	TRAFFIC CONTROL DEVICE APPLICATION GUIDELINES OFFICE OF TRAFFIC AND SAFETY		
	Issuing Unit TDS	Application Guideline No. 6-E3	Originally Issued: 05/06/2021

GUIDELINES FOR THE USE OF AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADs)

BACKGROUND AND PURPOSE

This document should be used as a guideline for implementing Automated Flagger Assistance Devices (AFADs) on MDOT SHA’s roadway projects. AFAD systems are appropriate to use on two-lane two-way roads on which a flagging operation would normally be employed in an effort to reduce the frequency and severity of flagger-related work zone crashes. AFADs enable a flagger to be positioned out of the lane of traffic, thereby reducing his/her exposure to injury or death. Some examples of projects that might be suited for the use of AFADs include:

- Pavement repair
- Bridge inspections and repairs
- Culvert inspections and repairs
- Utility work
- Guardrail inspections and repairs
- Detours requiring two opposite directions of traffic to utilize one lane
- Temporary traffic control in high traffic residential areas
- Tree trimming
- Emergency roadwork
- Ditch cleanout and drainage repairs
- Haul road crossings

The use of AFADs shall conform to Part 6 of the current Maryland Manual on Uniform Traffic Control Devices (MdMUTCD).

The use of AFADs must have the approval of the Assistant District Engineer – Traffic (ADE-T).

SCOPE

These guidelines apply to work performed along MDOT SHA owned and maintained roads.

EXCEPTIONS

N/A

GUIDELINES

Definitions

AFADs are portable traffic control devices mounted on a trailer that can be operated remotely by certified flagging personnel in lieu of using traditional flagging equipment. There are two types of AFADs:

- STOP/SLOW AFAD consists of a stop/slow paddle, a mechanized gate arm and supplemental signs (WAIT ON STOP/GO ON SLOW) and lights. When the AFAD displays a STOP message, the gate arm lowers across the roadway discouraging motorists from passing through a work area. AFADs can be operated by remote control by a certified flagger. Depending on work zone or site conditions, more than one flagger may be needed. See Figure 1.
- Red/Yellow Lens AFAD uses red and yellow lens, a mechanized gate arm and a supplemental sign. Currently, the MdMUTCD prohibits the use of this type of AFAD in Maryland. See Figure 2.



Figure 1. STOP/SLOW AFAD (permitted for use in Maryland)



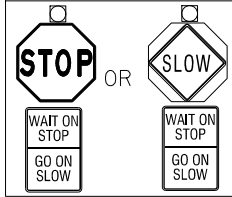
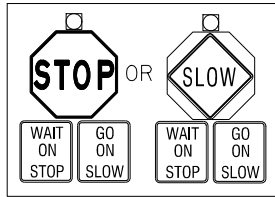
**Figure 2. Red/Yellow lens AFAD
(not permitted for use in Maryland)**

Usage Guidelines

1. AFADs can be used on roadways with a posted speed limit of 40 MPH or lower. AFAD use with higher speed limits may be permitted as approved by the ADE-T.
2. AFADs shall only be used at locations with only one lane of approaching traffic in the direction to be controlled. No more than two approaches to the work zone shall be controlled by AFADs.
3. AFADs should only be used along roadways with Average Daily Traffic (ADT) less than 8,000 vehicles per day. Prior to installing the AFADs, traffic counts should be reviewed to determine the traffic conditions throughout the day.
4. The work zone duration should not exceed 30 days.
5. If used for nighttime flagging operations, the AFAD locations shall be illuminated.
6. Conditions at the project site should be evaluated to ensure adequate sight distances are provided for the locations of the AFAD units. All sight distance requirements shall conform to the MdmUTCD. If possible, motorists should be able to see both AFAD units to help reduce driver confusion.
7. The use of AFADs shall comply to either Method 1 or Method 2. Except for the conditions listed in number 8, two flaggers shall be used regardless of what Method is used.
 - Method 1: A pair of AFADs positioned in advance of the one-lane, two-way traffic section, one for each approach.
 - Method 2: Use of an AFAD at one end and a flagger at the opposite end.
8. Evaluation should be performed to establish if a single operator may be used to operate the AFAD while also being the flagger in the opposite end, or if multiple operators should be used. Refer to MdmUTCD Section 6E.04 for additional guidance. A single flagger may simultaneously operate two AFADs (Method 1) or may operate a single AFAD on one end while being the flagger at the other end only if the flagger has an unobstructed view of the AFAD units and unobstructed view of the approaching traffic in both directions. Additionally,
 - If a single flagger is used for Method 1, both AFADs should be spaced a maximum distance of 1,000 feet apart. Engineering judgment should be used for greater distance.
 - If a single flagger is used for Method 2, the flagger and the AFAD should be spaced a maximum distance of 1,000 feet apart. Engineering judgment should be used for greater distances.

9. The flagger(s) operating the AFADs shall be certified and trained on the operation of AFAD and shall have completed an MDOT SHA approved flagging course. In the event of equipment failure, the flagger(s) should carry out manual flagging operation using handheld STOP/SLOW paddles.
10. There shall be no at-grade railroad crossings within the one-lane, two-way traffic section and within 200 feet of each AFAD. Any intersections, driveways or other access points within the one-lane, two-way traffic section shall be closed. If they cannot be closed, additional flagger(s) shall be stationed at the access point(s).
11. The AFAD's STOP/SLOW signs shall be supplemented with an active conspicuity device. It should include a stop beacon mounted above the sign face that illuminates in solid red during the STOP display, and two warning beacons mounted to the side that flash yellow during the SLOW display.
12. AFADs shall be crashworthy and should be placed a minimum of two (2) feet off the edge of the travel lane and be delineated with channelizing devices.
13. When not in operation, the AFAD units shall be moved outside of the clear zone or moved behind a barrier, and the AFAD signs shall be covered.
14. A gate arm retroreflectorized on both sides should be used with the AFAD. When the arm is in down position, the minimum vertical aspect of the arm and sheeting shall be two (2) inches and the end of the arm shall reach at least to the center of the lane being controlled. The gate arm shall not extend in the opposite lane.
15. The advanced warning signs associated with the AFAD shall be placed in accordance with the MDOT SHA Book of Standards.
16. To prevent motorists from entering the open lane during the STOP phase, channelizing devices shall be installed along the centerline of the roadway on the approach to the AFAD as recommended by the project engineer based on site conditions. It is recommended to use a minimum of 11 channelizing devices spaced at 20 feet maximum.

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



NOTES

1. AFAD SHALL ONLY BE USED IN SITUATIONS WHERE THERE IS ONLY ONE LANE OF APPROACHING TRAFFIC IN THE DIRECTION TO BE CONTROLLED.
2. IF THE AFAD IS NOT BEHIND A BARRIER, IT SHALL BE DELINEATED WITH CHANNELIZING DEVICES.
3. IF SHOULDERS ARE NARROW OR ABSENT, AFAD MAY BE PLACED IN THE CLOSED LANE AND BE PROTECTED BY CHANNELIZING DEVICES. ADDITIONAL SIGNS OR MARKINGS SHOULD BE USED TO INFORM MOTORISTS OF STOPPING LOCATION. THE AFAD GATE ARM SHALL NOT EXTEND INTO THE OPEN LANE.
4. A PAIR (TWO) AFADS SHOULD BE USED TO CONTROL TRAFFIC FOR ONE LANE, TWO-WAY OPERATIONS (METHOD 1). IF FLAGGER IS USED AT ONE END AND AFAD AT THE OTHER (METHOD 2), THIS DRAWING SHALL BE USED IN COMBINATION WITH STANDARD MD 104.02-10.
5. BASED ON FIELD CONDITIONS, A SINGLE OPERATOR (CERTIFIED FLAGGER) CAN CONTROL TWO AFADS ONLY IF HE HAS UNIMPEDED VISIBILITY OF BOTH AFADS AND THE APPROACHING TRAFFIC IN BOTH DIRECTIONS. IF ONE FLAGGER IS OPERATING BOTH AFADS, THE UNITS SHOULD BE PLACED A MAXIMUM OF 1000 FEET APART. IF VISIBILITY IS RESTRICTED IN ANY WAY, TWO OPERATORS (CERTIFIED FLAGGERS) SHOULD CONTROL TWO AFADS, COORDINATING THROUGH RADIO COMMUNICATION.
6. ILLUMINATION OF THE AFAD LOCATIONS SHALL BE PROVIDED DURING NIGHTTIME FLAGGING OPERATION.
7. A MINIMUM OF 11 CHANNELIZING DEVICES SPACED AT 20 FEET MAXIMUM SHALL BE PLACED ALONG THE CENTERLINE IN ADVANCE OF THE AFAD TO PREVENT VEHICLES FROM GOING INTO THE OPPOSITE LANE.

IMPORTANT:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-81.

KEY:

- CHANNELIZING DEVICES
- SIGN SUPPORT
- FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) WITH GATE

(OPTIONAL FOR 15 MIN.-12 HRS. OR DAYTIME APPLICATIONS)

