



**Kahnawake Department of
Occupational Safety and Health**

FLAGGER TRAINING



HANDBOOK

INTRODUCTION

Flaggers (Traffic Control Persons) have direct responsibility for the safe passage of traffic in a work area. The lives of workers, the traveling public and yourself depend upon your alertness and ability to control traffic with the STOP/SLOW paddle.

Flaggers should attempt to immediately warn the work crew when a motorist disregards a flagger's signal causing an emergency.

Flaggers shall be on duty during the installation and removal of equipment and traffic control devices located on any portion of a through traffic lane.

In general, roadwork conditions are regulated by the requirements of the *Manual of Uniform Traffic Control Devices-Canada (MUTCD-C)*. Individual provinces and states may have requirements which are specific to their jurisdiction.

The distances in this handbook are a basic guide only, and you should check your local laws for exact distances in your area.

In Quebec, the road safety code states that all signs must meet the requirements established by the Department of Transport Quebec.

FUNDAMENTAL PRINCIPLES

All road authorities are faced with special considerations in the application of signs and devices in work zones. Conditions may change depending on the length of a work zone or vary over a short period of time and are often unfamiliar to drivers. The decisions to be made by drivers in work zones can be challenging due to conditions often being complex and may be affected by construction equipment, movement of workers and other motorists in the area.

Roadwork must be planned, organized and supervised in consideration of traffic safety, and should be designed as an integral part of construction and maintenance projects. They must never be applied on a makeshift basis. Always route traffic through areas in a manner which most closely resembles normal road conditions, but ensures safety of workers and road users.

A traffic control plan must be prepared in advance for any significant projects, and approved by the road authority having jurisdiction.

Traffic movement should be interfered with as little as possible and consideration should be given to avoiding scheduling of work zone activities during peak hours, typically 07:00 hrs to 09:00 hrs and 16:00 hrs to 18:00 hrs.



CLASSIFICATION OF TEMPORARY CONDITIONS

SIGNS AND DEVICES

The sign classification system outlined in Part A of the MUTCD - Canada also applies to temporary conditions signs, subject to the variations as to color and size outlined in the following sections of Part D. Temporary conditions signs are classified according to their function as follows:

- a. Regulatory Signs*—are as described in Part A , Division 2 of the MUTCD-Canada. References to regulatory signs in Part D will be limited to applications on portions of road where work zone activities or other temporary and unusual conditions require a response by the road user.
- b. Warning Signs*—as described in the Part D are warning signs for temporary conditions.
- c. Information Signs*—are as described in Part A, Division 4 of the MUTCD-Canada. References to information signs in Part D are limited to their application for guiding road users through work zone activities or other temporary or unusual conditions where the road user may otherwise become confused.

Temporary signs are described in Division D2.

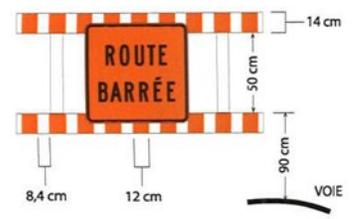
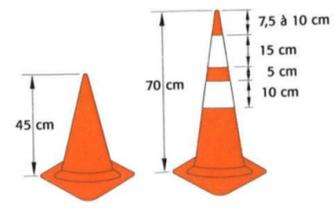
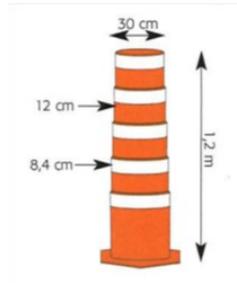
INSTALLATION

All signs for work projects should be positioned such that they do not interfere with or conceal existing applicable regulatory, warning or information signs.

RECORD KEEPING

On any work project, it is recommended that the project supervisor maintain records of all traffic control devices used.

EXAMPLES OF TEMPORARY SIGNS AND DEVICES



TEMPORARY WORK ZONE COMPONENT AREAS

A well-designed temporary conditions traffic control plan should reflect the five distinct component areas of each temporary work zone, which are:

- ◆ the Advance Warning area;
- ◆ the Approach area
- ◆ the Transition area
- ◆ the Activity area, which includes the longitudinal buffer space, the work space, the traffic space and the lateral buffer space; and;
- ◆ the Termination area.

As shown in Figure D1-1, the five component areas of a temporary work zone comprise the entire length of road between the first advance warning sign through to the last traffic control device, where traffic returns to its normal path and conditions.

These five component areas are described below in the order that drivers would encounter them.

(a) Advance Warning Area

The advance warning area is used to inform drivers to expect road work ahead. The advance warning may vary from a single sign to flashing lights on a vehicle.

(b) Approach Area

In the approach area, drivers are informed of lane changes, speed reductions, passing restrictions, etc. The approach area signage may vary from a single sign to flashing lights to a series of signs.

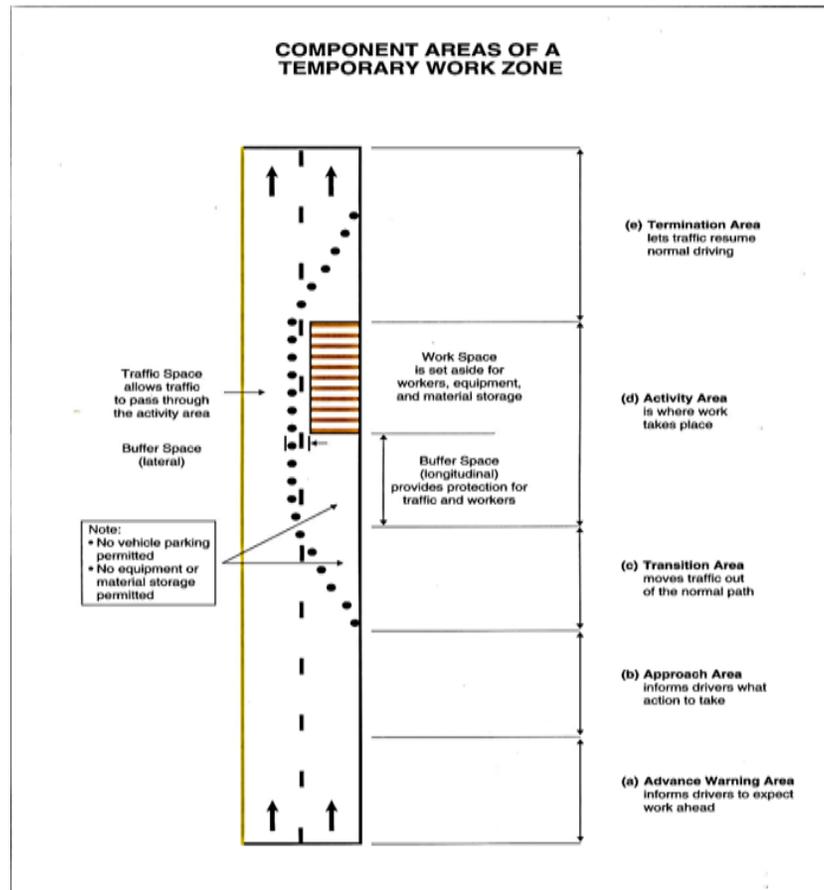


FIGURE D1-1

(c) Transition Area

When work is being performed in one or more lanes, lane closure is required. In the transition area, traffic is channeled from the normal alignment to the path required to move traffic past the work zone.

(d) Activity Area

The activity area is where the work takes place. It includes longitudinal buffer space, work space and lateral buffer space.

(i) *Longitudinal buffer space* provides protection for traffic and workers between the end of the transition area and work space.

(ii) *Work space* is set aside for workers, equipment and material storage. The work space may be in a fixed location or may move as work progresses. It may be defined by delineation devices.

(iii) *Traffic space* allows for traffic to pass through the activity area. The traffic space should provide minimum lane widths of 3.0 m. Wider lane widths may be desirable where speed limit is 80k/m or higher.

(iv) *Lateral buffer space* provides for a separation between the work space and the adjacent traffic space.

(e) Termination Area

The termination area is used for traffic to make the transition back to the normal path of the road.

DURATION OF WORK

The four categories of work durations are:

- Mobile Works
- Very Short Term Work
- Short Term Work
- Long Term Work

(a) Mobile Works

Mobile operations involve work that is done while moving continuously, usually at low speeds, or intermittently, with periodic stops which do not exceed a few minutes in duration.

In Quebec the three categories of mobile works are divided as follows;

- ⇒ Works at speeds of 20 to 60km/hr such as snow removal
- ⇒ Works at speeds of 5 to 20km/hr such as abrasive spreading.
- ⇒ Marking work.

(b) Very Short Term Work

Very short term work occupies a fixed location for up to 30 minutes. The work site may be moved along the roadway and make frequent, short stops.

In Quebec the work must be completed within 15 minutes.

Examples of very short term work are; minor road maintenance, crack sealing or pothole repair, storm drain cleaning, etc.

(c) Short Term Works

Short term work is stationary work that requires a separate work space that is continuously attended by workers for more than 30 minutes but less than 24 hours.

In Quebec this type of work requires more than 15 minutes and must not exceed 24 hours.

Examples are repairing a water leak or paving.

(d) Long Term Work

Long term work is stationary and requires a separate work space for longer than 24 hours.

ROAD FEATURES

Grooved pavement or soft shoulders may necessitate the use of temporary signs to advise drivers of such conditions. These signs are placed either as an advance sign or in the sequence of approach signs.



TC-47
750 mm x 750 mm

Grooved Pavement



TC-48
750 mm x 750 mm

Soft Shoulder (English and French)



TC-48F
750 mm x 750 mm

Grooved Pavement Sign

The grooved pavement sign may be used to warn of road surface conditions in work zones which require extra care and attention by motorcycle or bicycle operators. Construction procedures which may affect the control and stability of motorcycles and similar vehicles such as milling, grinding or scarifying would warrant the use of this sign.

Soft Shoulder Sign

Where soft shoulders may present a hazard to vehicles, these signs shall be installed at regular intervals approximately 300 m apart over a 1.0 km stretch and 900 m apart on longer section.

Visibility

When work is carried out at night and under adverse visibility conditions, road authorities may require that certain signs have supplementary flashing or steady lights.

Reflectorization

All signs and devices must be designed and manufactured so as to display the same shape and color by night as by day. This is normally achieved by using retro-reflective sign materials.

Specifications for retro-reflective material are established in the most recent edition of the Canadian General Standards Board (CGSB) Specification 62-GP-11M.

Additional information can be found in the most recent edition of the American Society for Testing and Materials (ASTM) Specification D4956.

Standard Sign Placement for Temporary Conditions

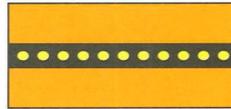
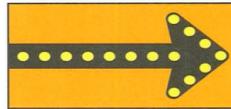
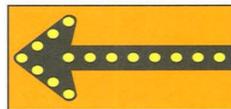
Sign placement should generally follow the guidelines outlined in Subsection A1.7.2. of the MUTCD-C

All signs in temporary work zones should be located where they can be readily seen by drivers at all times. Signs shall not be placed where they may pose a hazard and must be maintained at all times.

Temporary Conditions Devices

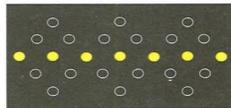
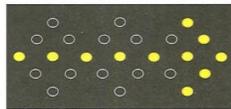
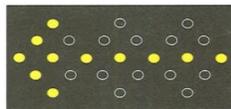
Flashing Arrow Boards

There are two types of flashing arrow boards in common use:



TC-8
Variable Dimensions

The TC-8 displays black arrow or bar on a reflectorized orange background.



TC-9
Variable Dimensions

The TC-9 has a black background and displays a symbol only when the lights are activated.

Delineation Devices

Delineation devices are used to delineate traffic through a work zone including diversions, channeling tapers in advance of lane closures and to separate the road work and the traffic flow. These devices should be spaced in accordance with distances shown in Division D4 of the MUTCD-C.

Traffic Cones

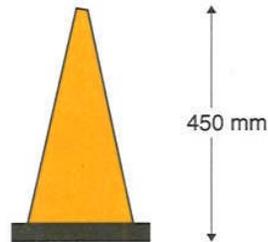
Traffic cones may be used as a delineation device, primarily during daylight hours.

Where speed limit is 60 km/h or less, either 450 mm or 700 mm cones may be used. Where the speed limit is 70 km/h or more, 700 mm cones are preferred for work operations.

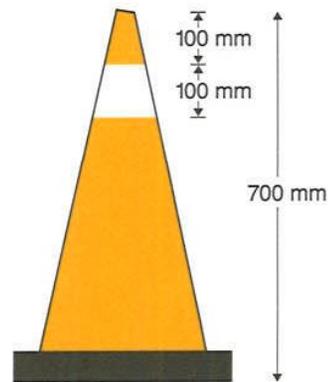
When used for nighttime operations, cones must be 700 mm in height and must have a reflective band on the upper half of the cone.

Cones are used only during short term work.

On auto-routes, freeways or expressways, either flexible drums (TC-63) or construction markers (TC-62) should be used for all nighttime operations and are preferred for daytime operations.



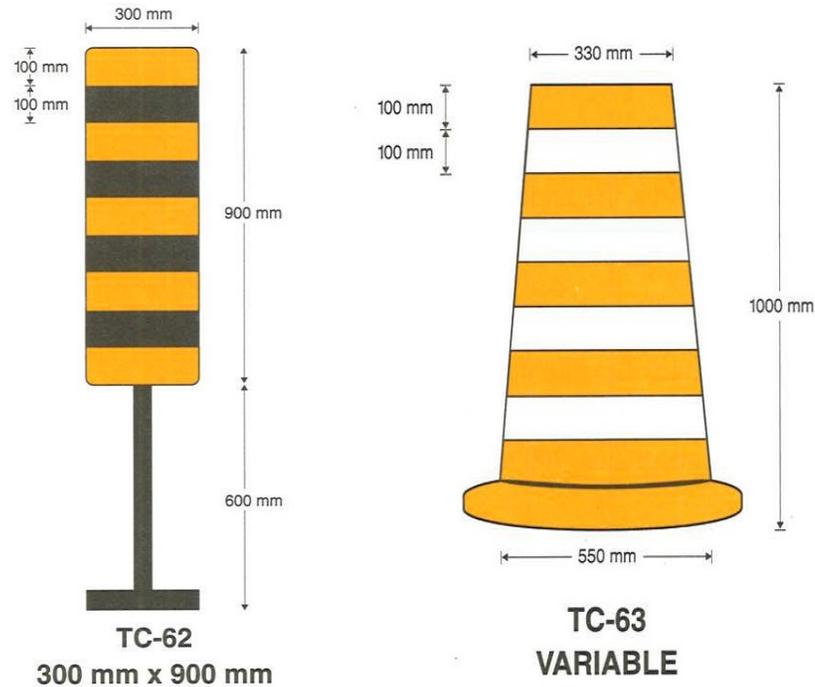
TC-61



TC-61

Flexible Drum (TC-63)

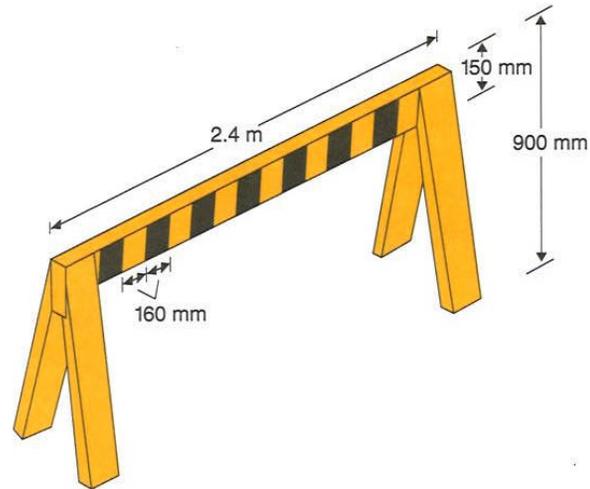
The flexible drum must have an anti-roll device in case of impact, must have sufficient ballast and constructed in a manner as to not create a hazard to drivers or workers.



On auto-routes, freeways or expressways, either flexible drums (TC-63) or construction markers (TC-62) should be used for all nighttime operations and are preferred for daytime operations.

Light Barricades (TC-64A)

Light barricades may be used to provide a road, street, lane, or shoulder closure for short terms.



TC-64A

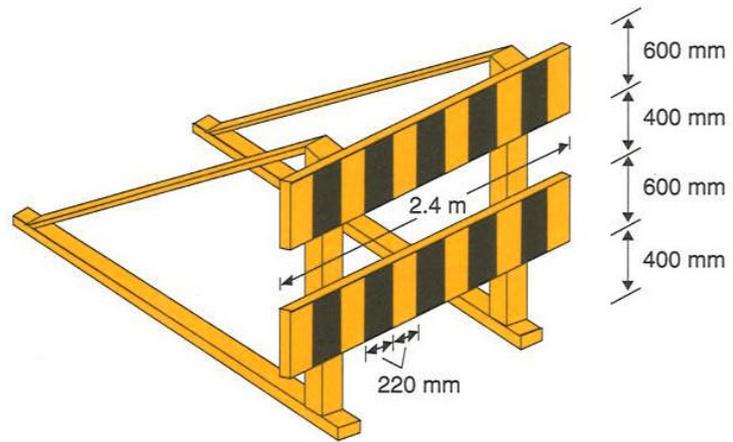
Heavy Barricades (TC-64B, TC-64C)

Heavy barricades are used to provide a complete closure of a road, street, lane or shoulder for an extended period of time.

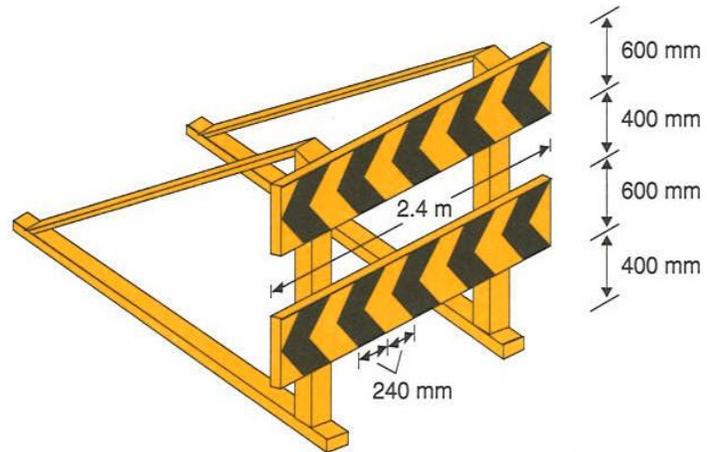
Where no direction is to be indicated, the TC-64B barricade is used.

The TC-64C barricade is used to indicate a direction to motorists.

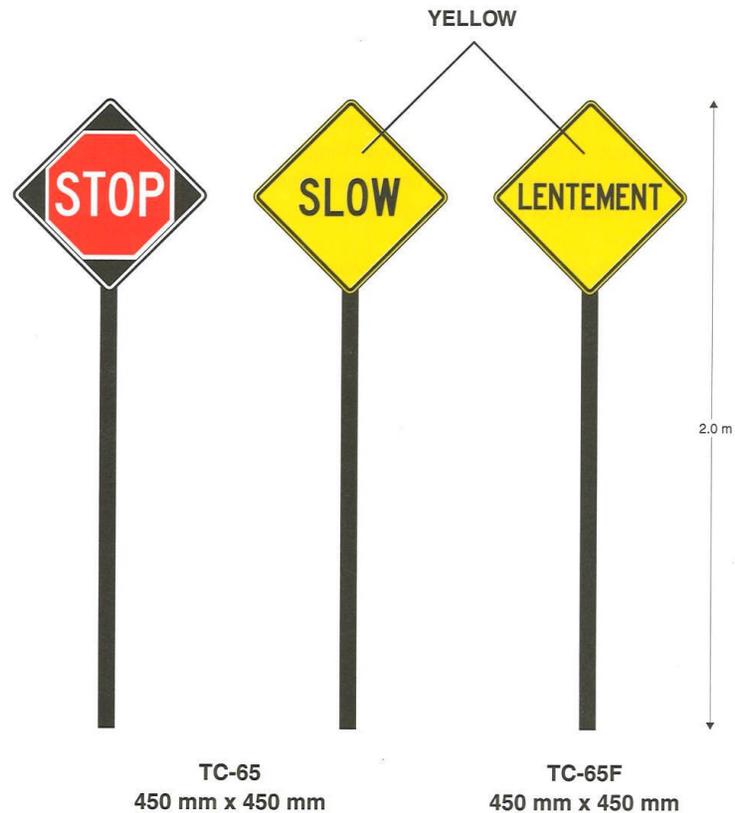
Heavy barricades should comply with the minimum dimensions indicated in the drawings. For heavy barricades being used to close narrow shoulders or lanes, the length may be reduced.



TC-64B
NON-DIRECTIONAL



TC-64C
DIRECTIONAL



Traffic Control Paddles (TC-65)

The stop/slow paddle is a double-sided hand-held traffic control device. It should be used by traffic control persons (TCPs) to direct traffic by displaying the desired message towards approaching vehicles in accordance with the training received by the road authority or the contractor. If only one TCP is being used to control traffic in one direction only, the side of the sign not facing the intended direction of control must be covered as to not confuse motorists in the opposing direction. **Flags should not be used.**

Traffic Control Persons (TCP)

When a traffic control person (TCP) is on duty, the TC-21 sign must be used at all times and must be removed when the TCP is not on duty.

Applications of TCPs

TCPs are used at work zones to regulate traffic and to prevent conflicts between pedestrians, vehicles, workers, and work zone activities. They may also stop traffic intermittently as necessary by work progress, or to maintain continuous traffic flow past the work zone at reduced speeds to protect workers. Local regulations may dictate whether or not TCPs may be used.

TCPs must be positioned in a manner that will not conflict with other traffic control devices such as stop signs or traffic signals.

When TCPs are not within sight of each other, a third TCP, or some other means of communication is required to relay instructions between TCPs.

When TCPs are required for nighttime operations, appropriate lighting must be provided so that the TCP is clearly visible to traffic in both directions.

Duties

The duties of a TCP are:

- (a) to direct traffic safely through the work zone;
- (b) to stop traffic whenever required by the progress of work in order to provide a safe work zone and to ensure worker safety; and
- (c) to warn workers of impending danger.

Qualifications

TCPs perform a unique and important role on work zone projects. They are responsible for the regulation of traffic through the work zone and for providing a high level of safety to workers, road users and themselves.

Only trained, properly equipped and adequately supervised personnel should be employed as TCPs.

Training

TCPs must have the proper training prescribed by the local occupational safety and health regulations or by the road authority. The following points should be emphasized in the training:

- (a) intelligence and common sense;
- (b) alertness and attentiveness to the task at hand;
- (c) a courteous but firm manner;
- (d) a sense of responsibility for the safety of workers and the public;
- (e) good physical condition, especially sight and hearing;
- (f) neat appearance;
- (g) responsibility to ensure necessary TCP signs are in place;
- (h) an understanding for the project and traffic control strategy underway; and
- (i) positioning and degree of exposure to traffic.

Personal Protective Equipment

Always consider other needs and requirements of local and occupational safety and health regulations.

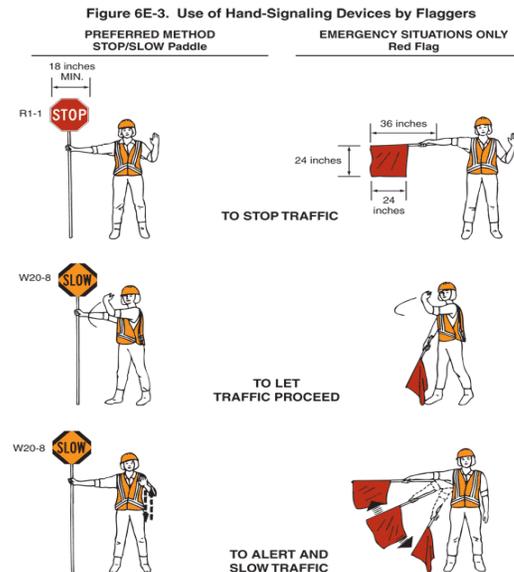
Equipment require by a TCP include;

- ◆ Stop/slow paddle
- ◆ Safety vest
- ◆ Safety footwear
- ◆ Eye protection
- ◆ Rain gear (should be high visibility material)
- ◆ Two-way radio
- ◆ Flashlight with red cone attachment for night use.

The TCP must wear a yellowish green florescent safety vest with reflective stripes in front, on back and both sides in order to be seen properly by road users.



It is recommended to use the stop/slow paddles instead of flags. Flags should be used in specific situations only. Never wave flags to let traffic proceed., this can confuse road users. Proper gestures or hand signals can help TCP to be understood by road users.



Application with Flagger (TCP)

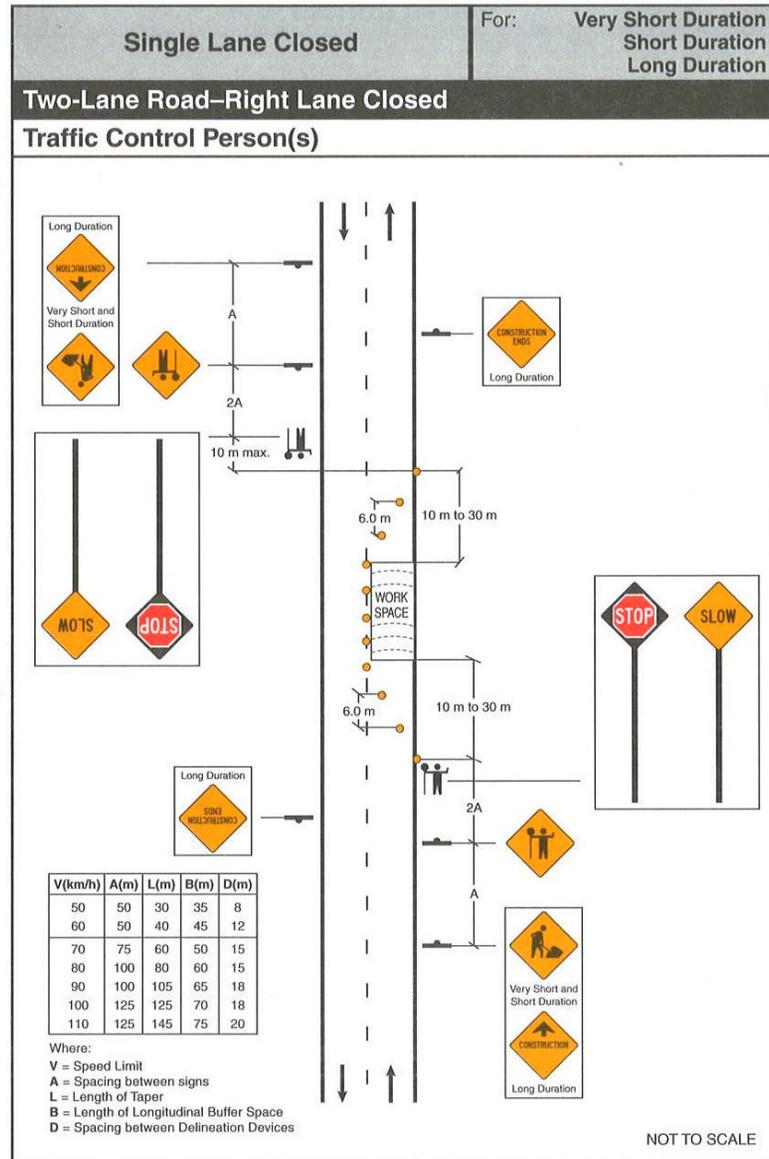


FIGURE D4-18

Application without Flagger (TCP)

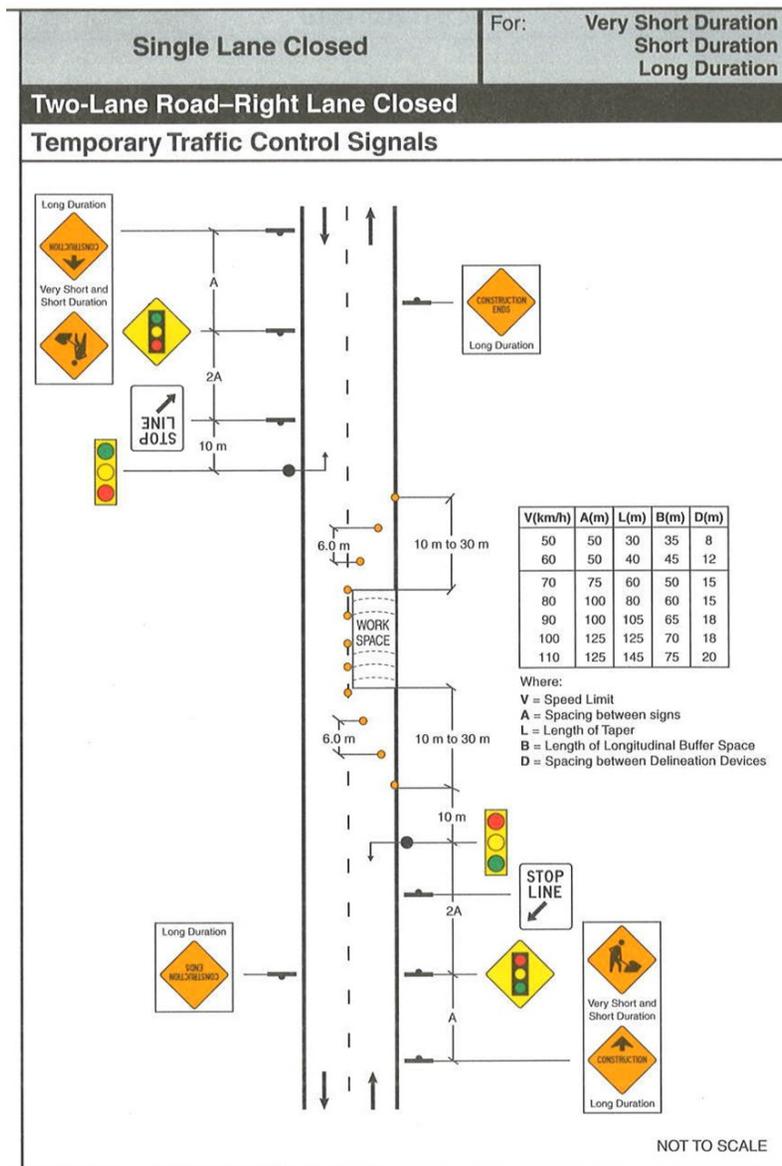


FIGURE D4-19

Application for Two-Lane Intersection (Near-Side Closed)

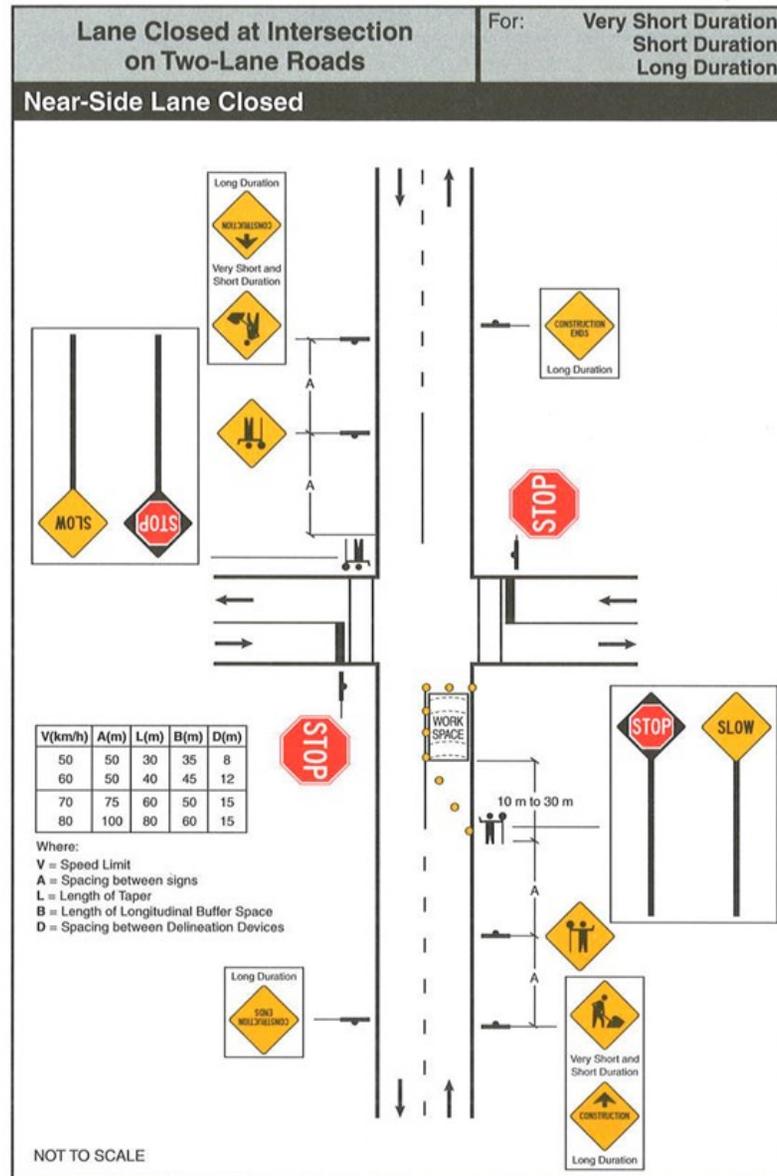


FIGURE D4-51

Application for Two-Lane Intersection (Far-Side Closed)

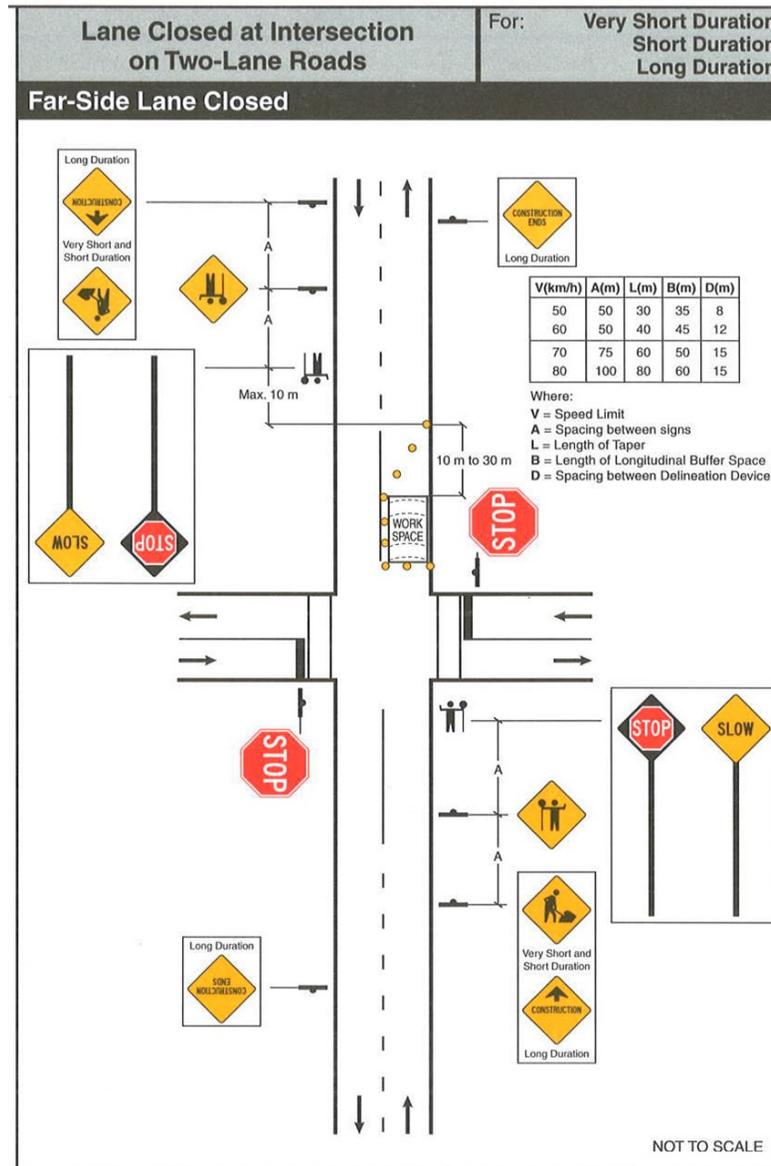


FIGURE D4-52

This handbook is for informational purposes only.

NOTE: The materials provided within this handbook are for flaggers who are directing traffic. For the purposes of this handbook the term “traffic” should be used interchangeably with: vehicles, pedestrians, bicyclists, and other road users.

Always refer to your local laws for specific regulations in your area.

Resources:

Manual of Uniform Traffic Control Devices for Canada



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