Adapting the Pedestrian Hybrid Beacon (HAWK) for Bicycle Use

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Pedestrian Hybrid Beacon--HAWK
TOUCAN ”TwO groUps CAN cross”

- Pedestrians and bikes cross through center
- Neighborhood street traffic must turn right. The arterial may also have turn restrictions
- May create difficult neighborhood traffic mitigation issues
- *Bike signal indications not currently MUTCD approved
Pedestrian Hybrid Beacon: HAWK

- Chapter 4F of the MUTCD
- Tucson has more than 100
- Provides crossing opportunities without attracting traffic to residential streets as signals tend to do
- Minimizes interruption for arterial traffic
- High compliance by public and neighborhood acceptance
Section 4F.02 Design of Pedestrian Hybrid Beacons recommended by NCUTCD to FHWA for 2016 MUTCD

ADDED: Standard: E. 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.

REMOVED: Guidance: A. The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs.
HAWK Signal Phasing

- Rests in dark mode,
- Flashing Yellow (3-5 sec)
- Solid Yellow (equal to yellow change interval)
- Solid red coincides with WALK (4 to 10 sec)
- Alternating Flashing RED (pedestrian clearance interval)
Development of the BikeHAWK

• Proven HAWK safety, less costly as compared to TOUCAN
• MUTCD Technique Approved
• Non-invasive to neighborhood
• Cyclists already using HAWKs, (design matched cyclists behavior)
• Makes safer Bike Boulevard crossings at arterials
Future of BikeHAWKs

• Need to turn the crossing from this barrier ......

• to this open and inviting way
Development of the BikeHAWK
Design of the BikeHAWK:

- Already had common entry and crossing pattern by all riders
- Inconsistent exit pattern
- Needed Easier access to Detection Buttons
- Design in conformance with current MUTCD
- Police and community support
Downstream sign (outside of diagram)
Design of the BikeHAWK

- Contra-flow bike lane
- Signal detection buttons within reach
- MUTCD-approved signing
- Supplemental Illuminated signs
- Green pavement markings*
  (Converting to Green ZEBRA Stripes now)

* FHWA Approval Required
Design of the BikeHAWK

- Pima County is experimenting with GREEN* ZEBRA stripe pavement markings in conflict areas, (Tucson desires consistent regional markings and is also converting to Green ZEBRA Stripes at conflict points)

* FHWA Approval Required
Contraflow Lane & Push Button
BikeHAWK Signing

- Use Ped Signal (R9-5)
- Yield to Peds (R9-6)
- Crosswalk Sign (R5-1b)
- Crosswalk Stop on Red (R9-3cP)
- No Turn on Red (W11-15)

Visual elements include bicycle icons and traffic signs.
Supplemental Illuminated Signs

Pedestrian Heads at Crosswalk

Bike Illuminated Signs at GREEN lane, with MUTCD 9-5, exempting bikes from STOP sign
Illuminated Signs
Only Word Messages MUTCD Accepted

Other Cities Bike Alert Information
Illuminated Signs

Japan uses signs alone at Bike, Pedestrian Crossings

Sign reads: PEDESTRIAN and BICYCLE USE
Quote from PORTLAND BikeForum:
I use the HAWK signal at Burnside quite a bit, and the other night I activated it and as I started into the intersection a car came barreling through at a pretty high rate of speed. It made me think, there it a stop sign there and the green light is pretty clear a bike light as it has a bike stencil on it. Are cars supposed to stop anyway before proceeding. Are bikes exempt from that stop sign if someone else already has activated the signal?
FHWA has discontinued the approval of new experiments using this modified treatment (Side Street Bike Indications at Pedestrian Hybrid Beacons). Agencies that have received prior approval to experiment may continue to operate under the terms of the original experimental approval for the duration of the agreed upon time frame.

Bikes can be assisted in crossing a roadway by a Pedestrian Hybrid Beacon type of device at the present time.

FHWA Bicycle Facilities and the MUTCD, 2013
Pavement Markings*

*Must get FHWA approval for GREEN Pavement
Use of the BikeHAWK
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- 96% of riders used the BikeHAWK
- 100% of families with children or children alone used the BikeHAWK
- 48% of riders were women, (6% children) which indicates a perception of safer, low stress facilities (normally at 26%+- in Tucson)
BikeHAWK Operation

- Requires no extraordinary programming
- ½ Cycle Background
- Coordinated or HOT pedestrian button as desired
- Rests in “dark” until needed, pedestrian head on constantly
- Pre-emption, if desired
- PUFFIN option possibility?
- 30 second delay between actuations
BikeHAWK Maintenance

- Requires the same level of maintenance as any other beacon or signal
- Illuminated bike sign wired in parallel with pedestrian signal
- Easily programmed with newer controllers
Future of BikeHAWKs

- Future Bike Boulevards
- Inexpensive to retrofit existing HAWKs (est. $10,000 to $15,000)
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
The Tucson Police Department, which participated in the creation of the BikeHAWK has found:

“We have monitored the BikeHAWK and observed that the pedestrians, cyclists and drivers know what to do naturally and the crossing movements are very safe, legal and predictable.”

–Sergeant Jerry Skeenes, Tucson Police Department, Traffic Enforcement Division
2 Wheeling in Tucson:
Tucson's first BikeHAWK is getting good reviews,
BikeHAWK Questions?

Everyone Gets Home Safe and Sound