Better Lives Through Better Transportation

SD DEPARTMENT OF TRANSPORTATION

Flagger Manual

INTRODUCTION

Read this manual in preparation for the 25-question flagger certification written examination. The questions will be taken from the contents of this Flagger Manual.

This South Dakota Flagger Certification Program is developed and maintained by the South Dakota Department of Transportation Division of Operations.

The purpose of the South Dakota Flagger Certification Program is to standardize flagging traffic control operations through training and subsequent testing of people to be used as flaggers. A person designated to conduct traffic control by flagging must be trained, pass a written examination, carry a Flagger Certification Card, and have his or her training and testing record on file in the South Dakota Department of Transportation Division of Operations. The Flagger Certification Card is good for 2 years from the date of certification and is valid only in the State of South Dakota.

When you have finished studying this Flagger Study Manual and are ready to take the Flagger Certification Written Examination, let the examiner know.

If you have questions or need further clarification, please contact:

SDDOT

Flagger Certification

(605)773-3574

IMPORTANCE OF THE FLAGGER AND FLAGGING

The traveling public understands traffic control devices such as signs and light signals, but there are times when conditions warrant more control. That is where flaggers come in. Flagging operations must be done in a manner that is safe for drivers, flaggers, and highway workers.

- Flagging operations will probably be required when:
- One lane is alternately used for all traffic.
- The roadway is closed for short periods of time.
- Workers are close to the travel lane without positive barrier.
- Traffic speeds must be reduced, and traffic control devices alone will not get the job done.
- Public relations and publicity are needed (explaining the situation, alerting motorists to changing conditions, and passing out handouts).
- Conflicting traffic flows need to be controlled at an intersection.
- Traffic control devices are being installed and removed.
- Other situations occur where variable conditions require responsive traffic control.

Being a flagger is important. The lives of coworkers and motorists are in your hands. Your actions can cause or prevent an accident.

THE FLAGGER

The flagger realizes safety always comes first.

They demonstrate good judgment by recognizing a hazard, understanding the defense, and acting correctly in time.

The flagger is faithful, staying on the job until properly replaced. Some other characteristics of a flagger would be:

- Wear the proper clothing and equipment without having to be reminded.
- Has good eyesight, quick reflexes and good feet and legs to work 8 - 12 hours a day.
- Is courteous, competent, official, and brief when dealing with the public.
- Smiles and is positive and outgoing.
- Faces oncoming traffic and is visible to motorists.
- Is reliable, using flagging equipment properly; does not "play around" on the job.
- Recognizes dangerous traffic situations and warns workers in sufficient time to avoid injuries.

By the time you complete reading this manual you will be able to answer the following about the flagger below:

- Does this flagger command respect?
- Is this flagger wearing the correct safety apparel?
- Is the flagger using the proper tool for the job?
- Is the flagger at a proper flagger station?

COMMUNICATION

Be courteous and patient, but brief when dealing with the traveling public. Be prepared to encounter a few people who object to instructions or to a slight delay in their travel plans.

If the reason for the delay is not apparent from your position, keep the STOP sign facing traffic, move to the door of the first vehicle and tell the driver the reason for the delay.

Do not leave your position to tell other drivers down the line what the situation is; if time comes to release traffic, you will not be in place to do so. Always remain at your position until properly relieved.

Do not lean on the stopped vehicle to talk to the occupant(s) and do not become preoccupied with small talk.

Do not argue with vehicle occupant(s); be courteous yet brief and factual in your conversations.

If a driver refuses to obey instructions, record his or her license plate number (this is normally sufficient to cause people to quiet down), description of the vehicle and driver; then report the situation to your supervisor.

ATTIRE

Flaggers should be fully clothed at all times. Bare skin is inappropriate, unbecoming, and distracting to motorists. The clothing should be neat and clean. An appropriate shirt and long trousers with good shoes or boots are to be worn. Wear adjustable clothing in layers, you may be on station for hours. Have the following available: extra jacket, orange or yellow rain gear, gloves, extra socks, safety glasses or sunglasses, bandages, aspirin, sunscreen lotion, and lots of water.

Hard hats provide head protection from the STOP/SLOW paddle on windy days.

Take pride in yourself; remain fully clothed; wear the correct safety gear. The flagger must look official and in charge of commanding the motorist's attention. The "Flagger" sign tells drivers to look for you: Be Alert, Be Visible, and Be in Charge.

HIGH VISIBILITY APPAREL

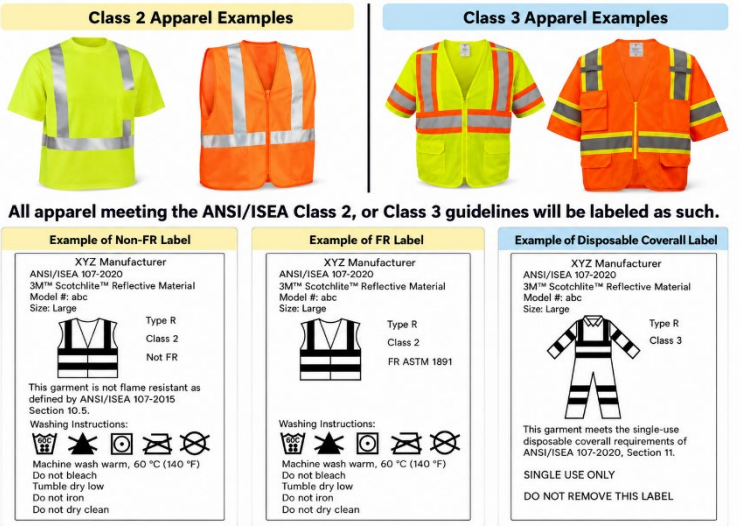
All workers within the right of way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work area must wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2015 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear". This applies to all projects within the right of way of streets, highways, pedestrian and bicycle facilities, and site roadways open to public travel.

The safety apparel background (outer) material color will be fluorescent orange-red, fluorescent yellow-green, or a combination of the two as defined in the ANSI standard. The retroreflective material will be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors. Items that comply with the requirements should be noted as such on the garment tags.

For flagger wear during nighttime activity, high-visibility safety apparel that meets the Performance Class 3 requirements of the ANSI/ISEA 107–2015 publication should be worn.

Class 2 apparel require a minimum of 775 square inches of background material and 201 square inches of retroreflective material (1.375” reflective stripes).

Class 3 apparel require a minimum of 1240 square inches of background material and 310 square inches of retroreflective material (1.375” reflective stripes). All will have sleeves.



YOUR TOOLS

The primary flagging tool for day and night is the STOP/ SLOW sign, it bears the messages STOP or SLOW to provide motorists with clear positive guidance.

Stop/Slow

This sign is an 18-inch wide (or greater) sign made of light gauge metal or other light weight semi-rigid material and has 6-inch letters (or greater). One side has the red octagonal STOP sign with white letters and border.

The other side has SLOW on an orange background with black letters and a black border. It will be retroreflectorized for night operations. The sign should be attached to a rigid staff, the bottom of which rests on the ground, while the message is high enough to be seen by approaching or stopped traffic.

Some other tools you may need to be familiar with are:

- Automated Flagger Assistance Device (AFAD)
- Temporary Portable Rumble Strips
- Emergency Flag
- Flashlight with cone
- Radio
- Baton
- Pilot Car

Automated Flagger Assistance Devices (AFADs)

AFADs are remotely operated devices used to control traffic while reducing a flagger's exposure to moving traffic. A trained operator must monitor the operation.

Temporary Portable Rumble Strips

Temporary portable rumble strips provide an additional warning to drivers approaching a work zone or flagger through vibration and noise. They supplement other required traffic control devices.

Emergency Flag

The Emergency Flag hangs from a 36-inch staff, will be 24 inches by 24 inches minimum size and made of good grade red or fluorescent orange-red material. The free edge of the flag should be weighted so the flag will hang vertically, even in heavy winds. A flag should only be used to control traffic in emergency situations or when a STOP/SLOW paddle is not available. Do not use a flag and the STOP/SLOW paddle together and do not use a damaged or soiled flag. When used at night the flag will be retroreflectorized red.

Flashlights

When flagging in an emergency situation at night in a non-illuminated flagger station, a flagger may use a flashlight with a red glow cone to supplement the STOP/ SLOW paddle or flag.

When two flaggers are out of sight of one another or separated by distance the last three tools come in handy.

Radios

Two way radios are used to communicate the flaggers' status and traffic, don't get distracted or involved in unnecessary chatter with the radios.

Batons

A baton, flag or other token can be used to identify the last vehicle released by the flagger at the other end of the work zone. This is a good system when one way traffic is confined to a relatively short section of roadway, usually not more than a mile in length. The driver of the last vehicle proceeding into the one lane section is stopped and given a clean dry red flag, baton or other token and instructed to deliver it to the flagger at the other end; then allow that vehicle to move forward. Stop all following traffic. The flagger receiving the flag, baton or other token must not release traffic until he or she first glances down the route and verifies that no one is playing catch up to the baton carrying vehicle.

Pilot Car

The pilot car leads traffic back and forth through the work zone. The driver of that car responds to your directions. Control traffic in the same manner discussed in this manual. The Pilot Car will lead traffic from the other flagger to your location and turn around. When the traffic is clear, the Pilot Car will move in front of the first vehicle you stopped. Release your traffic. By radio, tell the other flagger the traffic is on the way. The Pilot Car must have the sign “Pilot Car Follow Me” sign mounted on the rear of the vehicle.

THE WORK ZONE

A work zone is an area of a highway with construction, maintenance, or utility work activities. A work zone is typically marked by signs, channelizing devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign or high-intensity rotating, flashing, oscillating, or strobe lights on a vehicle to the END ROAD WORK sign or the last temporary traffic control device. You are not expected to know how to properly set up all of the traffic control devices as a flagger. You are expected to understand the setup and distances for the Advance Warning Signs and the Flagger Station location. When the work blocks part of a roadway, traffic may have to share a single roadway lane. Crashes are prevented by controlling traffic with flaggers.

A Work Zone is made up of four areas and includes locations for Advance Warning Signs and Flagger Stations. The areas of the work zone include:

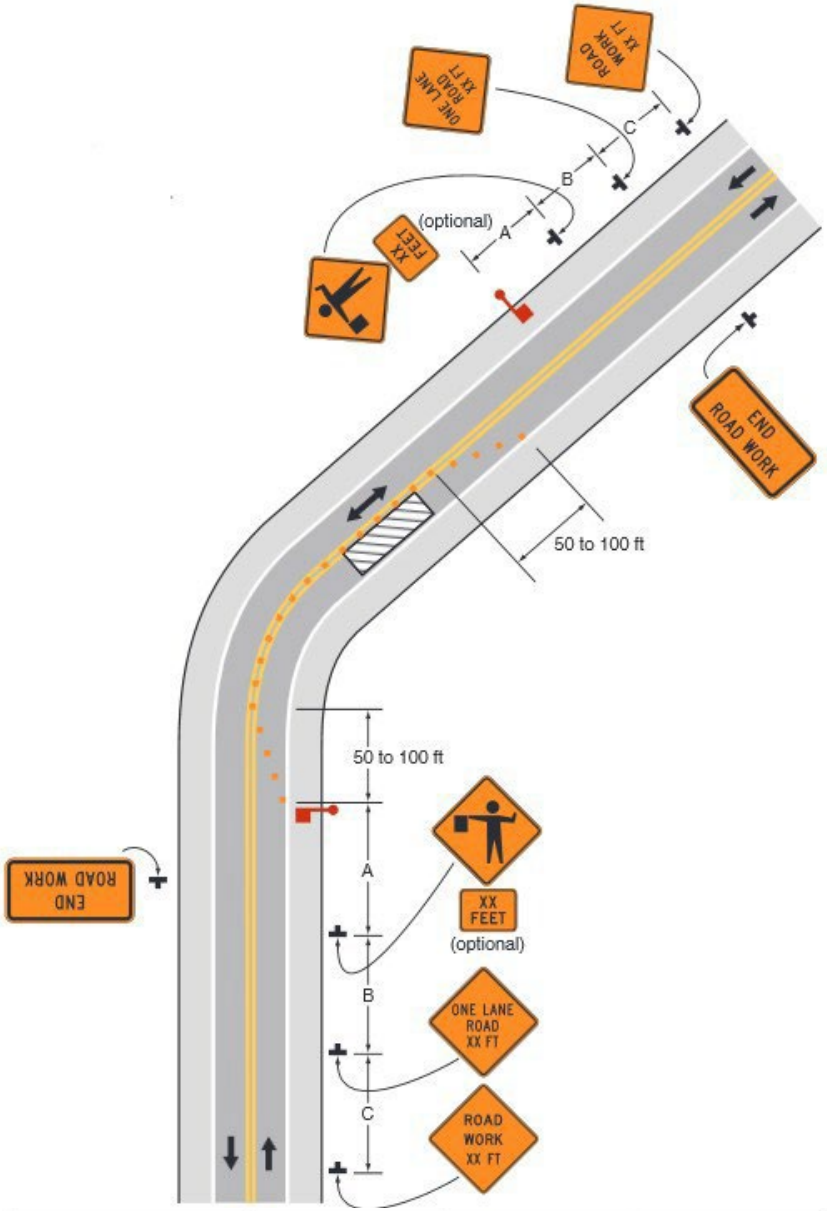
An advance warning area with advance warning signs such as a "Flagger" sign.

A transition area with a taper made of cones or drums which causes traffic to move out of or into its normal travel path into the oncoming traffic lane will require a flagger station at the beginning of this area.

An activity area is the area of roadway where the work takes place. It is composed of the workspace and the traffic space and may contain one or more buffer spaces.

A termination area, beyond the work area. Another flagger station is at or forward of the termination area for the opposing lane.

Some work zones can be miles long; some will be very short. On the next page you will see a work zone diagram with the advance warning signs and a distance chart.



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

Advance warning signs prepare drivers for the road conditions ahead.

As a general rule, advance warning signs will be located on the right-hand side of the street or roadway in each direction of travel toward the work site. The site location will dictate to some extent the types and placement of signs. Note the distances for the advance warning signs on the previous page, these distances are minimums, they can be adjusted to a greater distance if there are hills or curves minimizing sight distances.

The "Flagger" sign is always ahead of the Flagger Station. This sign informs oncoming traffic that a flagger is present to control traffic. Before flagging, make sure the "Flagger" sign is facing toward oncoming traffic. When the sign is up or uncovered, you need to be on station. When you are not flagging, this sign should be promptly turned away from traffic, covered, or placed on the ground.

Advance Flaggers are required where there is limited sight distance to the work area. An advance flagger is ahead of the designated Flagger's Station. The Advance Flagger slows or stops each vehicle as it approaches and, if necessary, gives drivers instructions about work being performed ahead. The designated flagger controls traffic ahead of the work zone.

Flagger Station

The distance between the flagger and the activity area is related to approach speeds and conditions at the activity area. This distance allows approaching traffic sufficient distance to reduce speed or stop. To better understand why it is so important to position yourself properly ahead of the Transition Area, to be visible to oncoming traffic, and to be clear of all obstructions, look at table ‘Stopping Sight Distance as a Function of Speed’.

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.

The flagger's station or position will be located at a position that will allow approaching traffic to have sufficient distance to stop at the intended stopping point. Except in emergency situations, Flagger Stations will be preceded by advanced warning sign or signs. If flagging at night, the Flagger Station must also be illuminated. Observe the vehicles as the

transition is made to see if the vehicles travel smoothly without hard braking or skidding. If the movement is not smooth, the taper length is probably too short. If you observe a problem with vehicles making the transition, contact your supervisor. Locate an escape route for each Flagger Station. The escape route must be free of construction materials and vehicles. You need someplace to run to if an out-of-control vehicle heads for your Flagger Station.

Another situation has to do with your personally owned vehicle or the company vehicle you are using. Do not let your car block your escape route. Park at least 100 feet away from your Flagger Station when conditions allow. Park the vehicle off the roadway.

If your flagger position moves, you can move your vehicle when you are on break.

If your flagger position moves, you can move your vehicle when you are on break.

Bring a bag with your equipment and supplies such as rain gear, spare socks, coat, water, food, and so forth. Place your bag close by but out of your escape route.

Be prepared to adjust your Flagger Station as necessary to maintain visibility.

You will often be flagging with other flaggers. Normally this is a situation when only one direction of travel is allowed in a single lane. Working with the other flagger, the direction of travel is alternated from one direction to the other. If you are

close together, you can talk to, shout to, or signal each other to alternate traffic. Whenever you see the "STOP" side of the paddle from the other flagger, your traffic should be stopped.

When you see the "SLOW" side of his paddle, you can release traffic when the road is clear.

When two flaggers are working together (one at either end of the work zone) they should always be able to signal each other or use two-way radios for proper communication. In such cases one flagger is always in charge, and the other flagger must coordinate his or her activities accordingly. The supervisor will designate the flagger who will be in charge. Do not wear earphones except when necessary for communication with other flaggers. Flaggers need to be able to hear construction equipment and approaching vehicles.

Where companion flaggers are far apart or out of sight of each other, radio or field telephone communications between them are necessary. Avoid radio or telephone sets that require two hands to operate or require a lot of movement; this can cause drivers to misinterpret what you are doing as a signal to drive on.

At spot construction and maintenance lane closures where adequate sight distance is available, one flagger may be sufficient to control traffic. In these activity areas, stand on the

shoulder opposite the work site. Continually scan the roadway to keep track of approaching traffic.

To perform your duties properly, position yourself to:

- Stand on the road shoulder adjacent to traffic being controlled; in advance of the taper (where a one-lane, two-way traffic taper is used).
- Never stand in the lane used by moving traffic.
- Be visible to traffic for a distance that will permit all vehicles to stop.
- Stand alone and face the oncoming traffic; glance back at the other flagger occasionally to either give or receive traffic control coordination signals.
- Stand sufficiently in advance of coworkers to warn them of danger, such as out-of-control vehicles. Audible warning devices should be used, e.g., horns, whistles.
- Maintain a color contrast with the background - avoid blending in with equipment and disappearing in bright light when you stand at the skyline.

FLAGGING PROCEDURES

Alerting or Slowing Traffic

This is done by one flagger working alone or one of a team of flaggers at either end of the work zone.

Stand off the traffic lane on the shoulder facing traffic with the SLOW side of the paddle toward oncoming traffic. Hold the paddle in a stationary position with the arm extended horizontally away from your body into the lane of approaching traffic. Never wave the paddle or let it lean to the left or right.

The flagger may motion up and down with the free hand, palm down, indicating that the driver should slow the vehicle.

Remember: Keep your paddle clean, look official, be in

charge, be courteous and be friendly

Stopping Traffic

This is done by one flagger working alone because he or she can control traffic coming from both directions or by one flagger while the flagger at the other end of the work zone is preparing to release traffic.

Stand off the traffic lane on the shoulder facing traffic with the STOP side the paddle toward oncoming traffic. Hold the paddle in a stationary position with the arm extended horizontally away from your body into the lane of approaching traffic. Never wave the paddle or let it lean to the left or right.

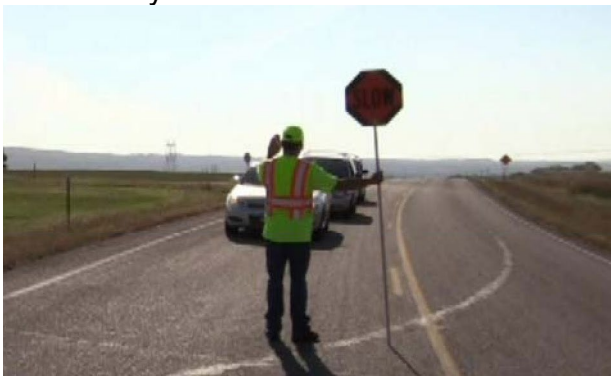
The free arm and hand will be raised above shoulder level with the palm toward oncoming motorists. Look the driver in the eye until the vehicle comes to a full stop.

Never attempt to physically stop, detain, or pursue a driver who refuses to stop or follow your instructions. Move out of the vehicle's path and prioritize your safety and the safety of the work crew.

Stopping Following Vehicles

After the first vehicle has been stopped, continue to face the first stopped vehicle with the STOP side of the paddle held facing oncoming traffic with the free arm and hand above shoulder level with the palm toward oncoming motorists. Gain eye contact with the driver and slowly walk toward the center of the road stopping just at or on the center of the road so drivers approaching the stopped vehicle can see you. Maintain this position, glancing at the other flagger and speaking over the radio to him or her until told to release traffic. Be visible, but do not stand in the lane used by moving traffic coming from behind you.

Do not stand among coworkers or behind construction equipment. Use your eyes. If the driver is looking at you, you know you have his or her attention.



Releasing Traffic

This is done while the flagger at the other end of the work zone has stopped traffic. Ensure no traffic is coming from behind you as you release traffic.

Keep the STOP side of the paddle toward traffic and your arm and hand raised. Gain eye contact with the driver and walk slowly to the side of the road. Never walk backwards. Stand parallel to the traffic movement and turn the paddle to the SLOW side. With your free arm, slowly motion horizontally

across your waist for traffic to proceed. Once traffic is moving, stop motioning.

Releasing Traffic on Right Lane (Two-way Traffic)

This technique is used when flagging on a two-lane highway where traffic is stopped temporarily in only one lane for loading or unloading operations, etc.

Keep the STOP side of the paddle toward traffic and your arm and hand raised. Gain eye contact with the driver and walk slowly to the side of the road. Never walk backwards. Stand parallel to the traffic movement, turn the paddle a quarter of a turn so that the word ‘STOP’ faces you and the word ‘SLOW’ is facing away from you. This way, motorists coming from your rear do not stop. With your free arm, slowly motion horizontally across your waist for traffic to proceed. Once traffic is moving, stop motioning.

Traffic Control at Haul Road Intersections

Traffic control procedures are the same for haul road intersections as for other situations.

When vehicles can only turn right onto the highway, only one flagger is required.

If vehicles from the haul site have the right of way and are crossing the highway or making a left turn, two flaggers will be necessary to control traffic from each direction.

Basic Procedures for Night Flagging

Flagging at night is the same as flagging during the day, except the following additional items are used:

- Retroreflectorized STOP/SLOW paddle.
- Class 3 reflectorized hard hat and vest or outer garment.
- Overhead light which illuminates the Flagger's Station.

Controlling Traffic In Emergency Situations

The use of flags should be limited to emergency situations. When used at night the flag will be retroreflectorized red. The basic techniques for controlling traffic with a flag are shown below.

<u>The following methods of signaling are used with a flag:</u>

To Alert or Slow Traffic: The flagger will face traffic and slowly wave the flag in a sweeping motion of the extended arm from shoulder level to straight down, without raising the arm above shoulder level.

To Stop Traffic: The flagger will face traffic and extend the

flag staff horizontally across the traffic lane in a stationary position, so that the full area of the flag is visible, hanging below the staff. The free arm should be raised with the palm toward approaching traffic.

To Release Traffic: The flagger will face traffic with the flag and arm lowered from view of the driver. With the free hand, the flagger should motion traffic to proceed. The flag will not be used to signal traffic to proceed.

TO STOP TRAFFIC

TO LET TRAFFIC PROCEED

TO ALERT AND SLOW TRAFFIC

Flashlight Use

When a flashlight is used to supplement flagging in an emergency situation or at night with an illuminated flagger station, the flagger will hold the flashlight in the left hand, will hold the paddle or flag in the right hand (using it properly) and will use the flashlight as follows to control approaching traffic:

To Alert or Slow Traffic: The flagger will point the flashlight toward oncoming traffic and quickly wave the flashlight in a figure eight motion.

To Stop Traffic: The flagger will hold the flashlight with the left arm extended and pointed down toward the ground and then will slowly wave the flashlight in front of the body in a

slow arc no more than 45 degrees from vertical.

To Release Traffic: The flagger will point the flashlight at the vehicle's bumper then slowly aim the flashlight toward the open lane and hold the flashlight in that position. The flagger will not wave the flashlight.

EMERGENCY VEHICLES

Emergency vehicles require special consideration and, although these vehicles have movement rights, keep in mind two critical words: Safety First. A wrecked ambulance in a construction zone is of no benefit to anyone.

Use good judgment. Stop all emergency vehicles if it is unsafe for them to proceed and carefully explain to them the situation which exists ahead.

You see an emergency vehicle coming. Immediately contact the other flagger and inform him or her to stop traffic and let you know what vehicle the last vehicle will be. When the emergency vehicle arrives at your location, you can let the driver know what has been done to expedite their passage through the work zone. They will normally wait to pass safely.

JUDGMENT CALLS

Before you control traffic, you will be told what your duties are but remember you need to know what to do when problems arise. Here are some common judgment calls that arise:

- If the wind blows a construction sign down, do not leave your station to put it back up, unless it is safe to do so.
- If it is unsafe to leave your Flagging Station to put the sign back up, notify another worker or stop a motorist and ask him or her to notify a worker.
- If a barrel overturns in the road, think quickly and stop traffic. Do not leave your Flagger Station unless it is safe to do so.
- When traffic is stopped for a long period of time a long line of vehicles may form. The danger is that the line of vehicles might stretch past the advance warning signs, and there could be a crash or a driver might swing out and drive toward the front of the line, either on the left or the right of the stopped lane of traffic. If you see this problem, notify your supervisor as soon as possible. Point out the problem and suggest that a second flagger is needed or that the duration of the stops should be made shorter.
- If the last stopped vehicle is not clearly visible for the required distance, another flagger and "Flagger" sign should be used. This problem can occur on hills and

curves where traffic must be delayed for a long period of time.

Plan for the unusual, and when challenges arise, use your best judgment. Think safety first.

ADDITIONAL INFORMATION

Ask your supervisor to check on you daily within an hour or so after you initially begin to flag. If you do not feel safe, tell your supervisor. Discuss break periods with your supervisor. Your job is too important to leave your Flagging Station, even for a few minutes.

The most difficult flagging situation is one where you are required to stop traffic when construction equipment is crossing or entering the highway. You may only need to stop traffic once or twice an hour, so you may become bored.

Do not read a book, sit in your car, sunbathe, use a cell phone or computer or talk to friends. Improper flagging is dangerous, and your flagging actions will reflect on the way drivers will react to other flagging situations. Remember, the "Flagger" sign is in place, and the motorist is looking for a flagger. If you are not visible, the motorist will tend to disrespect the "Flagger" signs at other flagging locations.

Always be at your flagging station; this is why you are paid. Boredom is a problem which you must face but also remember the importance of your job. You would not be there if there was a better way to provide the necessary safety.

Consider this situation: You are sitting in your car, reading a book, when you hear a truck approaching. You jump out to pick up your paddle. A construction truck is approaching your Flagging Station to enter the highway. A school bus loaded with children is also approaching the posted speed limit. You judge you will not be able to stop the bus in time. Your only chance is to try to stop the truck, but the driver has already entered the highway without slowing down. You created a

situation where a crash will occur. Do not sit in a motor vehicle while on flagger duty.

When you have finished studying this Flagger Study Manual and are ready to take the Flagger Certification Written Examination, let the examiner know.

If you have questions or need further clarification, please contact:

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Flagger Certification

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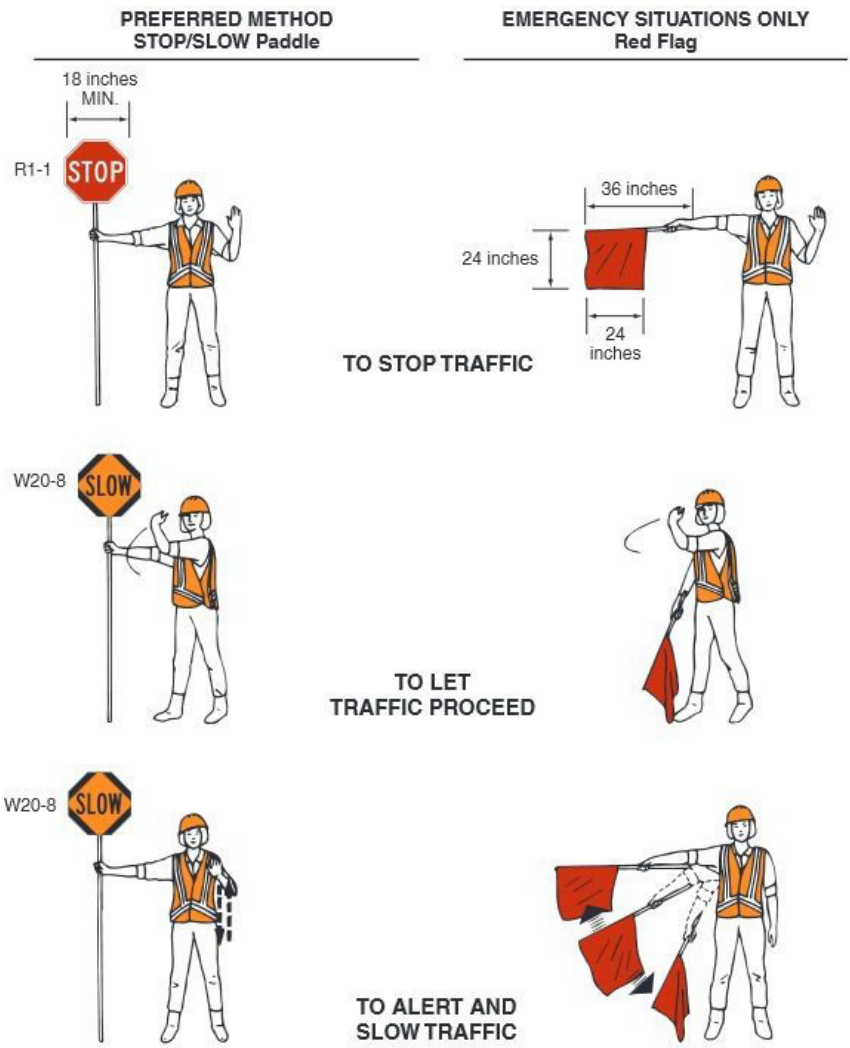
Figure 6E-3. Use of Hand-Signaling Devices by Flaggers