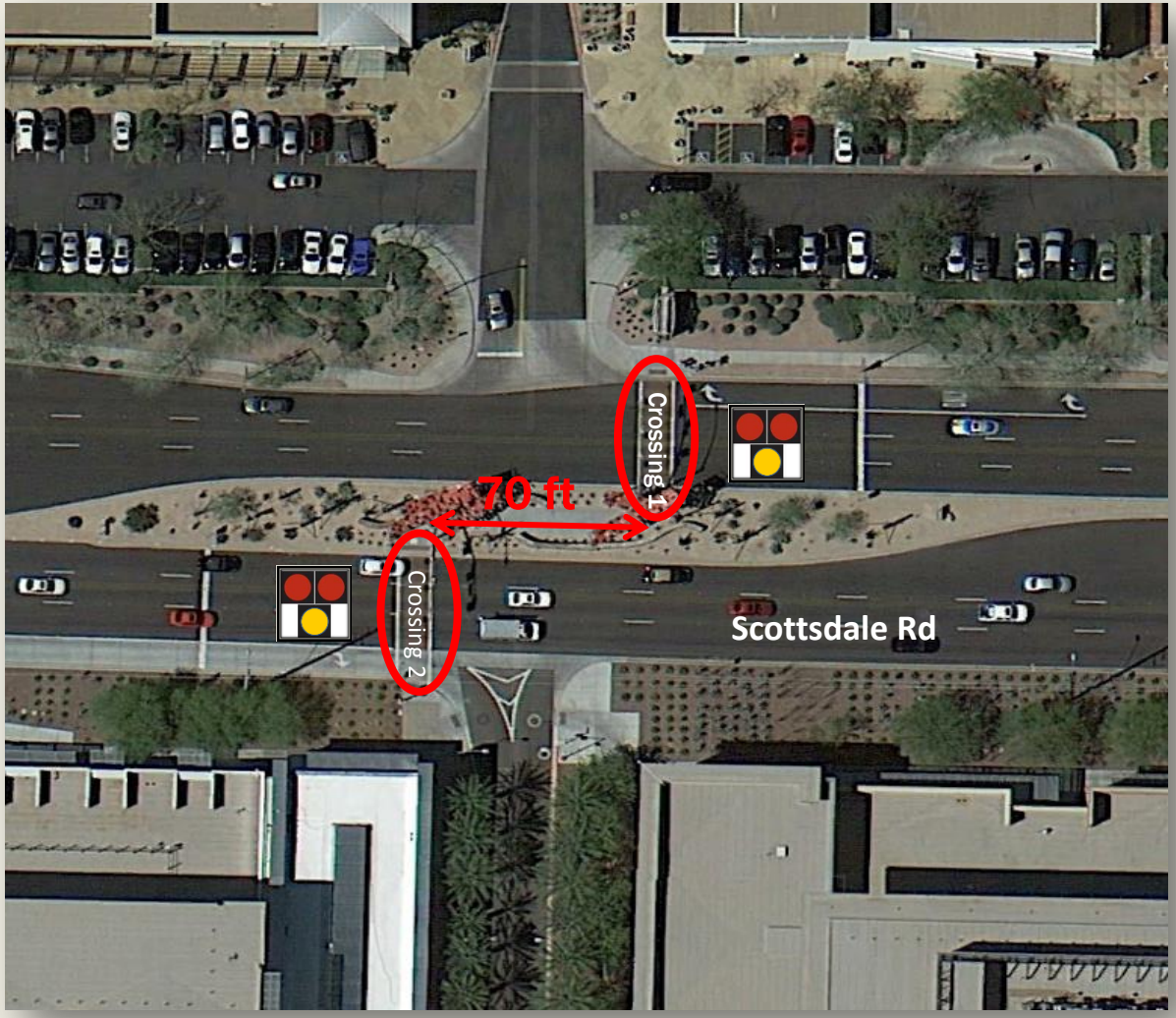
LATENT CROSSING DEMAND

- Connects two retail developments across a very busy 6-lane median divided arterial
  - 47,000 ADT
  - 6 Thru lanes, 2 Right turn lanes, Wide Median
- Peak-hour "BEFORE" count was **23 crossings** *("NO PEDESTRIAN CROSSING" signs were in place)*
- Peak-hour "AFTER" count there were nearly **400 crossings**

SCOTTSDALE RD 2-STAGE PHB CROSSING

- **2 PHB crossings**

  Pedestrian
  Transfer by
  Effective
  Refuge
  On
  Displaced
  Area
  Controlled
  Through
  Yielding
  Lanes



PHBs MAY BE SET UP AS A TWO-STAGE CROSSINGS

INFORMAL RESEARCH ON OFFSET CROSSWALKS

- Most UNSIGNALIZED 2-stage crossings are only staggered the width of the crosswalk.
  - Some are staggered the width of the crosswalk plus about 10 feet
- Amount of stagger need not be great
  - Especially with wider medians (16 feet or wider)
  - With medians of 20 feet or more the staggering may not be as important, even with signal or PHB-controlled
  - Every site is unique.
- The greater the stagger, the less likely someone will use it

- Some PHBs may be operated as TWO-STAGE crossings which allows for great efficiency for vehicles and less delay for pedestrians
- Staggering distance of Crosswalks may vary (Zegeer DPS 201)

Pima Association of Governments

ROUNDABOUTS & PHB

PHB AT ROUNDABOUTS

- Public Right-of-Way Accessibility Guidelines (PROWAG)
- Potentially at all multilane roundabouts

PHB AT ROUNDABOUTS: OPTION

- Option:
  - If installed at a roundabout and an engineering study determines that pedestrians without visual disabilities can be allowed to cross the road with out actuating the PHB, the pedestrian signal may be dark (not illuminated) when the PHB faces for motorists are dark

PHB BIKE APPLICATION (BIKEHAWK)

PHB AS BIKE CROSSING

- Design matches how cyclists actually currently use the PHB crossing

BIKEHAWK AT PHB CROSSINGS

Normal PHB with Bike Facilities and R9-5 for cyclists to use pedestrian signals

PHB AT BIKE CROSSINGS

Provide actuation devices that are accessible to bicyclists with R9-5 sign

Compliance is in the 90% range & near 100% with families and children

PHBs SERVE THE COMMUNITY

- Balance of needs between the various modes of travel and neighborhoods
- High compliance rates
- Support from the community
- Can be designed to serve “special service” needs
- Gets everyone home safe and sound

Positive News Coverage

“

“I feel safer now that they have put these lights in”
Jocellyn Mora – KGUN 9 On Your Side

The Living Streets Alliance, Tucson's bicycle and pedestrian advocacy organization has indicated that:

"The BikeHAWK helps unite neighborhoods and connect destinations for all modes of safe travel. Already, we've seen families and younger riders, both escorted and unescorted, using the BikeHAWK. This use emphasizes the safe connectivity of all levels of bicyclists across multi-lane, high speed roadways."

Emily Yetman, Executive Director, Living Streets Alliance

GOAL: PHBs HELP GET EVERYONE HOME SAFE AND SOUND!

QUESTIONS

Thank You!

- **Archive at www.pedbikeinfo.org/webinars**
  - Downloadable/streaming recording and presentation slides
- **Questions?**
  webinars@hsrc.unc.edu