

DEFENSIVE FLAGGING

A Survivor's Guide



TRAIN • SERVE • RESPOND



Texas Engineering Extension Service
The Texas A&M University System

The National Safety Council defines Defensive Driving as “driving to save lives, time and money in spite of the conditions around you and the actions of others.” The term Defensive Flagging implies a similar safety out-look and emphasizes the vigilant and protective attitude flaggers should have as they protect the lives of motorists and workers.

Table of Contents

INTRODUCTION	1
YOUR PUBLIC IMAGE	2
CLOTHING	3
FLAGGER EQUIPMENT	3
THE STOP/SLOW PADDLE	4
Using the STOP/SLOW Paddle	5
THE FLAG	6
Using the Flag	7
PROPER FLAGGER POSITION	8
VISIBILITY	10
ADVANCE WARNING SIGNS	12
TRAFFIC OPERATIONS—	
WHAT YOU SHOULD WATCH FOR	14
HOW FLAGGERS ARE USED TO CONTROL TRAFFIC WHEN	
ONE LANE OF A TWO-LANE ROAD IS CLOSED	15
TWO FLAGGERS CONTROLLING TRAFFIC WHEN	
ONE LANE OF A TWO-LANE ROAD IS CLOSED	16
ONE FLAGGER CONTROLLING TRAFFIC WHEN	
ONE LANE OF A TWO-LANE ROAD IS CLOSED	18
TWO FLAGGERS WITH PILOT CAR	20
HOW FLAGGERS ARE USED TO CONTROL TRAFFIC	
MOVING IN ONLY ONE DIRECTION	21
FLAGGING TRAFFIC AT NIGHT	21
BASIC RULES OF SAFETY FOR THE	
DEFENSIVE FLAGGER	22

Introduction

You are a “defensive flagger,” and, as such, you have a very important job.

Your job, your responsibility, is to

- Protect the lives of workers,
- Guide traffic safely past the work area,
- Protect yourself.

To do these things, you must communicate with motorists. That is the purpose of this handbook: to help you communicate.



To communicate with motorists and control traffic, you must understand exactly:

- What is expected of you, and
- What the traffic control setup is.

Whenever you have a question, ask your supervisor.

Your Public Image

Your job means that you deal with motorists of all types. Some of them become upset at being delayed. To avoid problems and conflicts, conduct yourself in a courteous but firm manner. It is not difficult. Remember:

- Keep conversation brief, so that you never lose your focus on traffic.
- Answer questions in a courteous and pleasant manner. This can take the sting out of an irritating situation.
- Saying “please,” “thank you,” “sir,” and “ma’am” gives you the advantage.
- Tell motorists clearly what is expected of them.
- Never argue with a motorist.
- If problems arise, notify your supervisor.

Clothing

As a defensive flagger, you must wear protective clothing and be highly visible. Such clothing not only protects you, but also sets you apart as someone in authority.

Always wear:

- High-visibility safety apparel that meets the requirements of ANSI/ISEA 107-1999 for class 2 risk exposure. All workers on a Federal-Aid or Texas state highway must wear safety apparel that meets the requirements of ANSI/ISEA 107-2004 for Class 2 or Class 3 exposure.
- A hardhat
- Safety footwear
- Safety eyewear is also recommended.

Your appearance should always be neat and clean because that will help you:

- Gain the respect of motorists
- Get your job done safely

Flagger Equipment

Basic flagger equipment is the STOP/SLOW paddle and the flag. At times, you may need a two-way radio to communicate with another flagger at the other end of the work area, and an air horn to alert workers to emergencies.

The STOP/SLOW Paddle

The STOP/SLOW paddle is your primary hand-signaling device. You use it to signal motorists to stop, proceed or slow down.

Properly used, the STOP/SLOW paddle gives a clear message to motorists because it is easily recognized and understood.

Two sizes of STOP/SLOW paddles are used:

- The smaller size is 18 by 18 inches.
- The larger size is 24 by 24 inches, and should be used when the roadway posted speed is 45 miles per hour or greater. It can be seen and recognized by motorists sooner.



For your safety, and the protection of motorists and fellow workers, you must use the proper hand signals when using the STOP/SLOW paddle.

Using the STOP/SLOW Paddle

The proper hand signals for using the STOP/SLOW paddle are shown below.



The defensive flagger stands behind three cones, for safety. These cones help get the motorists' attention and help protect the flagger.

The Flag

The flag is a red square of cloth measuring at least 24 by 24 inches. It is fastened to a staff about 3 feet long.



The flag does not contain a message, so, to give motorists the correct message, the flagger must hold the flag properly, and use the correct hand signals.

Use of the flag should be limited to

- Low-speed roads and/or low-traffic roads where traffic can best be controlled by a single flagger
- Emergency situations

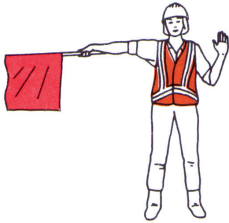
Emergencies are sudden, unexpected events that demand immediate action. Examples include fires, flooding, road or bridge failures, and traffic problems.

If the emergency situation lasts a long time, the STOP/SLOW paddle should be used.

Using the Flag

The proper hand signals for using the flag are shown below.

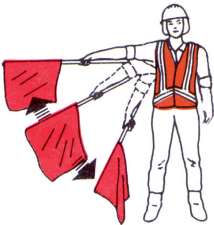
To Stop Traffic



Traffic Proceed



To Alert and Slow Traffic



Proper Flagger Position

For your safety, stand on the shoulder of the road, next to the lane of traffic being controlled.



Never stand in the lane being used by traffic.

Visibility

For your safety, it is extremely important for drivers to see you in time to respond to your signals and to stop at the intended stopping point. Use Table 6E-1 to determine the stopping sight distance drivers need.

Table 6E-1. Stopping Sight Distance as a Function of Speed

Speed*	Distance
20 mph	115 feet
25 mph	155 feet
30 mph	200 feet
35 mph	250 feet
40 mph	305 feet
45 mph	360 feet
50 mph	425 feet
55 mph	495 feet
60 mph	570 feet
65 mph	645 feet
70 mph	730 feet
75 mph	820 feet

* Posted speed, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed

To make certain the motorists see you, stand out from your surroundings. To ensure your safety,

- Stand alone, not with other workers.
- Do not stand in the shade.
- Do not stand in front of construction equipment or signs.
- Keep your vehicle away from your flagger station.

Advance Warning Signs

Advance warning signs tell motorists what to expect on the roadway and give them time to respond. Except in emergency situations, flagger stations must be preceded by an advance warning sign or signs.

These warning signs are routinely used for flagging operations:

ROAD WORK AHEAD

ONE LANE ROAD AHEAD

BE PREPARED TO STOP

FLAGGER (shown below)



Warning signs are located in advance of the condition to which they apply.

Table 6C-1 indicates the distances between signs.

Table 6C-1. Recommended Advance Warning Sign Minimum Spacing

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency

** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

Traffic Operations— What You Should Watch For

For your safety, you should pay close attention to the flow of traffic, and to the placement and condition of signs and other traffic control devices. Be especially alert for the following:

- Unusual driving behavior, such as sudden braking and stopping.
- Skidmarks, a warning sign of motorist confusion.
- Signs and other traffic control devices out of place.
- Faded, stained or damaged signs and other traffic control devices.
- Traffic problems caused by the weather or by changed road or pavement conditions.

For your safety, report all problems to your supervisor immediately. Traffic control adjustments may be needed.

How Flaggers Are Used To Control Traffic When One Lane Of A Two-Lane Road Is Closed

When one lane of a two-lane roadway is closed for repair, traffic shares the open lane alternately. This is a common situation and flaggers control the flow of traffic to minimize delays and prevent head-on conflicts.

To control the flow of traffic in such situations, three flagger control methods are available:

- Two flaggers
- One flagger
- Two flaggers with pilot car

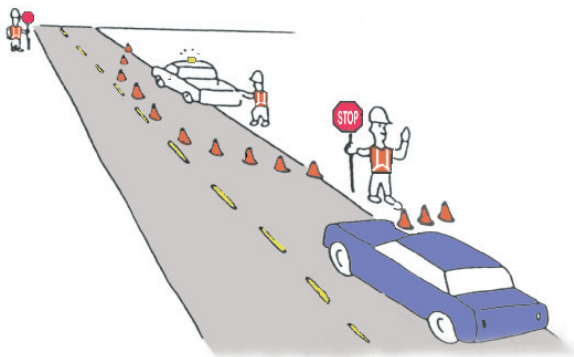
**Table 6C-3. Taper Length Criteria for
Temporary Traffic Control Zones**

Type of Taper	Taper Length
Merging Taper	at least L
Shifting Taper	at least 0.5 L
Shoulder Taper	at least 0.33 L
One-Lane, Two-Way Traffic Taper	50 feet minimum, 100 feet maximum
Downstream Taper	50 feet minimum, 100 feet maximum

Two Flaggers Controlling Traffic When One Lane Of A Two-Lane Road Is Closed

When the flow of traffic is controlled by two flaggers, one flagger is stationed at each end of the work area.

Communication between the two flaggers is critical. You should either be able to see each other clearly or have two-way radio contact with each other.



Two Flagger Operation

Figure TA-10 from the Manual on Uniform Traffic Control Devices (MUTCD) shows the two flagger traffic control setup.

The distances between signs is shown in Table 6C-1 on page 11.

Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

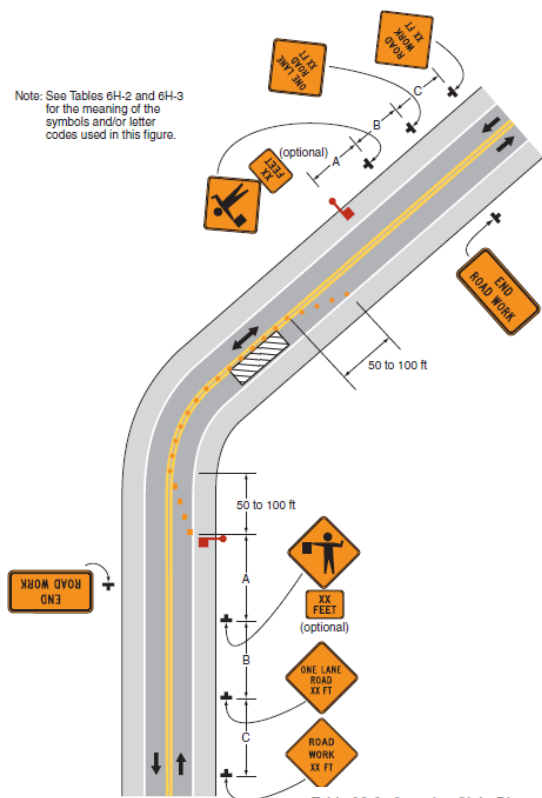


Table 6C-2. Stopping Sight Distance as a Function of Speed

Speed*	Distance
20 mph	115 feet
25 mph	155 feet
30 mph	200 feet
35 mph	250 feet
40 mph	305 feet
45 mph	360 feet
50 mph	425 feet
55 mph	495 feet
60 mph	570 feet
65 mph	645 feet
70 mph	730 feet
75 mph	820 feet

* Posted speed, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed

Table 6C-2 may be used to determine the longitudinal buffer space.

One Flagger Controlling Traffic When One Lane Of A Two-Lane Road Is Closed

Only under special conditions will one flagger be able to control the flow of traffic.

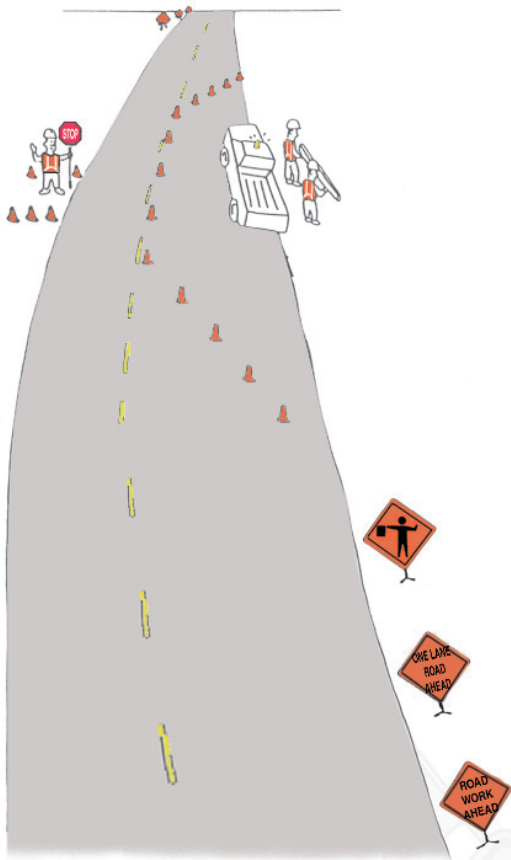
When the traffic control zone is sufficiently short to allow flagger to see from one end to the other, traffic can be controlled with a single flagger or with one at each end of the section.

In such situations, the flagger is stationed:

- On the shoulder of the road opposite the work area

or

- In a position where visibility is clear and traffic control can be maintained at all times



One Flagger Operation

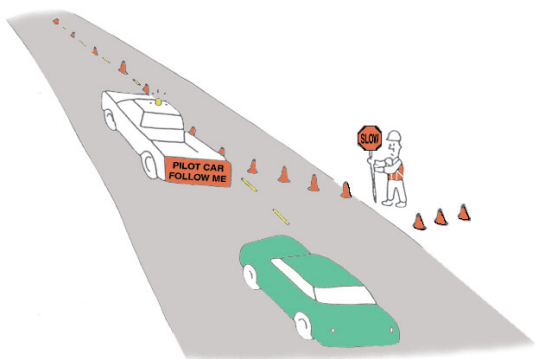
Two Flaggers with Pilot Car

The pilot car is used with two flaggers to lead traffic past the work area.

In using the pilot car, one flagger is stationed at each end of the work area. As traffic approaches, the flagger stops the vehicles until the pilot car arrives to lead them past the work area.

In the operation, there is a line of stopped vehicles stationed at one end of the work zone, and a line of vehicles moving past the work area.

The **PILOT CAR FOLLOW ME** sign must be mounted, in a very visible location, on the rear of the pilot car.



Pilot Car Operation

How Flaggers Are Used To Control Traffic Moving In Only One Direction

A flagger may be used to control one direction of traffic under special conditions, such as when work vehicles are entering or departing the work area.

The flagger stops traffic with the STOP paddle facing traffic. To release the vehicles, the flagger does the following:

- Turns the paddle parallel to the road so that neither the STOP or the SLOW message is visible to approaching motorists;

and

- Uses the free arm to motion traffic to proceed.

Flagging Traffic at Night

Except in emergency situations, flagger stations must be illuminated at night.

For your safety, always wear high-visibility safety apparel that meets the requirements of ANSI/ISEA 107-1999 for class 2 risk exposure. For nighttime activity, safety apparel that meets the requirements of ANSI/ISEA 107-1999 for class 3 risk exposure should be considered.

And your STOP/SLOW paddles or flags must be retroreflectorized so motorists can see them in time to stop or slow down.

Basic Rules of Safety for the Defensive Flagger

- Stay alert. Keep your mind on your job.
- Stand on the shoulder. Stay off the roadway and out of the way of traffic.
- Face traffic—so you can check the path and speed of approaching vehicles.
- Protect yourself.
- Have an escape route planned.
- Leave your post ONLY when you have been relieved.

Notice: The user is referred to the Manual on Uniform Traffic Control Devices (MUTCD), Part VI, for all procedures related to flagging operations. The specific purpose of this Defensive Flagging—A Survivor's Guide is to provide a quick reference for workers assigned flagger duties. Again, the user is referred to the Manual on Uniform Traffic Control Devices (MUTCD) for answers to all specific questions and for a complete listing of all requirements.

References:

Flagger's Guide, New Mexico State Highway and Trans. Department, New Mexico LTAP, 1995.

Flagger Training for Maintenance and Construction Operations, Utilities Work, and Management of Highway Incidents, Kentucky Trans. Center, Univ. of Kentucky College of Engr., July 1995.

Flagger's Handbook. ITRE-Tech. Tran. Program, North Carolina State Univ., March 1995.

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