

Automated Flagger Assistance Devices (AFADs)

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Automated Flagger Assistance Devices (AFADS)

- History
- Why use AFADS?
- Issues and National MUTCD Discussions
- Typical Usage
- Selection Criteria

History

- 1995 - Minnesota DOT - flagger fatality
- 1996 – MN began experimentation with AFADs
- 2003 – FHWA interim approvals
- 2009 – Included in 2009 MUTCD

Why use AFADs?

Work zones are dangerous places

- 18% of WZ fatalities involve directing or flagging traffic*
- Flaggers can be out of harm's way
- Intrusion alarm alerts entire work zone
- Save money – only need one flagger
- MNDOT study: STOP/SLOW AFADs get more motorist respect than flagger

* <http://www.bls.gov/opub/mlr/2004/12/ressum2.pdf>

This is why!!

INDOT flagger fatality report 901890670

- INDOT had flagmen at both ends of the construction zone
- The flagman standing on the right side of the roadway had stopped Eastbound traffic using a hand held stop sign. One vehicle had already stopped for the flagman.
- The approaching vehicle (V1) did not see the stopped vehicle nor the flagger and swerved to the right, ran off the road through the grass, striking and killing the INDOT flagger.
- IN DOT had placed multiple signs including a message board West of the zone to warn of the upcoming construction zone. V1's driver said that he did see the construction signs but when he did not see any work in the immediate area that he did not think that there were any workers in the area.

Why use AFADs?

- Over a 5 year period, INDOT work zone reviews found 29.6% of issues found were that the flagger was not properly positioned
- Let's get the flagger out of harm's way!

Two Types of AFADs

- STOP/SLOW sign AFADs
- Red/Yellow signal face AFADs



More Red/Yellow AFADs



Another STOP/SLOW AFAD



Issues with STOP/SLOW AFADs

- Should red signal flash?
 - Should be steady burn red, but can't be (MUTCD part 4)
 - TTI AFAD study: flashing is better
 - Motorists rarely recognized the issue
- Should gate arm be mandatory?
 - Currently is not mandatory
 - TTI study recommended yes
 - Texas MUTCD requires gate arm
 - Resolves flashing red light issue

Issues with Red/Yellow lens AFADs

- Is their visibility or "target value" adequate?
- Can color blind motorists function with just 2 colors?
 - NCUTCD had concerns about color discrimination with 2-color signal heads
 - NCUTCD did not recommend inclusion in 2009 MUTCD

Color Blind Motorists

- 7% to 10% of Americans are color blind
- Many can't distinguish between red and yellow
 - Decision takes time and analysis
 - Need side-by-side comparisons to discriminate
 - 2 signal head units offer no positional reference

Typical AFAD Applications

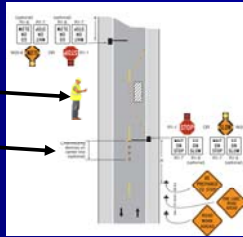
MUTCD Figure 6E-01

2 lane road, one lane closed

Flagger/operator must be able to see both ends of work zone

Note - Optional channelizing devices

In this mode, both devices must not be able to display slow at the same time!

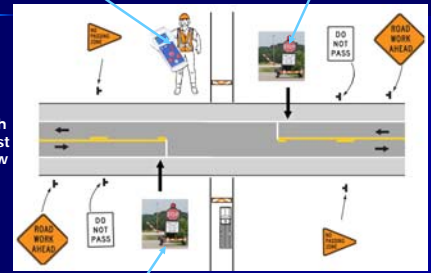


Uses: Haul Road – Flagger

Flaggperson with Hand Held

AFAD

In this case, both signs must show slow at same time!



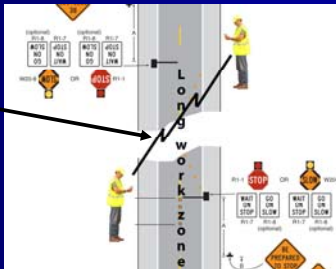
AFAD

Uses: Long work zones where one flagger can't see both ends of work zone.

The answer: Use two flaggers who communicate by radio while being located OUT OF HARM'S WAY

One flagger can control both devices

OR each flagger controls one sign



Uses: Moving Lane Closure



AFAD Selection Criteria

- Must meet Indiana MUTCD
 - Red/Yellow not allowed
- For STOP/SLOW AFADS
- Motorist safety aspects
 - Need good "target value"
 - Larger signs better for motorist visibility
 - Flashing signal and red strobe get attention
 - Taller signs visible over vehicles in queue
 - Gate arm for positive vehicle control
 - Gate arm height
 - Octagonal shape

Selection Criteria

- Flagger safety
 - Wireless remote control simple, foolproof
 - Allows flagger to be out of harm's way
 - Ability to control work zone while taking shelter from weather
 - Intrusion alarm loud, operator triggered
 - Best if all workers know sign message at all times

Selection Criteria

- Economical
 - Make sure single operator can tow, set up, run two units at once
 - Operational 24/7. Have everything sealed against dust, dirt, rain.
 - Guaranteed
- No FCC licensing required

Selection Criteria

- Reliable
 - Foolproof electronic communications
 - Solar Charging
 - In-yard charging or charge from vehicles
 - Operators always have fresh remote control batteries
 - Not failure prone

Possible changes coming

- Gate arms may become mandatory
- Signage may change



My Stuff

- Safety Technologies, inc.
www.autoflagger.com
- AF-76 AutoFlagger™ STOP/SLOW AFAD
 - Safest unit on the market
- AF-54 AutoFlagger™ Red/Yellow AFAD
 - Less expensive
 - My opinion: Less focused on motorist safety
- My contact info: djones@autoflagger.com
- 612 581-7503

You be the Judge



Thank You