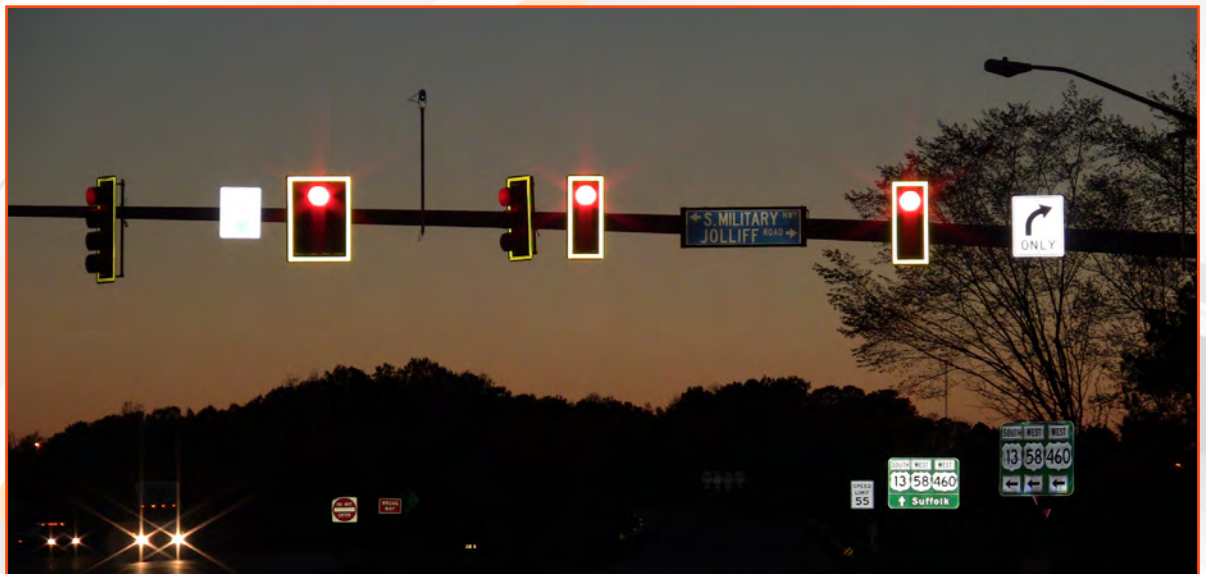
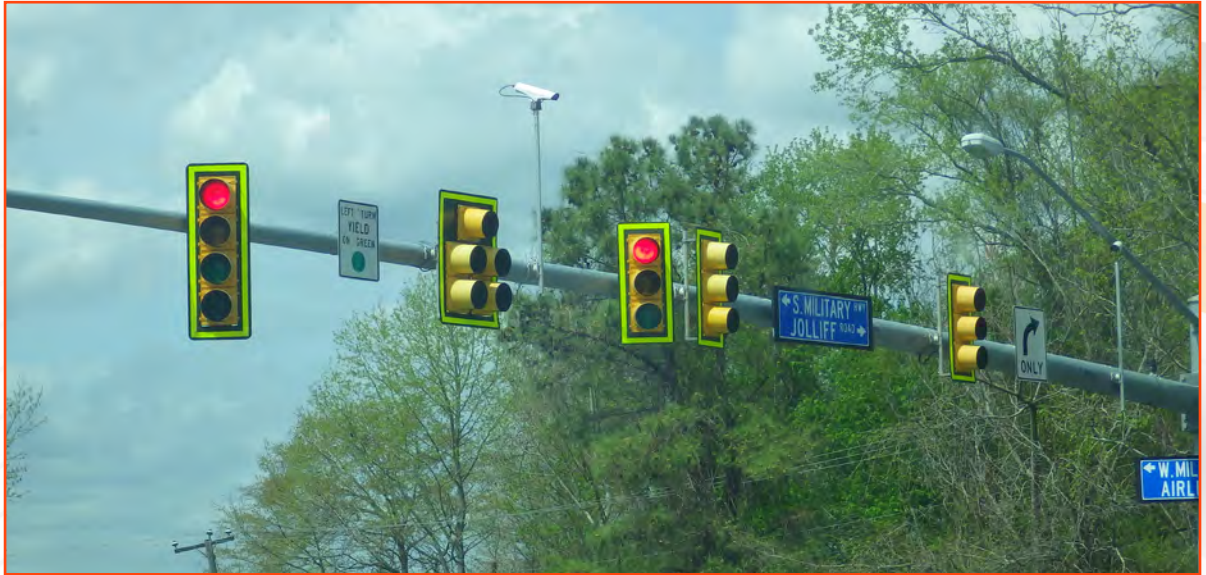


Retroreflective Traffic Signal Backplates



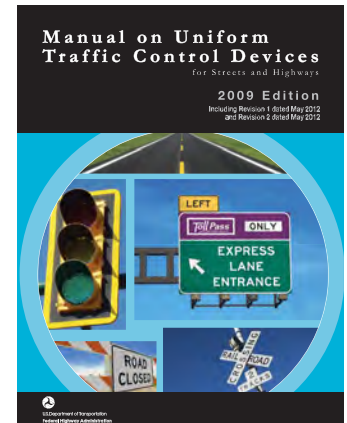
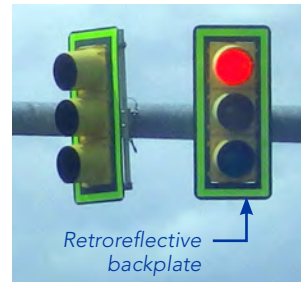
June 2014

PURPOSE

- Enhance visibility of traffic signals
- Improve overall safety and operations at signalized intersections
- Increase crash savings to motoring public
 - \$129 million/year if installed at all VDOT signals

WHAT ARE RETROREFLECTIVE BACKPLATES?

- Backplates surround the signal housing to improve visibility of the signal
- Retroreflective backplates have a 1- to 3-inch yellow retroreflective border around the perimeter of the backplate
- Option in 2009 MUTCD (first issued as Interim Approval in 2004)



Manual on Uniform Traffic Control Devices, 2009

WHY USE RETROREFLECTIVE BACKPLATES?

- One of the nine FHWA proven safety countermeasures
- Low cost, systematic improvement
- Reduces unintentional running of red lights and other driver violations of traffic signals
- Increases traffic signal visibility
 - Contrasts against the dark backplate
 - Distinguishes between background lighting, signs, and visual distractions
 - Increases recognition during times of limited visibility (night, fog, heavy precipitation)
 - Draws attention to the intersection during power outages
 - Draws attention to the intersection after long roadway sections without signals

15% REDUCTION IN VEHICULAR CRASHES ¹

29% REDUCTION IN FATAL AND INJURY CRASHES ²

TRAFFIC SIGNALS AT NIGHT



- To view a **video** go to <http://www.kimley-horn.com/communication/md/projects/vdot-video/VDOT-Backplate-At-Night.mp4>

1 Miska, E., P. de Leur, and T. Sayed. "Road Safety Performance Associated with Improved Traffic Signal Design and Increased Signal Conspicuity." ITE, 72nd Annual Meeting, Philadelphia, PA. Washington, DC, 2002

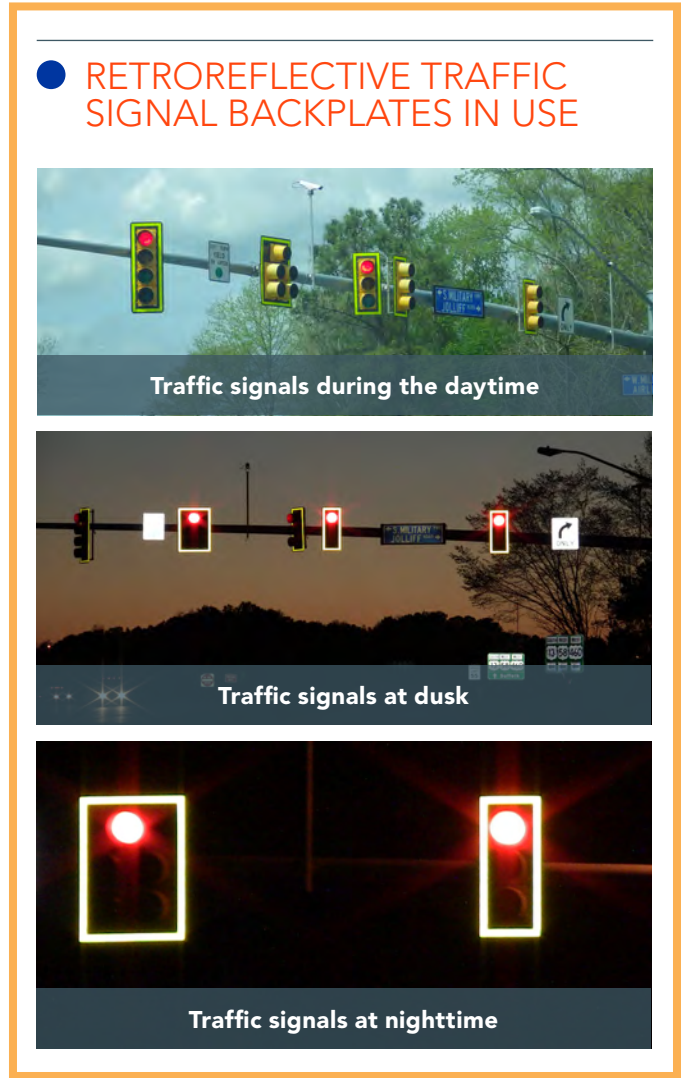
2 El-Basyouny, K. and Sayed, T. "A full Bayes multivariate intervention model with random parameters among matched pairs for before-after safety evaluation." Accident Analysis and Prevention, Vol. 43, No. 1, Oxford, N.Y., Pergamon Press, (2011) pp. 87-94.

● WHY USE RETROREFLECTIVE BACKPLATES IN VIRGINIA?

- ➔ Consistent with VDOT Business Plan for FY14-FY15 Objective 1.3
- ➔ Supports Virginia's Strategic Highway Safety Plan
- ➔ Enhances intersection safety
- ➔ Intersection crashes are an Emphasis Area for Virginia

● WHERE HAVE RETROREFLECTIVE BACKPLATES BEEN IMPLEMENTED?

- Ohio DOT³
- Massachusetts DOT³
- South Carolina DOT³
- Oklahoma³
- Florida DOT⁴
- Texas DOT
- Washington DOT
- Kentucky Transportation Cabinet
- Indiana DOT
- Connecticut DOT
- Chesapeake, VA
- Madison, WI
- Frankfort, KY
- Indianapolis, IN
- Manhattan, KS
- British Columbia, Canada



● RETROREFLECTIVE TRAFFIC SIGNAL BACKPLATES IN USE



3 All new traffic signals
 4 Required for roadways 45 mph and above, encouraged for roadways less than 45 mph

