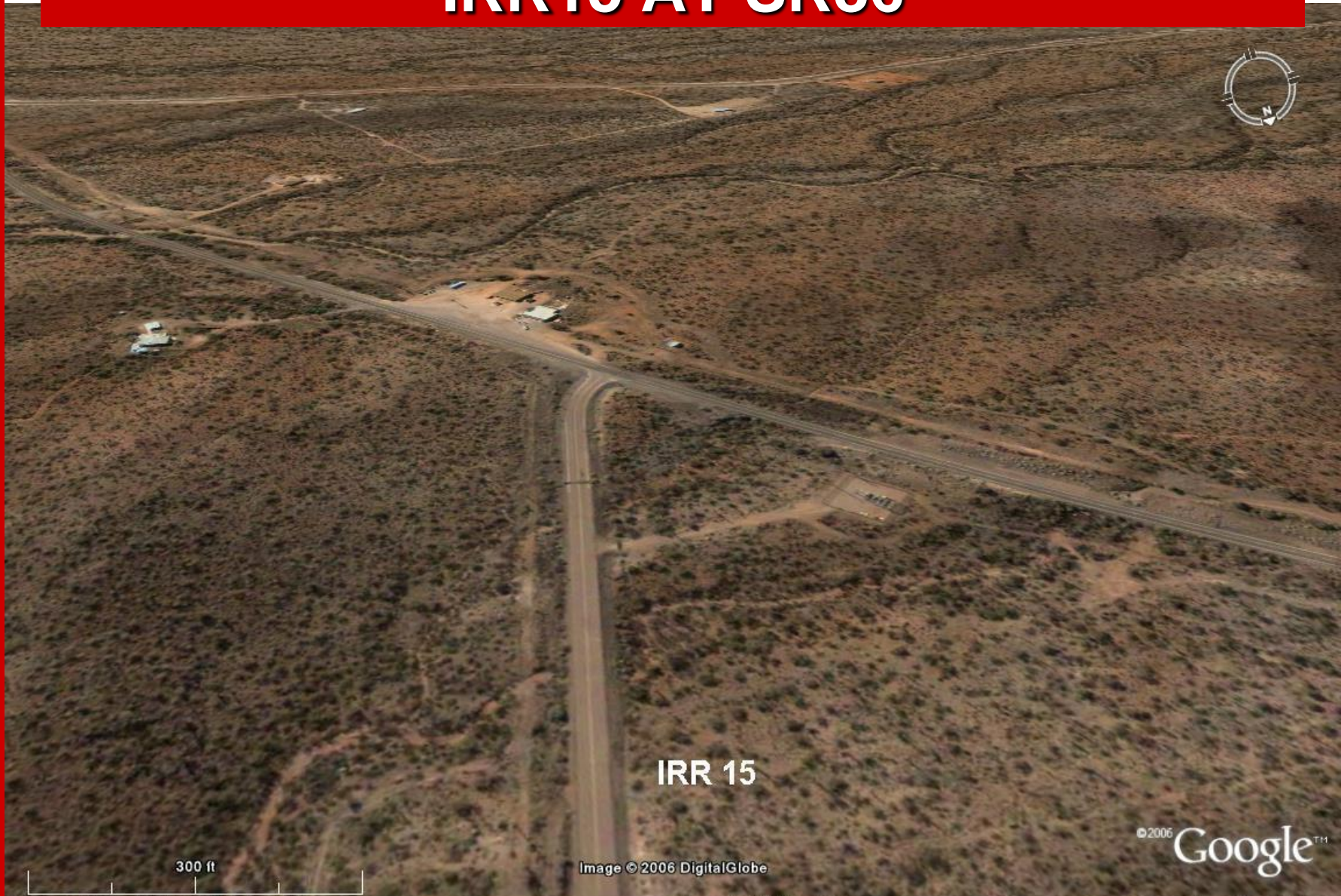


# Road Safety Audit for IRR15 AT SR86



IRR 15

300 ft

Image © 2006 DigitalGlobe

©2006 Google™

Pointer 32°09'38.87" N 112°06'42.38" W

Streaming ||||| 100%

Eye alt 811 ft

# RSA Team

- ✍ Mike Redhair – BIA Highway Design Engineer
- ✍ Mike Blankenship – Arizona DOT RSA Manager
- ✍ Karla Petty – FHWA, AZ (Office of Safety)
- ✍ Kohinoor Kar – ADOT HES
- ✍ Richard Weeks – ADOT HES

# Community Resources

- October 16 – Building Tribal Traffic Safety Capacity Implementation Team
- November 6 – RSA Training for TON
- November 19 - Covered Wells Community
- November 27 – Meeting with owners and et. al.
- November 27 – Trading Post Manager
- November 28 – ADOT Maintenance

# RSA Process

## 1. Start-up Meeting



## 2. Site Visit

## 3. RSA Analysis Workshop



## 4. Preliminary Findings Meeting

**Things being done Well!**

- **TON HAS PRIMARY SEAT BELT LAW**
- **TON'S RESTRICTION OF ROADWAYS FOR WIDE LOADS TO DAYTIME**
- **SR 86 PAVEMENT, PAVEMENT MARKINGS, AND SIGNS IN GOOD CONDITION**
- **USE OF RAISED PAVEMENT MARKINGS ON SR 86**
- **IRR 15 GEOMETRICS & ROAD CONDITION NORTH OF INTERSECTION (curve delineation for night)**



Quijotoa

# Issues

# Human Factors

## ⤴ Violation of driver expectancy

- ▣ High speeds w/ hidden intersection
- ▣ Stop sign on left side
- ▣ Speed reduction to 25

## ⤴ Processing information

- ▣ Chevrons for curve warning/Stop situation

# Visibility of Intersection



# Visibility of Intersection



SR 86 Westbound

# Visibility of Intersection



SR 86 Eastbound

# Sight Distance









# Sight Distance



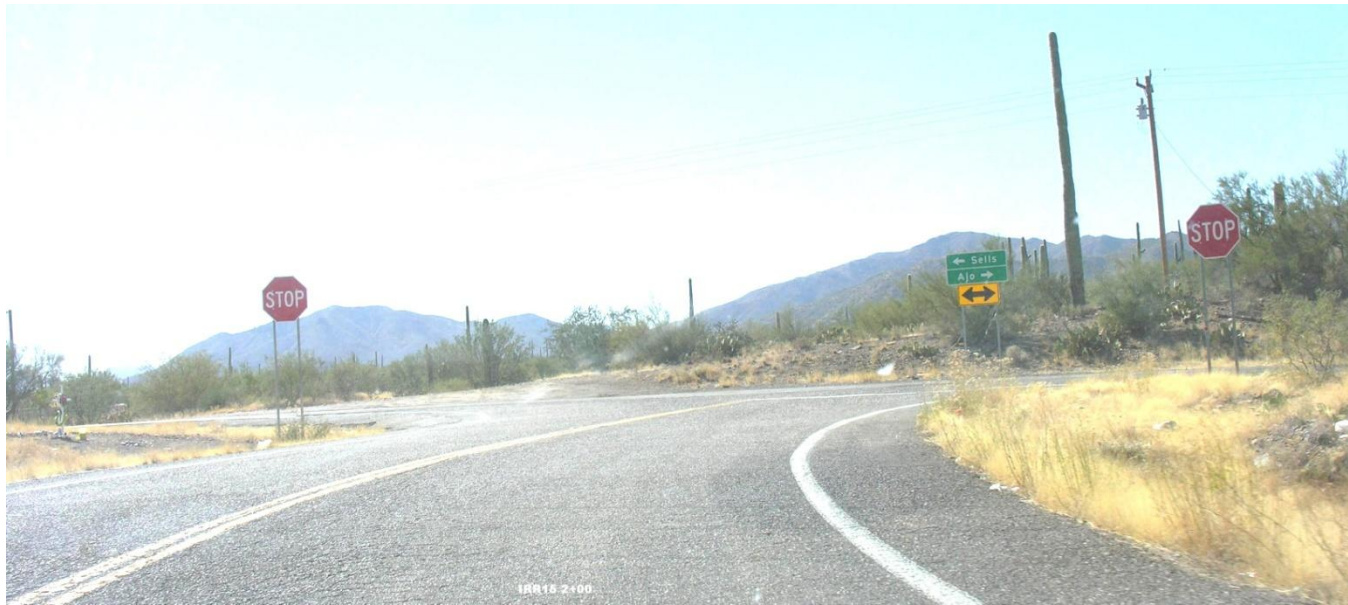
# Visibility of Intersections & Sight Distance

## Recommendations

-  Lighting
-  Turn Lanes
-  Cut back slopes on NE & NW Quadrants
-  Remove crest from profile
-  Removal of left side supplemental stop sign to alleviate driver's confusion
-  Transverse rumble strips closer to intersection

# Signing

Retroreflectivity  
Route Markers/Junction  
Signs  
Sign Placement



# Delineation

Raised pavement markers (RPMs)  
centerline & edge of pav't  
Remove chevrons and replace  
with delineators (360)  
Object markers



# Speed

Targeted enforcement  
Transverse Rumble Strips



# Roadside Maintenance



Removal of vegetation  
Grade shoulders

# Cattleguards



More Effective →

# Parking in R/W

Post No Parking Signs  
Enforce No parking



# Potential Funding Opportunities

↳ Highway Safety Improvement Program (HSIP) /HES

▣ *safety project construction*

↳ Transportation Enhancement Program

▣ *pedestrian facilities*

↳ ADOT District Minor, STP, etc.

↳ Indian Health Service (IHS) – Injury Prevention Program

# Potential Funding Opportunities

## ↳ State and Community Highway Grant Program / Section 402

- ▣ *enforcement*
- ▣ *education / promotion*
- ▣ *through Arizona Governors Office of Highway Safety, and/or BIA Highway Safety Office*

## ↳ IRR Program

- ▣ *highway safety improvements, including alignment improvements, pedestrian facilities, bus shelters, guardrail, and signing/pavement markings*

# Other Resources

Contact Karla Petty, Mike Blankenship,  
for information on:

- Arizona Road Safety Audit Program
- FHWA Resource Center assistance
- FHWA Road Safety Audit website

# RSA Process: Next Steps

## SR 86 & IRR 15 Road Safety Audit

RSA Report



### MEMORANDUM

DATE: January 4, 2006

TO: Roadway Safety Audit Team

FROM: Richard B. Nuss  
Transportation Administrator

SUBJECT: Response to Road Safety Audit Recommendations

Project: Road Safety Audit of six "HAWK" Pedestrian Crossing Sites, Tucson Arizona  
Contract: DTPB8-05-EX0005 Task Order BMS0508002  
Description: Installation of six HAWK Pedestrian Crossings City-wide

**Issue 1: Use of the Alternating Flashing RED Signal Indication.** During on-site observations of the existing HAWK 1 installations, most drivers were observed to remain stopped until the alternating flashing RED sequence has ended, even though they may legally pass through the crosswalk. Of those drivers who did proceed during the alternating flashing RED sequence, many following drivers continued slowly through the crosswalk without coming to a full STOP as required by law as a flashing RED beacon. Drivers who illegally enter the crosswalk during the flashing RED display may conflict with pedestrians legally in the crossing during the pedestrian clearance phase. This risk was noted in the risk level.

The following suggestion(s) were discussed and action(s) were taken:

1. **Additional Signage:** Additional regulatory signaling was installed at selected HAWK crossing to determine their impact upon drivers as well as extensive educational program and enforcement. The black on white sign read "STOP—MAY PROCEED WITH CAUTION WHEN FLASHING". Observation of the signage over the last year, as well as the media campaign, has shown little change to the driver's behavior. However, enforcement has made a significant impact upon individual driver's behavior as it does with other traffic enforcement.
2. **Eliminate Flashing Interval:** The HAWK operation is very effective in gaining appropriate driver compliance at pedestrian crossings and significantly increases the percentage of drivers voluntarily stopping for pedestrians. The beacon signal displays a solid RED indication to traffic during the WALK interval and is then followed by an alternating flashing RED interval during the FLASHING POINT WALK interval. The current alternating RED flashing sequence was adopted from the successful operations used in Europe, which use a flashing AMBER at PELICAN crossings and Los Angeles, which use a flashing RED indication at midblock crossings. The advantages of the flashing RED indication is to allow the momentary and prudent driver to proceed when it is safe to do so, and by some matches the crossing time needs of the individual pedestrian to actual delay thus maintaining high driver compliance. It is responsible to have a pre-determined crossing time match the time necessary for all individuals that may cross. The beacon signal operation needs to match the user expectancy in order to keep the compliance high. The key to the issue is that the operation of the STOP command should be generally only as long as the pedestrian needs to cross and reach the other curb and not become

Owner Response



Changes

# Contacts

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