TRAIN • SERVE • RESPOND

Flaggers in Work Zones

Instructor Guide

Texas Engineering Extension Service (TEEX)
Infrastructure Training & Safety Institute (ITSI)

A Member of The Texas A&M University System

IS HWS165 TR 02/11

FLAGGERS IN WORK ZONES

INSTRUCTOR GUIDE

The Texas A&M University System

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FLAGGERS IN WORK ZONES

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Table of Contents

Class Schedule

	Session	Module	Instructional Hours		
			Classroom	Lab/Field Activity	Total
Day 1	AM Session 1	Module 0: Course Introduction	30 min	0 min	30 min
		Module 1: Requirements for Flaggers	45 min	0 min	45 min
		Module 2: Hand Signaling Devices and Procedures	45 min	0 min	45 min
	AM Session 2	Module 3: Flagger Stations	60 min	0 min	60 min
		Quiz and Flagging Skills Demonstration	60 min	0 min	60 min
Daily Total			240 min	0 min	240 min
Course Totals			4 hours	0 hours	4 hours

Distribution Shipping List

Distribution Shipping List

Training Materials

1 per Student:

- ☐ *Flaggers in Work Zones* Participant Manual (*HWS110 PM*)
- ☐ *Flaggers in Work Zones* Quiz (*HWS110 QZ*)
- ☐ Defensive Flagging – A Survivors Guide – English *(HWS002 REF2 ENG)*
- ☐ Name Tent *(EU-127)*

Miscellaneous Materials – 1 per class unless otherwise noted

- ☐ **Qty 3** Defensive Flagging – A Survivors Guide – Spanish *(HWS002 REF2 SPA)*
- ☐ Return Labels – *(if shipped)*
- ☐ Labeled PadPak *(w/return instructions)*
- ☐ White copy of this Pack-Out list

Notes

APPROVALS:

Curriculum Services

Program Manager

Instructor Course Preparation Checklist

1. Off-site Preparation

- ☐ If taught at customer location, customer will supply all necessary equipment and field materials as agreed.

2. Tools

- ☐ 1 traffic cone (minimum 28” high)
- ☐ 1 STOP/SLOW paddle (minimum 24” sign plate)
- ☐ 1 red flaggers flag, 24” x 24”
- ☐ 1 ANSI/ISEA 107-1999 or 107-2004 safety vest
- ☐ Hard hat

3. Equipment

- ☐ Computer
- ☐ Data projector
- ☐ Extension cords with multiple plugs

4. Instructional Aids / Media

- ☐ Flaggers in Work Zones Instructor Guide
- ☐ Flaggers in Work Zones Final Exam
- ☐ Computer disk with instructional media (back-up)
- ☐ Defensive Flagging - A Survivor’s Guide - English

5. Participant Materials

- ☐ Flaggers in Work Zones Participant Manual
- ☐ Registration forms
- ☐ Attendance roster
- ☐ Name tents

6. Special Requirements / Instructions

☐ Confirm physical location of class and availability of audio/visual equipment. Some classroom locations may be difficult to find.

☐ Take promotional material if participants would like information on other TEEX courses.

☐ Set up a static display of tools (cones, paddle, vests, etc.) to use throughout the course as questions/opportunities arise.

☐ Check the roster in case a conflict has necessitated sending a replacement participant.

☐ If participants are not listed on the roster, verify, when appropriate, that they are paid with the Customer Care Center (979) 845-6563.

Module 0

Introduction and Orientation

Instructional Guidance

Time

30 minutes

Materials/Equipment

1. Registration Forms
2. General Release Form
3. Student Sign-In Sheet
4. Chapter 6E of the MUTCD version the state uses
5. Defensive Flagging: A Survivor's Guide
6. Laptop computer
7. Computer graphics generator (projector)
8. PowerPoint Presentation

Instructor Preparation

During this portion of the course, the instructor should facilitate the following activities:

1. Complete registration forms
2. Introduce instructor(s)
3. Introduce course participants
4. Overview of participant manual and other resources
5. Static display of all equipment set-up for use throughout the course

Introduction


1 - 2

In this module, participants complete registration procedures and receive course information including attendance requirements, evaluation, and certificate information. The instructor will conduct a brief overview of the course, which includes the goals and objectives, required participant equipment, and the course schedule.

About Flaggers in Work Zones

Participants will learn the requirements to be a flagger—from skills and abilities to personal protective equipment. We will become familiar with flagging devices and their proper usage, and learn to set up flagger stations around a work zone. These are all components to aid us in conveying messages to drivers.

Course Goal


3

Upon successful completion of this course, the participants will be able to demonstrate fundamental flagger procedures in accordance with Chapter 6E of the national Manual on Uniform Traffic Control Devices and develop a basic traffic control plan for a common two flagger operation.

Course Overview


4

Module 1: Requirements for Flaggers

Module 2: Hand-Signaling Devices and Procedures

Module 3: Flagger Stations

Target Audience

This course is designed for individuals who will be responsible for setting up flagging operations in work zones, and individuals that will be a flagger in work zones.

Delivery Methods

Course delivery consists of lectures, group discussions, demonstrations, participant activities, and practical applications. A quiz will be given at the end of the course.

Prerequisites

None.

Recommended Training

It is recommended that the participant complete the course *Work Zone Traffic Control* prior to course registration.

Course Length

4 hours

Registration and Attendance

Attendance is crucial in order to receive credit for this course. All participants must complete a registration form at the beginning of the course, sign the attendance roster, and complete the evaluation at the end of the course in order to receive a certificate of completion.

Participant Evaluation Strategy

The instructor will orally test the participants' command of terminal and enabling objectives at the corresponding points in the presentation. Problem areas that are identified during questioning will be reviewed in further detail. Participants will be assessed through participation in group activities that require the application of information presented by the instructors in a street or highway setting. Participants will take a quiz at the end of the course and must successfully demonstrate the use of the hand-signaling devices and hand signals.

Administrative Instructions


5

1. Completion of Course Registration Forms
2. Instructor Introduction
3. Participant Introductions
   - Name
   - Work organization
   - Work experience
   - Course expectations
4. Safety and Convenience Features of the Training Facility
5. Overview of Course Materials and Other Resources
   - Make sure participants have copies of participant manuals.
   - Point out important or frequently referenced material in participant manuals.

Module 0 PowerPoint Slides

Flaggers in Work Zones

IS HWS165 TR 0-1

Module 0

Introduction and Orientation

IS HWS165 TR 0-2

Course Goal

Upon successful completion of this course, participants will be able to demonstrate fundamental flagger procedures in accordance with Chapter 6E of the MUTCD and develop a basic traffic control plan for a common two flagger operation.

IS HWS165 TR 0-3

Course Overview

- Module 1: Requirements for Flaggers
- Module 2: Hand-Signaling Devices and Procedures
- Module 3: Flagger Stations

IS HWS165 TR 0-4

Administrative Details

- Course Registration Forms
- Introductions
- Safety and convenience features
- Overview of course materials

IS HWS165 TR 0-5

Module 1

Requirements for Flaggers

Terminal Objective

Upon successful completion of this module, the participant will be able to discuss minimum qualifications along with recommended safety equipment for flaggers.

Enabling Objectives

1. Describe minimum qualifications for a flagger.
2. State the requirements for personal protective equipment for flaggers.

Instructional Guidance

Time

45 minutes

Materials/Equipment

1. Participant manual
2. PowerPoint visuals for module
3. Variety of safety vests

Instructor Preparation

During this portion of the course, the instructor should facilitate the following activities:

1. Become familiar with the content of Chapter 6E of the MUTCD used by the state in which the course is being taught.
2. Prepare projector and position first PowerPoint slide.
3. Prepare devices and vests that will be used in the presentation.

Introduction


1

Do you know what the qualifications are to be a work zone flagger? In this module, we will learn what qualifications are necessary to be an effective flagger. We will also become familiar with the personal protective equipment that should be worn when performing this job.

Flagger Qualifications


2

1. A flagger provides temporary traffic control.

Participant Response Opportunity

Q: How does a flagger provide TTC?

A: Slow traffic, redirect traffic, stop traffic using hand signals and hand signaling devices

2. Abilities

Participant Response Opportunity

Begin a discussion where participants describe the problems that can arise when a flagger does not have one or more of the abilities required for flaggers.

Activity 1.1: Flagger Requirements

Open class for discussion regarding actions or inactions of the employees regarding safe flagging techniques. Ask participants the questions provided for each image (Figure 1.1 to Figure 1.4).

3

Figure 1.1: Slide 3

Q: What unsafe activities do you see?

Instructor Note

Answer: Flagger is seated.

Q: Why does the flagger need to stand in order to perform the task of flagging traffic?

Instructor Note

Answer: Flagger should be able to run.

Q: How is the standing employee being unsafe?

Instructor Note

Answer: Back towards traffic and not wearing a safety vest.

Q: What will traffic see first—the seated flagger or the sign?

Instructor Note

Answer: The sign.


4


Figure 1.2: Slide 4

Q: What concerns should a flagger have with this picture?

Instructor Note

Answer: The driver is distracted.

Q: At 70 mph, how many feet does a vehicle travel in one second?

Instructor Note

Answer: Approximately 100 feet per second.

Q: What does this mean to the flagger?

Instructor Note

Answer: If the driver is distracted, they may not see the flagger. The flagger must be able to move and maneuver quickly (run) out of the way.

5

Figure 1.3: Slide 5

Q: In what ways is this flagger not being safe?

Instructor Note

Answer: Hard hat on backwards, tape on hard hat, using a branch as a handle.

6

Figure 1.4: Slide 6

Q: What is wrong with this picture?

Instructor Note

Answer: No flag, no paddle, and vest does not meet ANSI/ISEA requirements. The traffic cone not correctly striped and the flagger is not wearing steel-toed boots.

Flagger Personal Protective Equipment (PPE)


7

3.High-Visibility Safety Apparel must meet American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) standards

4. Hard Hat
5. Safety Eyewear
6. Safety footwear
7. Additional Flagger Equipment

Activity 1.2: Safety Vest Inspection


8

Ask participants to examine and evaluate safety vests brought in by the instructor.

Q: For working within the right-of-way of a federal-aid or Texas state highway, is it mandatory or optional that the high-visibility safety apparel meet the requirements of ANSI/ISEA 107-2004?

Instructor Note

Answer: 2003 MUTCD requires ANSI/ISEA 107-1999;

2009 MUTCD requires ANSI/ISEA 107-2004;

2006 TMUTCD requires ANSI/ISEA 107-1999.

Q: How does the user determine if his or her vest meets the requirements of ANSI/ISEA 107-2004?

Instructor Note

Answer: Check the label

Q: What is the minimum visibility distance for a vest at night?

Instructor Note

Answer: 1,000 feet

Application of Participants' Knowledge/Skills

Participants will discuss the consequences of a flagger not having one or more of the MUTCD stated abilities for a flagger. They will also inspect safety vests to identify whether the vests meet ANSI/ISEA requirements.

Evaluation of Participants

The instructor will use oral questioning during the presentation to assess participants' mastery of the material. Problem areas that are identified during questioning will be reviewed in further detail.

Summary

A flagger must be able to communicate with drivers. This is the first requirement to being a flagger. You must be able to move quickly, control the signaling devices, understand and apply safe traffic control practices, and be able to recognize a dangerous traffic situation in order to warn workers of the danger.

Protect yourself by using PPE to enhance your safety. Make yourself visible to motorists by always wearing high-visibility safety apparel. Wearing a hard hat, safety eyewear, and safety footwear will help protect you. Your safety is your responsibility.

Works Cited

Texas. Texas Department of Transportation. *Texas Manual on Uniform Traffic Control Devices.* 2006 Edition, Revision 1.

U.S. Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2003 Edition.

U.S. Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2009 edition.

Module 1 PowerPoint Slides

Module 1

Requirements for Flaggers

IS HWS165 TR 1-1

Flagger Qualifications

- Abilities
  - Communicate
  - Move and maneuver
  - Control signaling devices
  - Understand TTC practices
  - Recognize dangerous situations, warn workers

IS HWS165 TR 1-2

Activity: Flagger Requirements

IS HWS165 TR 1-3

Activity: Flagger Requirements

IS HWS165 TR 1-4

Activity: Flagger Requirements

IS HWS165 TR 1-5

Activity: Flagger Requirements

IS HWS165 TR 1-6

Flagger PPE

- High visibility safety apparel

IS HWS165 TR 1-7

Activity: Safety Vest Inspection

- Examine and evaluate safety vests that are provided to you.

IS HWS165 TR 1-8

Module 2

Hand-Signaling Devices and Procedures

Terminal Objective

Upon successful completion of this module, the participant will be able to demonstrate proper hand signals in conjunction with hand-signaling devices to communicate specific instructions to drivers passing through a temporary traffic control zone.

Enabling Objectives

1. Demonstrate the proper usage of the STOP/SLOW paddle, including appropriate hand signals.
2. Demonstrate the proper usage of the flag, including appropriate hand signals.

Instructional Guidance

Time

45 minutes

Materials/Equipment

1. Participant manual
2. PowerPoint visuals for module 2
3. STOP/SLOW paddle
4. Flag
5. Chapter 6E of the MUTCD version the state uses

Instructor Preparation

During this portion of the course, the instructor should facilitate the following activities:

1. Become familiar with the content of Chapter 6E of the MUTCD used by the state in which the course is being taught.
2. Prepare projector and position first PowerPoint slide.
3. Prepare devices and vests that will be used in the presentation.

Introduction


1

In this module, we will learn how to properly use hand-signaling devices and the accompanying hand signals to communicate instructions to drivers.

Hand-Signaling Devices and Procedures


2

4. STOP/SLOW paddle
    a. Primary hand-signaling device.
    b. Standards
        i. Color
        ii. Size of STOP/SLOW paddle
        iii. Letters at least 6 inches high
        iv. Retroreflectorized for night use


3 - 5

    c. Procedures
        i. Stop
        ii. Proceed
        iii. Alert and slow traffic

Participant Response Opportunity

Q: Should a STOP/SLOW Paddle be left unattended in the top opening of a cone or any type of stand?

A: No.

Q: What is the recommended size of the sign plate on a STOP/SLOW Paddle?

A: The minimum is 18".

Q: In what hand does the flagger hold the STOP/SLOW Paddle?

A: Right hand.


6

5. Flag
    a. Standards
        i. 24" x 24"
        ii. 36" staff
        iii. Red or fluorescent red/orange


7 - 9

b. Procedures
   i. Stop
   ii. Proceed
   iii. Alert and slow traffic

Participant Response Opportunity

Q: Is the flag the primary hand signaling device?

A: No.

Q: What size is the flag used for flagging?

A: 24 inch x 24 inches.

Q: How long should the staff of the flagger's flag be?

A: 36 inches

Activity 2.1: Flagging Procedures


10

Demonstrate proper flagging procedure using the stop/slow paddle and the flag. If time allows, have participants demonstrate the procedures.

Activity 2.2: Flagger Video


11

Show the video.

Have participants take the quiz shown at the end of the video to determine if they can locate the 10 errors.

Instructor Note

The following content is applicable only to those states utilizing the 2009 national MUTCD.

Automated Flagger Assistance Devices (AFAD)


12 - 15

6. Two types
7. Duration
   a. Short term
   b. Intermediate term
8. Reduces flagger exposure to traffic

Application of Participants' Knowledge/Skills

At the end of the course, participants must successfully demonstrate their ability to properly use the flagging devices in conjunction with appropriate hand signals.

Evaluation of Participants

The instructor will use oral questioning during the presentation to assess participants' mastery of the material. Problem areas that are identified during questioning will be reviewed in further detail.

Summary

We have learned about the devices used for flagging procedures and the appropriate hand signals that should accompany the use of the devices. Using these methods will help ensure that drivers understand the instructions you are giving to them.

Works Cited

Texas. Texas Department of Transportation. *Texas Manual on Uniform Traffic Control Devices*. 2006 Edition, Revision 1.

U.S. Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2003 Edition.

U.S. Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2009 edition.

Module 2 PowerPoint Slides

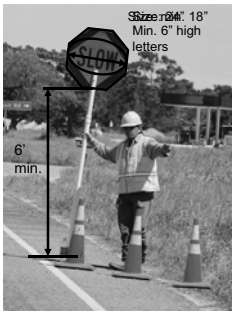
Module 2

Hand-Signaling Devices and Procedures

IS HWS165 TR 2-1

Hand Signaling Devices

- Stop/Slow Paddle
  - MUTCD standards



IS HWS165 TR 2-2

Flagging Procedures

- Stop/Slow Paddle
  - Stop command
  - Proceed command
  - Alert/Slow command

IS HWS165 TR 2-3

Flagging Procedures

- Stop/Slow Paddle
  - Stop command
  - Proceed command
  - Alert/Slow command

IS HWS165 TR 2-4

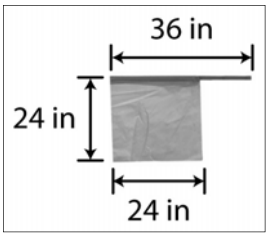
Flagging Procedures

- Stop/Slow Paddle
  - Stop command
  - Proceed command
  - Alert/Slow command

IS HWS165 TR 2-5

Hand Signaling Devices

- Flag
  - MUTCD standards



IS HWS165 TR 2-6

Flagging Procedures

- Flag
  - Stop command
  - Proceed command
  - Alert/Slow command

IS HWS165 TR 2-7

Flagging Procedures

- Flag
  - Stop command
  - Proceed command
  - Alert/Slow command

IS HWS165 TR 2-8

Flagging Procedures

- Flag
  - Stop command
  - Proceed command
  - Alert/Slow command

IS HWS165 TR 2-9

Activity: Flagging Procedures

- Instructor demonstration
- If time allows, practice the procedures.

Activity: Flagger Video

- Defensive Flagging

Automated Flagger Assistance Devices (AFADs)

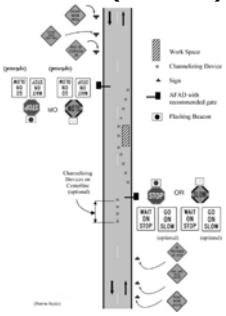
Automated Flagger Assistance Devices (AFADs)

IS HWS165 TR 2-13

Automated Flagger Assistance Devices (AFADs)

IS HWS165 TR 2-14

Automated Flagger Assistance Devices (AFADs)



IS HWS165 TR 2-15

Module 3

Flagger Stations

Terminal Objective

Upon successful completion of this module, the participant will be able to develop a basic traffic control plan for a common two flagger operation using the appropriate tables to locate the flagger stations.

Enabling Objectives

1. Use the appropriate tables to develop a traffic control plan for flaggers.
2. Identify the appropriate signs, along with their spacing, for the advance warning area when flagging procedures are used in a temporary traffic control zone.

Instructional Guidance

Time

60 minutes

Materials/Equipment

1. Participant manual
2. PowerPoint visuals for module
3. Chapter 6E of the MUTCD version the state uses

Instructor Preparation

During this portion of the course, the instructor should facilitate the following activities:

1. Become familiar with the content of Chapter 6E of the MUTCD used by the state in which the course is being taught.
2. Prepare projector and position first PowerPoint slide.
3. Prepare devices and vests that will be used in the presentation.

Introduction


1

We will learn how to determine the location of flagger stations in a work zone and have the opportunity to develop a traffic control plan that includes flagger stations.

Flagger Visibility


2

4. Extremely important for drivers to see you in time to respond to signals and to stop at intended stopping point
5. Use Table 6E-1 to determine the stopping sight distance drivers need
6. Except in emergency situations, flagger stations shall be illuminated at night.

One-Lane, Two-Way Traffic Control


3 - 6

7. Two flaggers
8. One flagger
9. Flaggers with pilot car
10. AFADs

Work Zone Components for Flagging Operations

Instructor Note

Discuss the components of a work zone that use flagger operations on a one-lane, two-way traffic control set-up.


7 - 12

11. Activity Area
    - Buffer space
    - Work space

12. Transition area
    - One-lane, two-way traffic taper (50 foot minimum to 100 foot maximum)
    - Device spacing (20 feet)
13. Advance warning area
14. Termination area
    - Buffer space
    - Downstream taper (50 foot minimum to 100 foot maximum)
    - Device spacing (20 feet)

Participant Response Opportunity

Q: Which traffic control device is installed first when one lane of a multi-lane roadway will be closed?

A: The RWA in the open lane.

Q: Which traffic control device is installed first when one lane of a two-way, multi-lane road will be closed?

A: The RWA in the closed lane.

Activity 3.1: Roadway Diagram


13 - 15

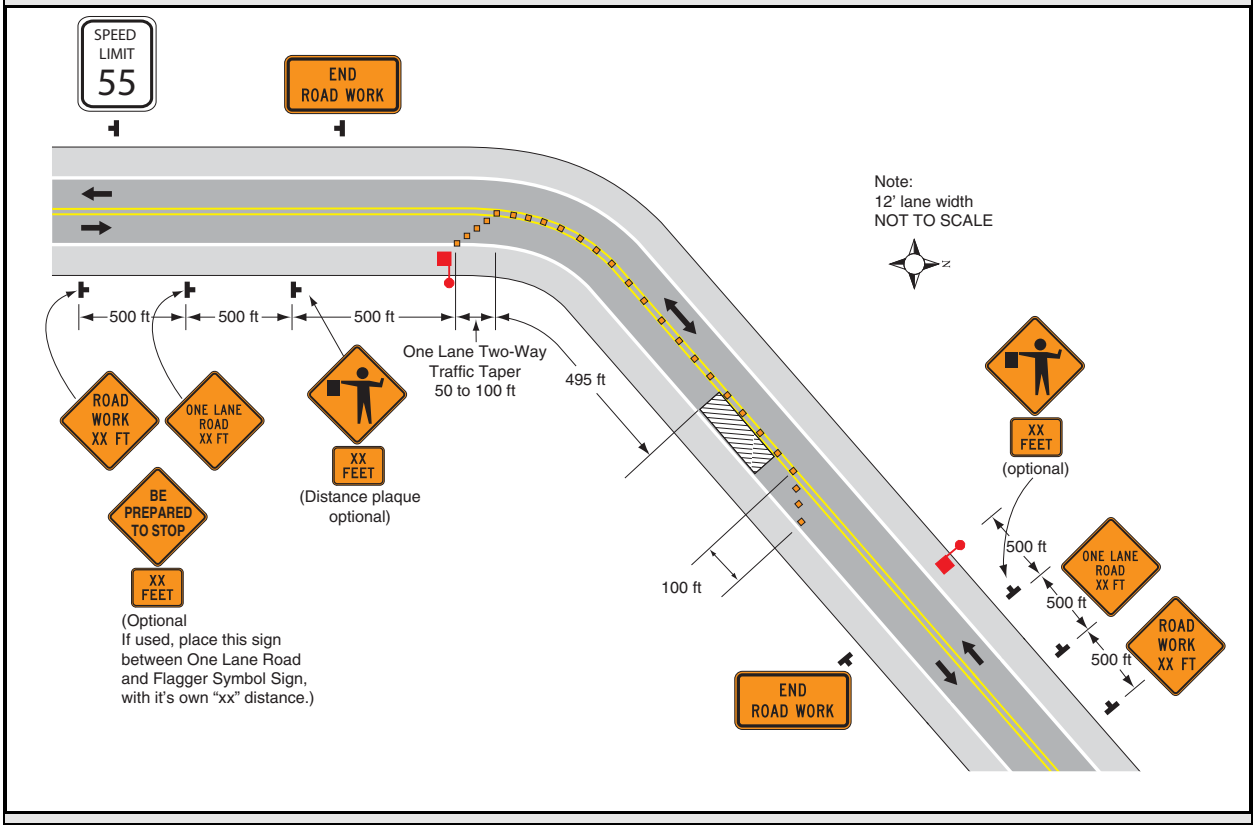
Using the roadway diagram, participants are to create a traffic control plan based on the following scenario:

> This is a two-lane, two-way rural highway, with a posted speed of 55 m.p.h. Extensive patching is needed in one lane of the road.
>
> The work will require that the lane be closed for about 3 hours during a normal daytime work shift. Traffic volumes are light and you have been asked to prepare a traffic control plan, using alternate one-way traffic control with flaggers, for this work activity. Show the location of the flaggers, channelizing devices, and signs.

Participants should use the following table to aid in organizing their information.

Posted Speed 55	Lane Width N/A	Information Source	Length or Distance
Buffer Length (Stopping Sight Distance as a Function of Speed)		Table 6C-2	495’
Taper Type: One-Lane, Two-Way		Table 6C-3	50’-100’
Spacing of devices in Taper		Table 6C-1	55’
Spacing of devices in Tangent		Table 6C-4	110’
Advance Warning Sign Spacing		Table 6C-1	500’
Downstream Taper Length		Table 6C-3	50’ minimum 100’ maximum

Roadway Diagram Key



Instructor Note

Have participants individually demonstrate the proper use of hand-signaling devices using correct hand signals. Afterwards, have participants take the exam. Go over answers before dismissing from course.

Application of Participants' Knowledge/Skills

Participants will use tables introduced in this module to develop a traffic control plan for flaggers. This plan will include the appropriate components and apply correct sign spacing for the advance warning area.

Evaluation of Participants

The instructor will use oral questioning during the presentation to assess participants' mastery of the material. Problem areas that are identified during questioning will be reviewed in further detail.

Participants will complete the Flagger Quiz at the end of the module. Participants must also demonstrate the proper use of the control signaling devices and hand signals.

Summary

Tips to keep you safe when flagging include:

- Stay alert
- Stand on the shoulder
- Face traffic
- Wear PPE
- Have an escape route planned
- Leave your post ONLY when you have been relieved by another qualified flagger

It is extremely important for drivers to see you in time to respond to your signals and to stop at the intended stopping point. To make sure the motorists see you, stand out from your background by adhereing to the following rules:

- Stand alone
- Do not stand in the shade

- Do not stand in front of construction equipment or signs
- Keep your vehicle away from your flagger station

Works Cited

Texas. Texas Department of Transportation. *Texas Manual on Uniform Traffic Control Devices.* 2006 Edition, Revision 1.

U.S. Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2003 Edition.

U.S. Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2009 edition.

Module 3 PowerPoint Slides

Module 3

Flagger Stations

IS HWS165 TR 3-1

Flagger Stations

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

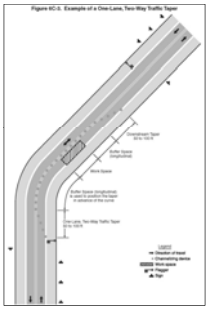
Speed*	Distance
20 mph	115 feet
25 mph	155 feet
30 mph	200 feet
35 mph	250 feet
40 mph	305 feet
45 mph	360 feet
50 mph	425 feet
55 mph	495 feet
60 mph	570 feet
65 mph	645 feet
70 mph	730 feet
75 mph	820 feet

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

IS HWS165 TR 3-2

One-Lane, Two-Way Traffic Control

- Two flaggers
- One flagger
- Pilot car
- AFAD



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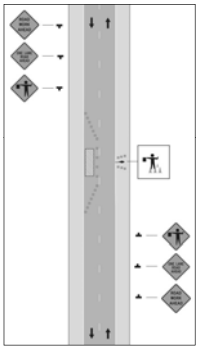
IS HWS165 TR 3-3

One-Lane, Two-Way Traffic Control

- Two flaggers
- One flagger
- Pilot car
- AFAD



IS HWS165 TR 3-4

One-Lane, Two-Way Traffic Control

- Two flaggers
- One flagger
- Pilot car
- AFAD

IS HWS165 TR 3-5

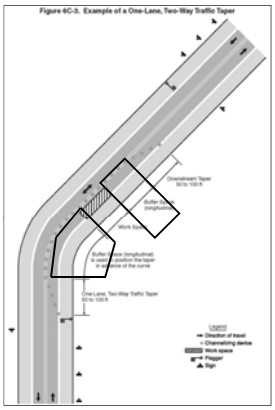
One-Lane, Two-Way Traffic Control

- Two flaggers
- One flagger
- Pilot car
- AFAD

IS HWS165 TR 3-6

Work Zone Components for Flagging Operations

- Buffer Space
- Tapers
- Advance Warning



IS HWS165 TR 3-7

Traffic Control Component Distance

- Buffer Space
- Tapers
- Advance Warning

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

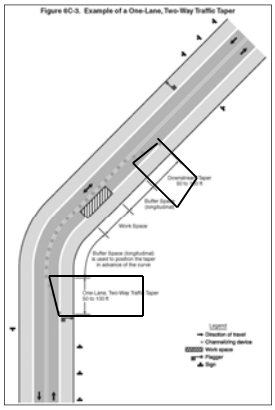
Speed*	Distance
20 mph	115 feet
25 mph	155 feet
30 mph	200 feet
35 mph	250 feet
40 mph	305 feet
45 mph	360 feet
50 mph	425 feet
55 mph	495 feet
60 mph	570 feet
65 mph	645 feet
70 mph	730 feet
75 mph	820 feet

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

IS HWS165 TR 3-8

Work Zone Components for Flagging Operations

- Buffer Space
- Tapers
- Advance Warning



IS HWS165 TR 3-9

Traffic Control Component Distance

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

Note: Use Table 6C-4 to calculate L

Traffic Control Component Distance

- Advance warning sign spacing

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

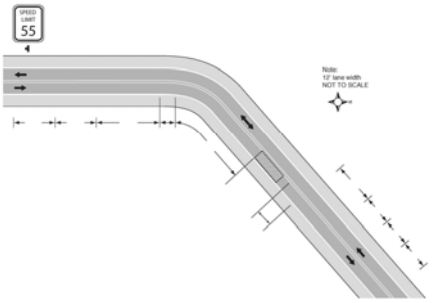
Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* 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.)

Work Zone Components for Flagging Operations

- Buffer Space
- Tapers
- Advance Warning

Participant Activity 3.1



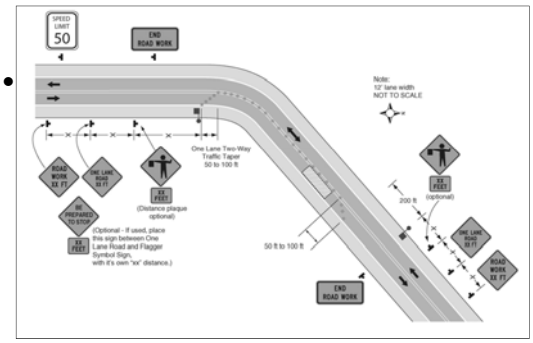
IS HWS165 TR 3-13

Participant Activity 3.1

Posted Speed	Lane Width	Information Source	Length or Distance
Buffer Length			
Type of Taper:			
Spacing Distances of TCD			
Taper			
Tangent			
Advance Warning Sign Spacing			
Downstream Taper			

IS HWS165 TR 3-14

Roadway Diagram



IS HWS165 TR 3-15

Appendix A

Flaggers in Work Zones Quiz Answer Key

Flaggers in Work Zones Quiz Answer Key

1. According to the MUTCD, a flagger shall be a person who controls traffic through a work zone. To do this a flagger must…
   A. Guide traffic
   B. Protect Workers
   C. Protect themselves
   D. All of the above

Instructor Note

Answer: d.

2. The background of the ANSI/ISEA 107 Safety Vest should be made of material that is fluorescent
   A. Orange – red
   B. Yellow – green
   C. Purple – blue
   D. a or b

Instructor Note

Answer: d.

3. What is the minimum size of a Stop/Slow Paddle when flagging on a minor street.
   A. 12”
   B. 16”
   C. 18”
   D. 24”

Instructor Note

Answer: c.

4. Flags, when used for flagging, should be a minimum of _____ inches2.
   A. 12”
   B. 16”
   C. 18”
   D. 24”

Instructor Note

Answer: d.

5. When flagging at night, both the Stop/Slow Paddle and the flag shall be retroreflective.
   A. True
   B. False

Instructor Note

Answer: a.

6. In a two flagger operation, the flaggers must be able to communicate with each other by….
   A. seeing each other for signals
   B. using two-way radios
   C. the use of a pilot car
   D. all the above

Instructor Note

Answer: d.

7. What type of taper is used in a flagging operation?
   A. Merging
   B. Shifting
   C. One-Lane Two-way Traffic Taper
   D. Shoulder

Instructor Note

Answer: c.

8. How long should the One-Lane, Two Way Traffic Taper be in length?
   A. 10’ – 20 ‘
   B. 50’ – 100’
   C. 100’ – 200’
   D. Over 200’

Instructor Note

Answer: b.

9. Which advance warning sign is optional in a flagging operation?
   A. Flagger Symbol Sign
   B. Road Work Ahead Sign
   C. One Lane Road Sign
   D. Be Prepared to Stop Sign

Instructor Note

Answer: d.

10. When a Flagger is not at his/her Flagger Station he/she may leave all signs in place.
    A. True
    B. False

Instructor Note

Answer: b.

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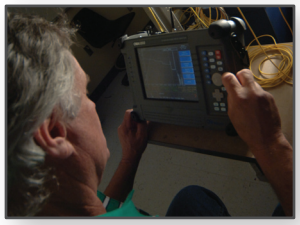

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