



May 9, 2011

Mr. Hari Kalla  
MUTCD Team Leader, Office of Operations (HOTO-1)  
Federal Highway Administration  
1200 New Jersey Avenue SE, E84-316  
Washington, DC 20590

RE: Request to Experiment – New Sign to be used with STOP/SLOW AFADs

Dear Mr. Kalla:

The Texas Department of Transportation (TxDOT), is requesting permission to experiment with a new sign to be used with STOP/SLOW automated flagger assistance devices (AFADs) in an attempt to increase safety at lane closures on two-lane, two-way roadways. All the test locations will be located on the highway system under the jurisdiction of the TxDOT. Through the attached request, we are seeking permission to experiment with this new sign.

If you have any questions, please contact Michael Chacon at (512) 416-3120.

Sincerely,



Carol T. Rawson, P.E.  
Director of Traffic Operations  
Traffic Operations Division

Attachment

cc: Melisa Finley, TTI  
Ken Wood, FHWA

THE TEXAS PLAN

REDUCE CONGESTION • ENHANCE SAFETY • EXPAND ECONOMIC OPPORTUNITY • IMPROVE AIR QUALITY  
PRESERVE THE VALUE OF TRANSPORTATION ASSETS

## Background

The Texas Transportation Institute (TTI) is currently conducting research for the Texas Department of Transportation (TxDOT) to determine the operational and safety effectiveness of AFADs relative to the use of flaggers at lane closures on two-lane, two-way roadways. This research includes motorist surveys and field studies. Preliminary motorist survey results show that the current signs used with STOP/SLOW AFADs (i.e., WAIT ON STOP and GO ON SLOW) result in approximately one-quarter of participants stopping at the AFAD and then proceeding like at a normal stop sign (instead of waiting for the SLOW sign). In addition, with the current signing fewer participants understood that the AFAD would display the SLOW sign when it was appropriate to proceed.

During the motorist surveys, TTI researchers also investigated 13 alternative signs to be used with the STOP/SLOW sign. The most promising sign combination is shown in Figure 1. It is similar to the current signing except it contains graphics of the STOP and SLOW signs. Overall, these signs had the best comprehension level and were the only signs studied that had a correct comprehension level greater than 85 percent (threshold criterion). These signs also had the highest percentage of participants that stated they would wait until the SLOW sign was displayed before proceeding. With respect to incorrect actions, these signs had the smallest percentage of participants that would have stopped and then proceeded like at a typical stop sign.



**Figure 1. New Signs to be used with STOP/SLOW AFADs.**

Based on these data, TTI researchers believe that the use of the signs shown in Figure 1 might improve motorist compliance with STOP/SLOW AFADs. Thus, TTI researchers would like to include these new signs in the ongoing field studies.

### Field Study Experimental Plan

In 2010, TTI researchers conducted field studies at 12 sites in Texas. To the extent possible, the following three treatments were evaluated at each site: standard flaggers, STOP/SLOW AFADs with no gate arm and the WAIT ON STOP sign, red/yellow lens AFADs with a gate arm and the STOP HERE ON RED sign. TTI researchers collected over 50 hours of observational data, which included over 1000 stop periods. TTI researchers also conducted surveys of drivers stopped at the three treatments on days when no observational data were being collected.

In June-July 2011, TTI researchers plan to conduct additional field studies regarding the STOP/SLOW AFAD. The treatments are shown in Table 1. TTI researchers plan to collect data over a 3 to 4 week time period. The exact number of sites is dependent upon work availability, length of each project, etc. The observational data collected during each stop period will include:

- The length of time traffic is stopped at the treatment.
- The number of vehicles in queue.
- Whether or not opposing traffic could be seen by a driver stopped at the treatment.
- Whether or not the first vehicle in the queue complied with the treatment, including a description of their actions.
- If the first vehicle does not comply, what do the other vehicles in the queue do?

**Table 1. Additional STOP/SLOW AFAD Treatments.**

<b>Signs</b>	<b>Gate Arm?</b>	<b>Objective</b>
WAIT ON STOP & GO ON SLOW	No	Determine the impact of adding the GO ON SLOW sign
New signs (see Figure 1)	No	Determine the impact of new signs
WAIT ON STOP	Yes	Determine the impact of adding the gate arm
WAIT ON STOP & GO ON SLOW	Yes	Determine the impact of adding the gate arm
New signs (see Figure 1)	Yes	Determine the impact of adding the gate arm

TTI researchers will also conduct surveys of drivers stopped at the treatments on days when no observational data is being collected. These surveys will help researchers assess motorist understanding of the treatments.

TxDOT agrees to restore the sites of the experiment to a condition that complies with current standards within three months following the end of the time period of experiment. TxDOT will terminate the experimentation at any time if it determines significant safety concerns are directly or indirectly attributable to the experimentation.

### **Correspondence with FHWA**

TxDOT will provide the FHWA Office of Transportation Operations with a copy of the final results of the experimentation. Semi-annual progress reports will not be submitted to FHWA since the project is scheduled to end in August 2011.

### **Patent/Copyright Statement**

The concept of these new signs is not protected by patent or copyright.