



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

TRAFFIC OPERATIONS BULLETIN 01-12

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To: District Traffic Operations Engineers, District Design Engineers, District Structures Design Engineers, District Directors of Operations, and District Directors of Transportation Development

From: Mark C. Wilson, P.E., State Traffic Operations Engineer 

Copies: Brian Blanchard, Tom Byron, Duane Brautigam, Tim Lattner, Lora Hollingsworth, David O'Hagan, Robert Robertson

Subject: Adding Signal Heads and/or Backplates to Existing Traffic Signals

Background

A major goal of the Department's Strategic Highway Safety Plan is to reduce intersection crashes. The need to quickly address critical safety concerns at signalized intersections is vital to that goal. The ability to implement safety counter-measures such as additional signal heads, protected-only signal phasing, deploying flashing yellow arrow left turn treatment and adding backplates quickly is anticipated to reduce recurring crashes at signalized intersections.

A concern in making traffic safety improvements is that adding additional loading to some traffic signal support systems may reduce the traffic signal support system's ability to withstand the wind loading under the Department's established design event. As part of risk management, we have established a reduced wind load procedure which will allow Districts to employ immediate countermeasures to address frequent crash problems at signalized intersections. These projects typically involve District Traffic Operations Offices needing to respond to identified safety and operational problems arising at a particular intersection and needing to be addressed in a responsive manner. Quickly implementing safety improvements or modifications to address specific documented safety concerns at a particular intersection is paramount to reducing crashes and improving intersection safety.

Adding traffic signal heads, backplates, and ancillary traffic control devices to existing support structures is expected to immediately improve safety with the recognition that the additional loading will reduce the traffic signal support structure's ability to withstand the design wind loading while maintaining a minimum level of structural capacity.

Implementation Process

Proposed safety improvement additions of signal heads, backplates or other devices to existing traffic signal support systems must be analyzed in accordance with the FDOT Plans Preparation Manual (PPM) Section 25.4.27. If all demand-to-capacity (D/C) ratios and combined stress ratios (CSRs) are less than one, the structure meets FDOT and AASHTO requirements and no additional analysis is required.

If any D/C ratios or CSRs are greater than one (>1.0), the following temporary Wind Recurrence Intervals can be used in the analysis:

- Concrete Strain Poles, a 10 year Wind Recurrence Interval is allowed (reduced from 25 Years)
- Mast Arms and Steel Strain Poles, 25 year Wind Recurrence Interval is allowed (reduced from 50 Years)

Case 1:

If all D/Cs and CSRs are less than one (<1.0) using reduced Wind Recurrence Intervals, the structures can be temporarily retrofitted and should be upgraded to meet PPM criteria when it is feasible and practical to meet the PPM Wind Recurrence Intervals through either the Department's Work Program or Maintenance Program. The District Traffic Operations Engineer is to submit the project to the District Director of Transportation Development for possible addition to the Work Program.

Case 2:

Cases where any D/C ratios or CSRs are greater than one (>1.0) using the reduced Wind Recurrence Intervals will be reviewed on a case-by-case basis by the State Traffic Operations Engineer.

Traffic signal support systems meeting the temporary reduced wind recurrence intervals described in this bulletin will not require a Design Variation.

The Traffic Engineering Manual, Chapter 3 - Signals will be modified to include the provisions contained in this bulletin.