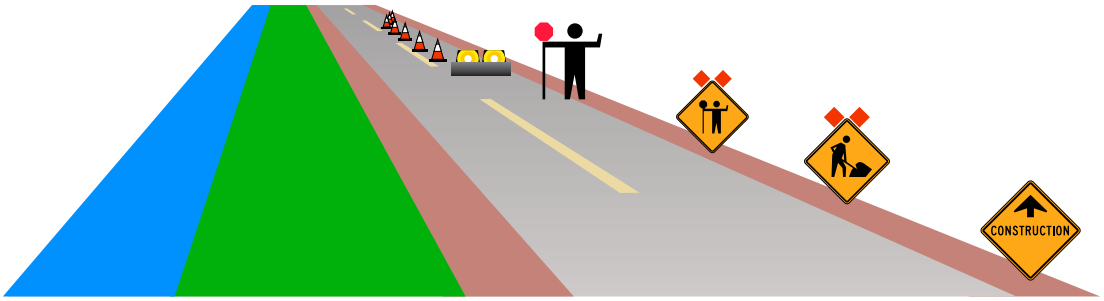
Prince Edward Island
Temporary Workplace Traffic Control Manual 2005



Prince Edward Island
CANADA

Transportation and
Public Works

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1.0 Introduction

This edition of the *Prince Edward Island Temporary Workplace Traffic Control Manual* is a compilation of amendments to the traffic control procedures for road work . The purpose of the Manual is to provide a traffic control standard for construction, maintenance, and utility operations on highways and streets in Prince Edward Island. It is applicable to all temporary work sites and all roads in the province.

When construction or maintenance activities interrupt the normal operating conditions of a street or highway, temporary traffic control provides for the continuity of movement of motor vehicle, bicycle, and pedestrian traffic and access to property and utilities.

The function of temporary workplace traffic control is to

- provide for the safe and efficient movement of motor vehicles, bicycles, and pedestrians around or through temporary work areas.
- protect workers in temporary work areas from errant vehicles.

The safety of workers is of equal importance to the safety of the public travelling through a temporary traffic control zone. Temporary traffic control zones present constantly changing roadway conditions that are not expected by the road users. This presents a high degree of risk to workers, which must be mitigated. Never start or continue work if the safety of either motorists or workers is jeopardised. Stop work until safety is ensured.

Every temporary workplace traffic control zone must consider road-user safety, worker safety, and the efficiency of traffic flow at all stages of the project, from planning through to completion. Efficient construction and maintenance of the street or highway are equally important.

The *Prince Edward Island Temporary Workplace Traffic Control Manual* provides uniformity in temporary workplace traffic control procedures by stating principles of temporary workplace traffic control and by schematically presenting a number of traffic control applications and procedures (the application Guides).

This manual uses the words “may”, “should” and “must” in a specific manner to convey a specific meaning:
may - a permissive condition; no requirement for design or application is intended.
should - an advisory condition; recommended but not mandatory.
must - a mandatory condition; requirements have to be met.

Unless otherwise stated, the *Manual* depicts the **minimum** level of traffic control for a particular application.

On gravel roads where both traffic volumes and speeds are low, the number and / or spacing of signs may be dictated by existing conditions. On gravel roads with either high traffic volumes or speeds, the specific signing procedures outlined in this manual must be followed.

This manual cannot consider all the variables for every situation that may arise. Traffic volume, traffic speed, and roadway and work site conditions for a particular location may vary significantly from the typical condition depicted in the Guides. Exercise good technical judgement in the design of the temporary workplace traffic control plan. Use additional signs, markings, devices, and worker protection if they seem necessary.

Conduct an on-site review of the traffic control plan immediately after the plan is implemented and periodically as conditions change. Correct the plan as needed.

2.0 Legal Authority

The Minister of Transportation and Public Works has the responsibility and legal authority to regulate and control traffic on public highways in Prince Edward Island, and has supervision and general control over the laying out, opening, altering, building, improving, maintenance, and repair of public highways in Prince Edward Island, pursuant to the *Public Works Act*, the *Highway Traffic Act*, and the *Roads Act*.

This edition of the *Prince Edward Island Temporary Workplace Traffic Control Manual* has been approved by the Minister of Transportation and Public Works pursuant to Section 6 of the *Roads Act* as the minimum standard for construction and maintenance activities on public highways in Prince Edward Island.

The Workers Compensation Board, as established under the *Workers Compensation Act*, has been legislated under the *Occupational Health and Safety Act*, to administer the *Occupational Health and Safety Act* and Regulations, and as such has the legal authority to enforce traffic control procedures and to regulate workplace occupational health and safety in Prince Edward Island. The current edition of the *Prince Edward Island Temporary Workplace Traffic Control Manual* constitutes a compilation of amendments to the *Traffic Control Procedures for Road Work Manual*. The Department of Transportation and Public Works may enforce its provisions concerning workplace traffic control procedures.

Highway signs, pavement markings, traffic control signals, and any other devices or persons intended or employed to regulate, warn, or direct traffic in a temporary work area must operate under the authority of the agency that has jurisdiction over the affected section of road.

Road contractors and public utility companies may install or direct the installation of temporary condition signs, markings, or devices, or assign traffic control persons to direct and regulate traffic and to protect workers, in accordance with legislative requirements pursuant to all of the pertinent legislation governing such activities.

3.0 Legal Liability

The purpose of temporary workplace traffic control is to provide for the safe and efficient movement of traffic through or around temporary work areas and to protect workers from errant vehicles. Its purpose is not to reduce legal liability in the courts; however, taking care to help traffic flow and prevent collisions and other incidents will also assist in reducing the liability for a collision or other incident.

The necessary elements of care include (but are not limited to):

- designing and implementing an appropriate traffic control plan.
- making an on-site review of the plan once it is set up.
- inspecting the site frequently to ensure all signs and devices are in place and functioning properly.

The critical issue in deciding liability when a collision or other incident occurs is the care with which the defendants carried out their responsibilities. Therefore, if there is a collision or other incident at a site, you must be able to show that you exercised a reasonable standard of care. If you cannot show that a reasonable standard of care was followed, you may be liable for damages. The poorer your standard of care, the greater your share of the damages.

You must be able to prove the standard of care you followed and met. This proof may be required for any number of reasons, including court actions. To be able to prove the standard of care you followed and met, you will need to keep careful records. The following are recommended as a minimum record keeping practice:

- Keep a record of all traffic control devices used on the project.
    - On large projects, keep a separate field book.
    - On small projects, it may be sufficient to keep a signed copy of the signing plan, or if a typical application Guide was used, make reference to the typical application and record the application Guide actually used on the project in your field notes.
- Record the daily status of traffic control devices and the times of any changes to the devices, as well as the changes that were made.
- Record the status of the traffic control devices as soon as possible after an incident. Take appropriate measurements and photographs and mark them with the date, time, and location.

4.0 Definitions

Words and phrases used in the *Prince Edward Island Temporary Workplace Traffic Control Manual* are defined as follows for the purpose of this Manual.

Arterial Highway: a system of highways whose main function is the safe and efficient movement of traffic; may be controlled access or may permit land access as a secondary function. Ramps and merging areas on arterial highways are also included.

Active Work Area: the specific portion of roadway where construction, maintenance, or utility operations are being carried out; the area occupied by workers and work vehicles and where work is actually in progress.

Advance Warning Area: the area of a roadway in advance of an active or inactive work area in which drivers are given advance warning that they are approaching construction or maintenance activities or abnormal roadway conditions.

Approach Area: the area of a roadway immediately preceding an active or inactive work area in which drivers are given the necessary information to safely traverse the temporary work area.

Arrow Mode: one of the modes displayed by a Flashing Light Unit (FLU) consisting of an arrow shape formed by the flashing lights displayed as a warning to approaching drivers to change lanes in the direction of the arrow; Arrow Mode must only be used on multi-lane roads.

ASTM: designation of American Society for Testing and Materials.

Bar Mode: one of the modes displayed by a Flashing Light Unit (FLU) consisting of a single horizontal row of flashing lights displayed as a warning to approaching drivers to increase their vigilance or to direct their attention to a warning sign.

Blocker Vehicle: a truck without a Truck Mounted Attenuator (TMA) positioned in advance of an active work area to protect workers from errant vehicles.

Buffer Area: the area of a roadway between the transition area taper and the work area established to provide a recovery area for errant vehicles and for the placement of a Flashing Light Unit or Blocker or Protection Vehicles.

Changeable Message Sign: signs that are capable of displaying one of a number of fixed messages, any one of which may be displayed at a given time; the messages are changeable manually, by remote control, or by automatic control. These signs are also called Variable Message Signs or Dynamic Message Signs.

Channelization: the separation of traffic from work areas using delineation devices.

Collector Highway: a system of highways whose functions are equally divided between the efficient movement of traffic and land access. Collector highways generally have speed zones greater than 50 km/h.

Construction Zone: a temporary work area.

Continuous Moving Operation: a Mobile Operation that does not make intermittent stops in a travel lane.

Controlled Access Highway: a highway on which access to or from the highway is prohibited except at specific locations established by public authority.

CSA: designation of the Canadian Standards Association; used to indicate the necessary requirements for safety-related clothing, equipment, and devices.

Current Edition: the most recent edition or revision of the *Prince Edward Island Temporary Workplace Traffic Control Manual* as issued or amended from time to time by the Minister of Transportation and Public Works.

Delineation Device: a device that provides vehicle tracking and guidance information to drivers.

Delineator: a retro-reflective device placed in series along the edge of a roadway or travel lane to provide night-time guidance to drivers.

Double Posted: signs erected on both sides of a highway approaching a work area.

Excavation: a hole or trench more than 300 mm in depth - if in or adjacent to a travel lane, drivers must be provided extra protection. Trenching for curb and gutters should be treated as a low shoulder rather than an excavation.

FLU: see Flashing Light Unit

FLB: see Flashing Light Bar

Flashing Amber Light 360°: a light that emits an amber flash pattern visible 360° around the light; normally mounted on the cab of equipment to provide a warning of its presence. A Flashing Amber Light 360° must be visible for a minimum of 300 meters during daylight hours.

Flashing Light Bar (FLB): a warning light unit with a minimum of two 55-watt flashing halogen lights and an internal reflector mirror that creates the appearance of a double flash with every rotation of the lights.

Flashing Light Unit (FLU): a warning light unit with a matrix of lights capable of flashing a horizontal bar or a pattern of lights forming directional arrows.

High Mount Portable Base: a mounting device for fabric roll-up 75 cm x 75 cm signs. The base of the sign must be placed at least 50 cm from the pavement.

High Shoulder: a shoulder that is higher than the travel lane by an amount sufficient to be an unexpected hazard to an unaware driver striking the raised shoulder with a tire; generally caused by cold planing operations.

Highway: a generic term that includes all types of freeways, roads, and streets whether divided or undivided, multi-lane, or two-lane two-way.

Highway Traffic Act: current edition of the Prince Edward Island Highway Traffic Act.

Impact Attenuator: a traffic barrier of energy absorbing material used to shield fixed objects from the impact of an errant vehicle.

Inactive Work Area: the portion of the roadway or right-of-way on which work has commenced but has temporarily ceased without the roadway being returned to normal operating conditions. This is the same portion of a temporary work area as an active work area.

Lane Closure: the closing of a travel lane by blocking it in some manner and directing traffic around it.

Liability: the legal responsibility for damages or injuries arising from a temporary workplace motor vehicle collision.

Long Duration Work: work at a site that will take longer than 24 hours to complete, the road condition not being restored to normal condition at the end of each day.

Low Shoulder: a shoulder drop off that is lower than the travel lane by 100 mm or is not fully functional by being covered with loose un-compacted gravel; generally caused by re-surfacing operations.

Low Volume Road: a road having an hourly traffic volume of less than 30 vph during the period that the road will be under repair; Arterial Highways can never be treated as low volume, whatever their actual traffic volume.

Low Volume Urban Street: an Urban / Residential street having an hourly traffic volume of less than 200 vph during the period that the street will be under repair; the volume may be estimated by conducting a 3-minute count and multiplying the volume by 20.

Manual or *Manual*: current edition of the *Prince Edward Island Temporary Workplace Traffic Control Manual*.

Maintenance Zone: a temporary work area.

may: a permissive condition; not a requirement. See also "shall," "must," and "should."

Median: the portion of the right-of-way separating opposing lanes of travel on a multi-lane divided road.

Median Barrier: a non-traversable barrier in a median intended to prevent vehicles from crossing the median; a New Jersey barrier is the recognized type.

Median Crossover: a traversable construction across a median on a multi-lane divided road to permit vehicles to change direction. Median crossovers can only be used by authorized vehicles.

Minibar: see Flashing Light Bar

Mobile Operation: work that is carried out while moving continuously, usually at slow speeds, or intermittently, with periodic stops that do not exceed a few minutes in duration; additional warning signs and devices are required for a mobile operation with intermittent stops.

Mobile Continuous: work that is carried out while moving continuously; usually operates at slow speeds.

Mobile Intermittent: work that is carried out while moving intermittently, with periodic stops that do not exceed a few minutes in duration; additional warning signs and devices are required for a mobile operation with intermittent stops. See Special Operations.

Multi-Lane: generally a road with two or more travel lanes in each direction; also a road with two lanes on one approach, such as a climbing lane or a two-lane approach to an intersection.

Must: a mandatory condition; requirements have to be met. See also "shall," "may,"and "should."

NCHRP: designation of the National Cooperative Highway Research Program.

Night Work: work performed during the period from a half hour before sunset to a half hour after sunrise.

Observer: a worker assigned the responsibility of watching for and warning of approaching traffic when another worker is on the travel lane of a road; usually the temporary work area would be signed for Very Short Duration or Short Duration shoulder work and a worker would enter the travel lane from the shoulder to perform a brief task using only hand tools.

Off-Shoulder Work: work that is carried out within the right-of-way but is completely clear of the travel lanes and the shoulder of the road; no workers, equipment, or vehicles are permitted to encroach on the shoulder.

Park Lane: a paved lane adjacent to the travel lanes for parked vehicles; provided on some Urban / Residential streets instead of shoulders.

Pilot Vehicle: a vehicle used to lead drivers through a Work Area. A Pilot Vehicle is not a substitute for Traffic Control Persons who continue to be required to stop and hold traffic on each end of the job while awaiting the return of the Pilot Vehicle.

Partial Lane Closure: the partial closing of a travel lane by closing part of the lane and guiding traffic in the narrowed lane; a minimum of 2.5 m of useable lane must be available to traffic; not permitted on Arterial Highways or multi-lane highways.

Protection Vehicle: a truck with a Truck Mounted Attenuator (TMA) positioned in advance of an active work area to block a travel lane and protect workers from errant vehicles entering the work area.

Portable Sign Support: a mounting device for 90 cm x 90 cm signs; the support may place the bottom of the sign at pavement or shoulder level.

Road: a generic term that includes all types of freeways, highways, and streets whether divided or undivided, multi-lane, or two-lane two-way.

Roll-up Sign: a portable temporary condition warning sign of a roll-up design consisting of a fabric substrata with a retro-reflective orange face.

Service Vehicle: a vehicle used to facilitate a construction or maintenance project to transport workers and equipment but not used in the work; may be used to place signs and devices.

shall: a mandatory condition; requirements have to be met. See also "may," "must,"and "should."

Short Duration Work: work at a site that will be completed in less than 24 hours of continuous work, or work that is ended each day and the road restored to its normal condition at the end of each day.

should: an advisory condition; recommended but not mandatory. See also "shall," "must," and "may."

Shoulder Work: work that is carried out on the shoulder of a road, completely clear of the travel lanes; no workers, equipment, or vehicles are permitted to encroach on the travel lanes.

Special Operation: a construction or maintenance project that has some unusual feature that is not fully compatible with the Typical Application Guides, based solely on road class, encroachment, and work duration.

TCM: see Traffic Control Manager

TCP: see Traffic Control Person

Temporary Work Area: the area of a roadway which is directly affected by construction, maintenance, or utility operations. The site may be an Active Work Area or an Inactive Work Area, depending upon the work schedule of the project.

Termination Area: the area of a roadway immediately following a temporary work area in which traffic returns to its normal alignment.

Traffic Control Manager (TCM): a person qualified and accredited by the Prince Edward Island Department of Transportation and Public Works to prepare and implement traffic control plans within a temporary work area for construction, maintenance, or utility operations.

TMA: see Truck Mounted Attenuator

Traffic Control Person (TCP): a person qualified and accredited by the Prince Edward Island Department of Transportation and Public Works to direct the movement of traffic along or across a highway within an area designated as a temporary work area for construction, maintenance, or utility operations.

Trail Vehicle: a vehicle used to trail a Mobile Operation to provide advance warning to traffic overtaking the operation; trail vehicles must be equipped with appropriate advance signs and a Flashing Light Bar (FLB) or a Flashing Light Unit (FLU).

Transition Area: the area of a roadway in which traffic is guided from its normal alignment to the path required to move around the work area.

Transition Area Taper: a smooth alignment established to guide traffic from its normal alignment in the transition area; generally established by using cones or drums but may be unmarked.

Truck Mounted Attenuator (TMA): an energy absorbing device mounted on the rear of a truck used as a Protection Vehicle; Truck Mounted Attenuators must satisfy the requirements of NCHRP 350 Level TL-3 (100 km/h impact speed).

Typical Application: the prescribed minimum treatment for a particular construction or maintenance project; unique situations may require more than the minimum signs, devices, protection, or warning distances.

Urban / Residential Street: a street in an urban area with a maximum 50 km/h speed zone.

Uneven Lanes: a section of road on which one travel lane is higher (or lower) than the other lane by an amount sufficient to be an unexpected hazard to an unaware driver crossing the longitudinal joint between the lanes; caused by cold planing or resurfacing operations.

Utility Operation: construction or maintenance work involving overhead lines or cables; may be signed for using TC-114(PEI) Overhead Utility Work rather than TC-2 Road Work.

Very Short Duration Work: work that occupies a location for up to 30 minutes, including equipment set-up and take-down time.

vph: vehicles per hour.

Work Activity: the specific task being carried out as part of a construction or maintenance project.

Work Area: see Temporary Work Area

Workplace Traffic Plan (WTP): a plan prepared and approved by the Regional Engineer prior to the beginning of work, noting all procedures and devices needed to guide traffic in a clear and positive manner while it approaches and travels through a temporary work area. On small projects a typical application Guide may be used; on large projects a plan specific to that project will be required.

Work Vehicle: a vehicle used to facilitate construction, maintenance, or utility operations in a temporary work area.

WTP: see Workplace Traffic Plan

5.0 Fundamental Principles

The regulation and control of road users through a temporary traffic control zone is an essential part of highway construction, maintenance operations, and utility work.

All traffic control signs, markings, devices, and procedures used for construction, maintenance, and utility operations must conform to or exceed the intent of the applicable specifications of this manual.

Traffic and worker safety must be an integral part of every project, from planning through design and construction.

Traffic Control Managers (TCMs) and Traffic Control Persons (TCPs) must be trained and accredited in the principles and practices of safe temporary workplace traffic control before being assigned responsibility for traffic guidance and control at temporary work areas.

Implementation Process
Traffic Control Managers (TCMs) must use the following process for every project, keeping in mind the fundamental principles listed above:

- Prepare a workplace traffic control plan with sufficient detail for the complexity of the project.
- Discuss the plan with everyone.
- Make sure everyone understands the work plan before the work is started.

Implementation Principles
Traffic Control Managers (TCMs) must use the following principles when preparing and implementing the traffic control plan:

- Control traffic movement through a temporary work area so as to maintain safe working and driving conditions and minimize delays and queue lengths.
- Avoid frequent or abrupt changes in alignment that require rapid manoeuvres.
- Provide for the safe operation of work vehicles.
- Guide traffic in a clear and positive manner while it approaches and travels through temporary work areas:
  - provide adequate warning, delineation, and channelization.
  - place signs and devices so that they are visible to all approaching traffic, whatever the driving lane or potential passing manoeuver.
  - cover or remove inappropriate signs.
  - remove inappropriate pavement markings unless the project is short term and it is reasonable to leave existing pavement markings in place and compensate for their presence with channelization or delineation markers or other devices.
  - inspect signs and devices frequently, relocating or replacing signs or devices if required.

Implementation Requirements
Traffic Control Managers (TCMs) must meet these requirements while implementing and managing the workplace traffic control plan:

- Start work only after appropriate traffic controls are in place.
- Modify traffic controls as required to meet changing conditions at the work area.
- Cover or remove temporary traffic control devices that are no longer applicable because of changes in the work pattern or the job shut down at the end of the work day.
- Uncover or erect temporary traffic control warning signs or devices to ensure that drivers receive proper warning and notification of conditions when the work area is inactive, especially at night.
- Cover or remove all temporary traffic control devices when roadway conditions have been returned to normal.
- At the completion of the work, install or re-erect permanent
  - regulatory and warning signs
  - pavement markings
  - guide and information signs.

6.0 Components of a Temporary Workplace Traffic Control Zone

A plan for temporary workplace traffic control should recognize the six distinct areas of a temporary work area. The temporary work area is the entire section of road between the first advance warning sign and the resumption of normal roadway conditions. The six areas are:

Advance Warning Area
Approach Area
Transition Area
Buffer Area
Active Work Area
Termination Area.

Each of the component areas will be present in some form in most work zones. Some components may be combined if traffic volume, speed, and visibility permit. The characteristics of each component area are given below.

Advance Warning Area begins at the first advance warning sign used to inform drivers to expect road work ahead. The advance warning may be a single sign or a series of signs beginning up to several kilometres before the Approach Area signing.

Approach Area begins at the first specific warning sign used to give drivers the information necessary to drive safely through the temporary work area, such as lane changes, lane drops, passing restrictions, speed changes, or the presence of traffic control persons or signals. The information is normally conveyed by a series of properly spaced signs.

Transition Area begins with the delineation devices used to channelize traffic from its normal alignment to the path required to move around the work area. The transition area contains the channelizing devices used to form the taper, including cones, drums, and New Jersey Barriers. The intended path must be clearly delineated for drivers. For long duration operations, the existing pavement markings may have to be removed and new markings placed. The Transition Area must be kept clear of unnecessary obstructions:

- Do not store material or equipment in the Transition Area.
- Do not park vehicles in the Transition Area.
- Operational traffic control devices may be positioned in the Transition Area, including trailer-mounted Flashing Light Units.

Buffer Area is established between the Transition Area taper and the Work Area to provide a recovery area for errant vehicles and a margin of safety for both motorists and workers. Use channelization devices to delineate the Buffer Area **except**

- during Mobile Operations when the Buffer Area is the space between the Trail Vehicle and the work vehicles.
- during Very Short Duration Work.

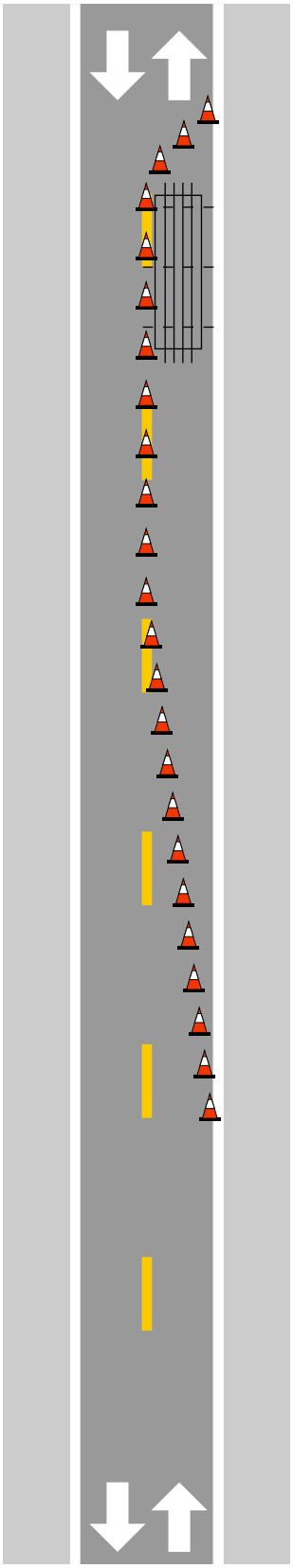
Keep the Buffer Area clear of unnecessary obstructions. Do not store material, or park equipment or vehicles in the Buffer Area **except**:

- for operational traffic control devices, which may be positioned in the Transition Area, including trailer-mounted or truck mounted Flashing Light Units.
- when a Blocker Vehicle or a Protection Vehicle is used to give extra protection to workers.

Work Area is the specific portion of roadway where construction, maintenance, or utility operations are being or have been carried out. It is the area occupied by workers and work vehicles. A Work Area can be

- "Active," with work being carried out at the present time.
- "Inactive," with work having commenced but temporarily ceased and the roadway not returned to normal operating conditions.

Termination Area provides a short distance for traffic to clear the work area and return to its normal path and to normal roadway conditions. A short taper may be provided in the Termination Area.



TERMINATION AREA
traffic returns to normal

workers
equipment
materials

ACTIVE WORK AREA
workers and/or
equipment on road

protection
equipment
only

BUFFER AREA
provides protection
for workers

delineation
equipment
only

no vehicle
parking

no storage

TRANSITION AREA
moves traffic away
from work area

traffic control
person

warning signs

APPROACH AREA
informs drivers
of required action

warning signs

ADVANCE WARNING AREA
informs drivers to
expect work area

NOT TO SCALE

7.0 Planning and Preparation Checklist

Review the following Planning and Preparation Checklist before starting a construction or maintenance project. Consider the size and duration of the project. Determine how applicable each item is to the project.

1. Determine the type of work to be performed.

2. Determine the duration of the work to be performed.

3. Become familiar with all applicable regulations.

4. Carry out a site review to determine:
   - Level of encroachment on travel lanes.
   - Prevailing vehicle speeds.
   - Stopping sight distances.
   - Traffic volumes (peak hour and off-peak volumes and distribution). If the roadway is a "low volume" roadway during off-peak hours but not during peak hours it can only be treated as "low volume" if the work will be carried out and completed during a "low volume" time period. If the project will be active at night, review night-time traffic patterns and volumes.
   - Pedestrian walking routes and school zones.
   - Expected weather conditions.
   - Night time visibility if the project will be active at night or if roadway conditions will be affected at night.
   - Overhead and underground wires, cables, and pipelines.

5. Contact the local police for comments on traffic and unexpected problems.

6. Determine type of traffic control required and prepare preliminary plan. A suitable Workplace Traffic Plan (WTP) must include:
   - The minimum deployment of warning signs and traffic control devices to achieve a safe work area under expected traffic conditions.
   - A transitional plan to deploy the warning signs and traffic control devices and to direct traffic to the new (temporary) alignment.
   - Additional warning signs and traffic control devices that may be needed to achieve a safe work area under heavy or unusual traffic conditions.
   - The number of Traffic Control Persons (TCPs) required at the work area and their work schedule.
   - A statement clarifying if a Traffic Control Manager (TCM) is required exclusively on the project.

   A suitable Workplace Traffic Plan (WTP) must consider whether or not:
   - The plan allows for the safe and efficient passage of emergency vehicles.
   - There will be conflicts between existing traffic control devices and the proposed temporary workplace traffic control plan. Do not plan to alter or remove existing traffic control devices without approval.
   - Night work will be part of the project. If so, review existing lighting and lighting requirements.

7. Arrange a public awareness / public relations meeting if required.
   - Provide information to the public concerning the extent of the project, the timing of any phases, the preliminary workplace traffic control plan, and the expected impact.
   - Advise occupants of abutting properties of expected parking prohibitions or access limitations.

8. Prepare final Workplace Traffic Plan:
   - Prepare list of traffic control devices required and ensure their availability.
   - Prepare list of personal protective equipment required and ensure its availability.
   - Identify appropriate procedures for sign and device set-up and take-down.

9. Obtain all required permits, approvals, and authorizations.

10. Arrange for removal and storage of signs and other traffic control devices when work is not being performed.

11. Arrange for additional temporary traffic control warning signs or devices to ensure that drivers receive proper warning and notification of conditions when the work area is inactive, especially at night.

12. Advise police, fire, and other emergency services, and other agencies that may be affected by the work.

13. Hold pre-job meeting.

8.0 Work Duration

The duration of the work is a major factor in deciding the number and types of signs and other temporary traffic control devices required to efficiently establish a safe temporary work area. The duration of a temporary traffic control zone is defined by the length of time the work operation occupies a single location or several adjacent locations that are so close together that they effectively are a single location and are signed as a single location.

The four categories of work duration are

- Mobile Operations (Moving Operations)
  - Mobile Continuous
  - Mobile Intermittent
- Very Short Duration Work (Less than 30 minutes)
- Short Duration Work (Less than 24 hours continuous work)
- Long Duration Work (More than 24 hours continuous work)

Mobile Operations consist of work carried out while the equipment and workers are

- moving continuously, usually at slow speeds, or
- moving intermittently, with periodic stops.

For **Mobile Continuous** Moving Operations on low volume roads where speed is low and visibility is good, a well-marked and well-signed vehicle may be sufficient. If traffic volume is higher, a buffer vehicle with a flashing light unit must follow the work vehicle. If both traffic volume and speed are high, the buffer vehicle must have a flashing light unit and should be equipped with a truck mounted attenuator.

Mobile Intermittent Moving Operations are Special Operations. They may only be undertaken by properly equipped and trained work crews and specially equipped vehicles.

Mobile Intermittent Moving Operations are, in effect, moving lane closures accomplished by vehicles with proper illumination and attached signs alone. Traffic Control Persons are not usually used to direct traffic. Workers on foot are permitted on the road surface only when protected by a Protection Vehicle or a Blocker Vehicle with a flashing light bar or a flashing light unit (FLU), and only if there is clear and sufficient sight distance.

Very Short Duration Work occupies a location for up to 30 minutes, including equipment set-up and take-down time. The time required to set-up and take-down normal traffic control devices for very quick jobs can exceed the time required to do the actual work.

Short Duration Work is work at a site that will be completed in less than 24 hours of continuous work or work that is ended each day and the road restored to its normal condition at the end of each day.

Long Duration Work is work at a site that will take longer than 24 hours to complete and the road condition will not be restored to its normal condition at the end of each day.

9.0 Roadway Encroachment

There are four stages of encroachment
- Off-Shoulder Work
- Shoulder Work
- Partial Lane Closure
- Lane Closure

Off-Shoulder Work is work carried out within the right-of-way but is completely clear of the travel lanes and the shoulder of the road. Workers, equipment, or vehicles do not encroach on the shoulder.

Off-Shoulder Work requires no traffic control signs or devices if the actual work site is beyond the shoulder and all work vehicles and equipment are beyond the shoulder.

Signing (for Shoulder Work) is required if:
- equipment sits on the shoulder to serve an off-shoulder work site.
- support vehicles are parked on the shoulder.
- support vehicles cross the shoulder to reach the work site.

Shoulder Work is work carried out on the shoulder of a road or the park lane of an urban/residential street completely clear of the travel lanes. Workers, equipment, and vehicles do not encroach on the travel lanes. Shoulder Work requires traffic control signs or warning devices, or both.

The normal signing for Short Duration Shoulder Work and Long Duration Shoulder Work is one sign on each affected approach on arterial highways and one sign on collector highways. Approaching drivers may be adequately warned of Very Short Duration Shoulder Work by flashing lights or a flashing light bar or a flashing light unit on the work vehicle.

Partial Lane Closure closes part of a travel lane and guides traffic in the narrowed lane. A minimum of 2.5 metres of usable lane must be available to traffic.

A Partial Lane Closure is **not** allowed on
- controlled access arterial and collector highways
- multi-lane highways

A Partial Lane Closure is allowed on
- urban / residential streets.
- two-lane two-way collector highways.
- interchange ramps.
- for utility work only, on uncontrolled access arterial highways.

On highways and on urban / residential streets, an altered centreline or lane line may be marked with cones or other suitable markers to guide traffic past the work site if sufficient width is available to maintain 2.5 m lanes throughout. On-street parking on the side opposite the work area may be removed and the parking area used as a travel lane to provide the necessary street width.

Lane Closure closes a travel lane by blocking it in some manner and directing traffic around it. Lane Closure requires the effective use of warning signs and other warning devices. Lane Closures on two-lane two-way highways except those on Low Volume Urban/Residential Streets require active traffic control to regulate the flows of traffic past the work site. The active traffic control may be provided by traffic control persons or by temporary or permanent traffic signals.

10.0 Sign and Device Spacing

The purpose of signing and marking a work area is to allow a driver to make a correct assessment of the conditions existing at the work area, slow to an appropriate speed, and follow a safe route around the workers and equipment. To do this, drivers need sufficient information given in a controlled and timely manner. Information given too early will be forgotten by the time it is needed. Information given too late can not be acted upon. Too much information at a time will divide the driver's attention between the message and the driving task.

The general practice followed in this manual is to give the driver

- two separate pieces of information concerning a work area in the travelled lane
- one piece of information if the work area is not in the lane but might become a hazard if approached unexpectedly (either in the opposite lane or on the shoulder).

The spacing for the various components of work area signing depends on traffic approach speed and driver expectancy. Drivers must both receive the information in time to react to it AND not have to perform an unexpected or rapid manoeuver. This is especially important for drivers on arterial and collector highways who may have travelled for a considerable distance without any interference.

The distances shown in Table 10.1 are the **minimum** distances for A (sign spacing), L (taper length), and T (distance between tapers) and the **maximum** distance for D (cone and drum spacing). If the precise measurement for the placement of a sign or the beginning of a taper is at a location with inadequate sight distance, increase the distance to compensate.

Table 10.1 - Sign and Device Spacing Distance

Symbol	Spacing Description	Collector and Local Highways and Urban / Residential			Arterial and Multi-Lane Highways			
V	speed zone km/h	50	60 - 70	80	50	60 - 70	80	90
A	sign spacing m	50	75	100	50	100	150	200
L	taper length (closure) m	30	60	120	30	60	120	180
L/2	taper length (partial) m	15	30	60	-	-	-	-
D	cone & drum spacing m	2.5	5	10	2.5	5	10	15
T	distance between tapers	-	-	-	50	100	250	300

For 50 km/h speed zones every second cone or drum may be omitted thus reducing the number of cones or drums and increasing their effective spacing. The Taper Length **L** must remain unchanged.

Partial lane closures are permitted on **Collector Highways,** on **Local Highways**, on **Urban / Residential Streets**, and on interchange ramps if 2.5 metres of travel lane will remain available for traffic. Partial lane closures are **not**

permitted on controlled access **Arterial** and **Collector Highways** and **Multi-Lane Highways**.

The schematic guide for cone and drum spacing in tapers on the following page uses a 0.3 m offset from one marker to the next. The result is that a lane closure taper is usually formed with 13 cones or drums running from the shoulder (edge of lane) to the centerline.

In 50 km/h speed zones it is acceptable to omit every second cone or drum and form the taper with seven cones or drums.

The entire taper length will be used to move traffic over one lane and around the work area. If a **Buffer Area** is required it must be added to the taper length. The additional length should be based on the planned protection device.

The resultant **Buffer Area** lengths are shown in Table 10.2.

Table 10.3 illustrates **New Jersey Barrier Approach Set-up.**

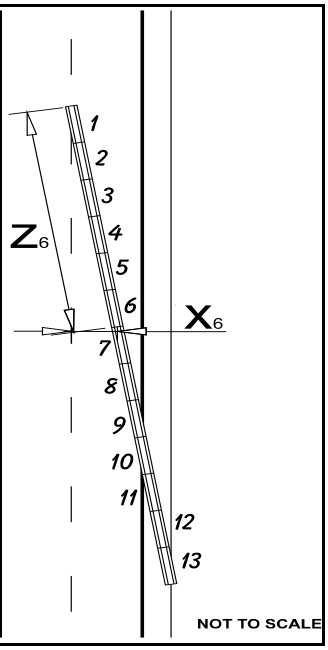
Table 10.2 - Buffer Area Lengths

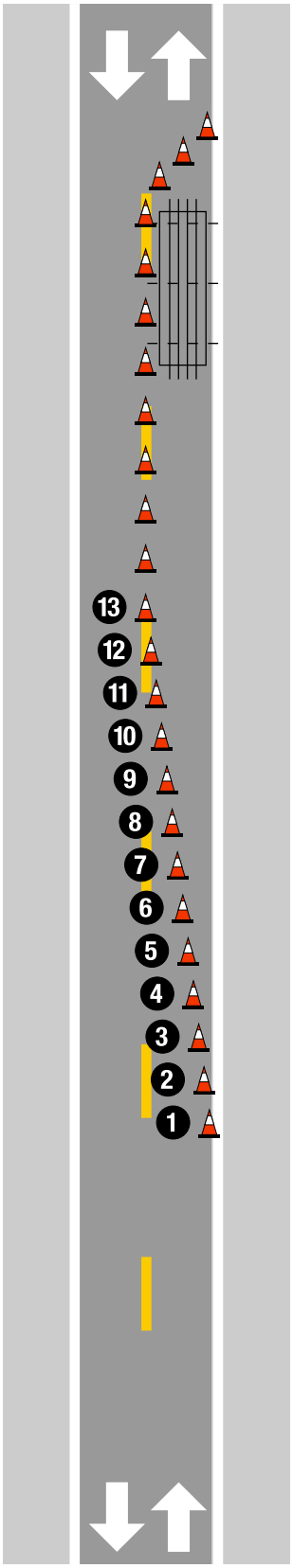
Symbol	Spacing Description	Collector and Local Highways and Urban / Residential			Arterial and Multi-Lane Highways			
V	speed zone, km/h	50	60 - 70	80 - 90	50	60 - 70	80	90
	Buffer Area, m	0	0	30	0	0	50	60

Table 10.3 - New Jersey Barrier Approach Set-up

New Jersey Barrier section # *	Length of Barrier, z (m)	Horizontal Distance from lane closure to far end of New Jersey Barrier section, x (m)
1	2.5	0.4
2	5.0	0.8
3	7.5	1.2
4	10.0	1.6
5	12.5	2.0
6	15.0	2.4
7	17.5	2.8
8	20.0	3.2
9	22.5	3.6
10	25.0	4.0
11	27.5	4.4
12	30.0	4.8
13	23.5	5.2
14	35.0	5.6
15	37.5	6.0

* When a 2.5m New Jersey Barrier Section is Used





- In ≤50 km/h speed zones it is acceptable to omit every second cone or drum and form the taper with seven cones or drums

TERMINATION AREA
traffic returns to normal

workers
equipment
materials

ACTIVE WORK AREA
workers and/or
equipment on road

protection
equipment
only

BUFFER AREA
provides protection
for workers

TRANSITION AREA
moves traffic away
from work area

Cone/Drum Number	Offset from Shoulder (m)
1	0.0
2	0.3
3	0.6
4	0.9
5	1.2
6	1.5
7	1.8
8	2.1
9	2.4
10	2.7
11	3.0
12	3.3
13	3.6

NOT TO SCALE

11.0 Temporary Condition Signs

Temporary condition signs have two purposes:

- They warn drivers and pedestrians that highway construction or maintenance activities are being carried out on the road immediately ahead.
- They regulate the passage of drivers and pedestrians past the work area.

All temporary condition signs must meet the standards shown in this manual for appearance, size, shape, colour, and level of reflectivity.

Signs must be reflectorized

Temporary condition warning signs must be fully reflectorized to show the same shape and appearance by night as by day. The minimum level of reflectivity for orange sheeting used on temporary condition warning signs is ASTM Type III (high intensity). (Reference ASTM D4956-01a).

Fluorescent orange sheeting may be used

- for Advance Signs:

TC-1A	Construction Ahead (with distance tab)
TC-115(PEI)	Wet Paint Ahead
TC-131(PEI)	TCP Ahead / Be Prepared to Stop
TC-132(PEI)	Signals Ahead / Be Prepared to Stop
TC-161(PEI)	Right Lane Closed 1 km
TC-165(PEI)	Road Work Ahead / Be Prepared to Stop

- for all signs in a Special Operation.
- where conditions suggest its use.

Red-orange flags

Signs depicting "human activity" must display two red-orange flags. The following signs require red-orange flags:

TC - 2	Road Work
TC - 3	Survey Crew
TC - 21	Traffic Control Person
TC - 21A(PEI)	Traffic Control Person (Advance Sign)
TC -114(PEI)	Overhead Utility Work
TC -131(PEI)	Traffic Control Person / Be Prepared to Stop (unless displayed with a Flashing Light Unit)

Standards for roll-up signs

All temporary condition warning signs may be a "roll-up" design consisting of a fabric substrata with a reflectorized orange face. "Roll-up" signs must meet the standards for appearance, size, shape, colour, and level of reflectivity specified in this manual, with one exception: on Arterial and Collector highways you may use 75 cm x 75 cm signs mounted on high mount portable bases in place of 90 cm x 90 cm signs.

Use of portable sign supports

Temporary condition warning signs expected to be in place for a short period may be mounted on portable sign supports placed on or next to the highway shoulder.

Regulatory signs

Regulatory signs used in work areas must conform with signs depicted in the *Province of Prince Edward Island Schedule of Official Highway Signs* published by the Minister of Transportation and Public Works under the authority of the *Public Works Act*, the *Highway Traffic Act*, and the *Roads Act* of Prince Edward Island. Authorization for use of regulatory signs must be obtained from the appropriate Traffic Authority for the street or highway under consideration.

Duty to remove temporary signs

All temporary condition warning and regulatory signs must be removed or covered immediately after they no longer apply.

Duty to install additional warning signs

Uncover or erect additional temporary traffic control warning signs or devices when the work is finished for the day but roadway conditions have not been returned to normal. This will help to ensure that drivers receive proper warning and notification of conditions when the work area is inactive, especially at night.

Duty to install permanent signs

Permanent standard regulatory and warning signs must be in place at the completion of each project. Guide signs and other information signs should be in place at the project's completion. Remove temporary condition signs and devices when permanent signs and devices are in place at the completion of the project.

11.1 Schedule of Signs

The following schedule of temporary condition warning signs has been approved for use in Prince Edward Island. Temporary workplace signs must be of the shape, colour, and minimum dimensions specified, and must bear the message or lettering indicated, and must otherwise comply with these specifications, except as noted in **Section 11.2 Exemptions from Schedule of Signs**.

TC -1 Construction Ahead
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -1A Construction Ahead Advance
- Minimum size . . . . . 120 cm x 120 cm

TC -2 Road Work
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -3 Survey Crew
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -4 Construction Ends
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -5 Lane Closed Ahead
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -5A(PEI) Lane Closed Ahead Advance
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -6 Lane Closure Taper
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -10 Detour Ahead
- Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
- Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -10A Detour Ahead Advance
- Minimum size . . . . . 120 cm x 120 cm

TC -11 Detour Direction Marker
- Minimum size . . . . . 60 cm x 45 cm

TC -12S End Detour
Minimum size . . . . . 45 cm x 30 cm

TC -17(PEI) Yield to Oncoming Traffic
Minimum size . . . . . 75 cm x 75 cm

TC -18(PEI) One Lane Operation Ahead
Minimum size . . . . . 75 cm x 75 cm

TC -21 Traffic Control Person
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -21A(PEI) Traffic Control Person Ahead
Minimum size . . . . . 90 cm x 90 cm

TC -34 Road Narrows
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -34A(PEI) Road Narrows Ahead
Minimum size . . . . . 90 cm x 90 cm

TC -36S Distance Tab
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 60 cm x 30 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 75 cm x 40 cm

TC -47 Grooved Pavement
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -49 Low Shoulder
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -50 Pavement Ends
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -51 Bump
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -54 Truck Entrance
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -55 Slippery When Wet
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -101(PEI) High Shoulder
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -102(PEI) Uneven Lanes
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -103(PEI) Construction Zone
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -104(PEI) Tar Ahead
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -105(PEI) Temporary Pavement Marking
Minimum size . . . . . 90 cm x 120 cm

TC -106(PEI) End Temporary Pavement Marking
Minimum size . . . . . 90 cm x 120 cm

TC -107(PEI) Traffic Control Signals
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -107A(PEI)Traffic Control Signals Ahead
Minimum size . . . . . 90 cm x 90 cm

TC -108(PEI) Flying Stones / Loose Gravel
Minimum size for *Locals* and *Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials, Collectors,* and *Multi-Lane* . . . . . 90 cm x 90 cm

TC -112(PEI) Be Prepared To Stop
Minimum size . . . . . 90 cm x 90 cm

TC -113(PEI) Road Ends
Minimum size . . . . . 90 cm x 90 cm

TC -114(PEI) Overhead Utility Work
Minimum size . . . . . 75 cm x 75 cm

TC -115Y(PEI) Wet Yellow Paint Ahead
Minimum size . . . . . 240 cm x 120 cm

TC -115W(PEI) Wet White Paint Ahead
Minimum size . . . . . 240 cm x 120 cm

TC -116(PEI) Over-dimensional Load
Minimum size . . . . . 245 cm x 30 cm

TC -117(PEI) Slow Moving Vehicles Ahead
Minimum size . . . . . 270 cm x 120 cm

TC -118(PEI) Follow Me Do Not Pass
Minimum size . . . . . 120 cm x 60 cm

TC -131(PEI) TCP & Be Prepared To Stop
Minimum size . . . . . 240 cm x 120 cm

TC -132(PEI) Signals & Be Prepared To Stop
Minimum size . . . . . 240 cm x 120 cm

TC -141(PEI) Street Closed
Minimum size . . . . . 120 cm x 60 cm

TC -142(PEI) Local Traffic Only
Minimum size . . . . . 120 cm x 60 cm

TC -144(PEI) Sidewalk Closed Use Other Side
Minimum size . . . . . 100 cm x 60 cm

TC -161(PEI) Right Lane Closed 1 km, Left Lane Closed 1 km, Centre Lane Closed 1 km
Minimum Size . . . . . 180 cm x 90 cm

TC -165(PEI) Road Work Ahead / Be Prepared to Stop
Minimum Size . . . . . 180 cm x 90 cm

TC -170(PEI) Barricade Ahead
Minimum size . . . . . 90 cm x 90 cm

TC -175(PEI) Road Closed
Minimum size for *Highways and Urban / Residential Streets* . . . . . 75 cm x 75 cm
Minimum size for *Arterials* and *Multi-Lane* . . . . . 90 cm x 90 cm

11.2 Exemptions from Schedule of Signs

The signs included in Table 11.1 are exempted until April 01, 2007, from full compliance with the signs listed in **Section 11.1 Schedule of Signs,** for the noted variances.

Table 11.1 - Exemptions Permitted Until April 01, 2007

Sign Number	Sign Name	Exemption Until April 01, 2007
Various	Signs with Engineering Grade Reflective Sheeting	Existing signs with Engineering Grade reflective sheeting in good and legible condition may be used for day work
TC-21	Traffic Control Person	Red STOP paddle may be shown rather than black
TC-21A (PEI)	Traffic Control Person Ahead	Red STOP paddle may be shown rather than black

11.3 Sign Descriptions

TC-1

TC-1 Construction Ahead is used to provide advance warning of a major work area. This sign is generally used on long-term construction projects where drivers may encounter construction activities.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-1A

TC-1A Construction Ahead (with distance) is used to provide additional advance warning of construction projects. If lane closures are expected to create long queues of stopped traffic the sign is repeated at 500 m intervals to ensure that there are always two signs displayed in advance of the queue. The distance shown on the sign is to be changed to show the actual distance to the work area by placing overlays or tabs in 500 m increments on the face of the sign.

Minimum size . . . . . 120 cm x 120 cm

TC–2

TC-2 Road Work is used to indicate that work area activities are occurring on or near the travelled portion of the road and that workers or equipment may be at risk or may pose a risk to the driver.

TC-2 must not be displayed when work is not in progress.

TC-2 must display two red-orange flags positioned on the top of the sign.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-3

TC-3 Survey Crew is used to indicate that a survey crew is working on or near the travelled portion of the road.

TC-3 must not be displayed when work is not in progress.

TC-3 should not be used where the crew is part of a larger work force as the work area would be covered by **TC-2**.

TC-3 must display two red-orange flags mounted on the top of the sign.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-4

TC-4 Construction Ends is used to indicate to drivers that they have reached the end of a work area and that they can expect normal roadway conditions on the remainder of the roadway.

TC-4 is not required when it is obvious that the work area has ended.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-5R

TC-5 Lane Closed Ahead is used to indicate that a lane is closed for road work. **TC-5** must only be used on a multi-lane highway or street or on a highway or street with a multi-lane approach to the work area. The appropriate **L** (Left Lane) or **R** (Right Lane) version of the sign must be used.

TC-5L

Where lane closures involve the closure of multiple lanes **TC-5A (PEI)** is repeated in advance of the Taper for each successive lane closure.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-5RA(PEI)

TC-5A (PEI) Lane Closed Ahead Advance is used to give advance warning of lane closure(s) on Arterial Highways and other roads and streets where advance warning is deemed appropriate. The appropriate **L** (Left Lane) or **R** (Right Lane) version of the sign must be used.

TC-5LA(PEI)

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-6

TC-6 Lane Closure Taper is erected at the beginning of a taper on ***Multi-Lane*** highways as a final warning to drivers that a lane change is necessary.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-10

TC-10 Detour Ahead is used to indicate that traffic will be required to follow another road to detour around the work area.

TC-10 is erected in advance of detours on all streets and highways.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-10A

TC-10A Detour Ahead (with distance) may be erected 1 kilometer in advance of all detours on highways with high approach speeds or high traffic volumes.

Minimum size . . . . . 120 cm x 120 cm

TC-11

TC-11 Detour Direction Markers is used as part of a **Barricade Unit** when the detour or temporary connector intersects the closed highway at or near 90º.

TC-11 should be used in conjunction with the appropriate route markers or street name signs to guide motorists through intersections along a detour route.

TC-11 is available in **S** (Straight Through), **R** (Right Turn), and **L** (Left Turn). The appropriate arrow must be used.

Minimum size . . . . . 60 cm x 45 cm

TC-12S

TC-12S End Detour should be used to indicate that motorists have reached the end of the detour and are resuming travel on their original route. **TC-12S** should be erected in advance of the end of a detour on a highway or at the end of a detour on urban streets.

Minimum size . . . . . 45 cm x 30 cm

TC-17(PEI)

TC-17(PEI) Yield to Oncoming Traffic is used to indicate to a driver that their lane is closed for road work and that traffic through the work area is self regulating

Minimum size . . . . . 75 cm x 75 cm

TC-18(PEI)

TC-18(PEI) One Lane Traffic Operation Ahead

Minimum size . . . . . 75 cm x 75 cm

TC-21

TC-21 Traffic Control Person is used to indicate the presence of traffic control persons directing traffic using a stop / slow paddle. Motorists are warned that they must obey their directions.

TC-21 is only displayed when traffic control persons are actively directing traffic; otherwise it must be removed or covered.

TC-21 must display two red-orange flags positioned on the top of the sign.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-21A(PEI)

TC-21A (PEI) Traffic Control Person Ahead is used to provide additional advance warning of the presence of traffic control persons.

TC-21A (PEI) must display two red-orange flags positioned on the top of the sign.

Minimum size . . . . . 90 cm x 90 cm

TC-34

TC-34 Road Narrows is used to indicate a reduction in the width of the road but not a reduction in the number of lanes. Motorists are warned to expect a narrowing of their driving lane or a reduction in the shoulder clearance.

TC-34 must be displayed at all times when there is a reduction in the roadway width whether or not the work area is active.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-34A(PEI)

TC-34A(PEI) Road Narrows Ahead is used to provide additional advance warning of a reduction in the roadway width.

Minimum size . . . . . 90 cm x 90 cm

TC-36S

TC-36S Temporary Distance Advisory (NEXT x Km) Tab Sign is used to indicate the length of road that a condition exists

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 75 cm x 40 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 60 cm x 30 cm

TC-47

TC-47 Grooved Pavement is used to indicate road surface conditions in work areas which require extra care and attention by bicyclists and motorcyclists.

TC-47 must be erected in advance of a section of roadway where construction procedures such as milling, grinding, or cold planing create a surface condition which may affect the control and stability of motorcycles and similar vehicles.

TC-47 must remain in place until re-surfacing is completed.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-49

TC-49 Low Shoulder is used to indicate a section of road that has an appreciable drop in elevation between the travel lane and the shoulder caused by construction activities.

TC-49 must be erected in advance of and every 1 kilometer throughout a section of roadway where construction procedures have created a "low shoulder".

TC-49 must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-50

TC-50 Pavement Ends is used when pavement ends as a result of construction activities.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-51

TC-51 Bump is used to indicate a change in the profile of the road that is sufficiently abrupt that it will cause discomfort to passengers or a deflection of the vehicle from its course. **TC-51** must be erected in advance of every isolated "bump" caused by construction procedures. **TC-51** may also be used to indicate that a section of road has numerous "bumps" by using the supplementary tab sign **TC-36S** to indicate the length of the rough section.

TC-51 must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-54R

TC-54 Truck Entrance is used to indicate a location where trucks are entering, exiting, or crossing the road and where there is no other construction activity in the area, such as entrances to gravel pits or asphalt mix plants.

TC-54 should not be used at locations where construction or paving work is actually in progress as this information should be conveyed by **TC-2.**

TC-54L

TC-54 is only displayed when trucks are working; otherwise the sign must be removed or covered.

TC-54 are available in **R** (Right Entrance), and **L** (Left Entrance). The appropriate sign must be used.

TC - 117(PEI) is often used with **TC-54**.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-55

TC-55 Slippery When Wet is used when the driving surface has an unexpected low coefficient of friction or experiences water ponding as a result of construction activity.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-101(PEI)

TC - 101(PEI) High Shoulder is used to indicate a section of road that has an appreciable increase in elevation between the travel lane and the shoulder due to construction activities.

TC - 101(PEI) must be erected in advance of and every 1 kilometer throughout a section of roadway where construction procedures have created a "high shoulder".

TC - 101(PEI) must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-102(PEI)

TC-102(PEI) Uneven Lanes is be used to indicate a section of road that has adjacent lanes at different elevations when cold planing or resurfacing operations has not reached the same point in all lanes by the end of the work day.

TC-102(PEI) must be erected in advance of and every 1 kilometer throughout a section of roadway where construction procedures have created "uneven lanes".

TC-102(PEI) must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-103(PEI)

TC-103(PEI) Construction Zone sign is used in advance of a construction zone as a general warning sign when a specific warning sign is not required and to remind drivers that they are in an area where they will encounter construction activities. It also advises drivers that although they may be in an area where construction activities have temporarily stopped, the roadway has not been returned to normal operating conditions.

TC-103(PEI) must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-104(PEI)

TC-104(PEI) Tar Ahead is used to indicate a section of road that has been primed or tack coated for resurfacing. Motorists are advised of the possibility of temporary pavement slipperiness or objectionable splashing.

TC-104(PEI) must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-105(PEI)

TC-105(PEI) Temporary Pavement Marking is used to indicate a section of highway that has been recently resurfaced and that does not have permanent centre-line markings.

TC-105(PEI) should be erected 300m in advance of the beginning of a temporarily marked section of highway.

TC-105(PEI) should remain in place until the permanent centre-line has been painted.

Minimum size . . . . . 90 cm x 120 cm

TC-106(PEI)

TC-106(PEI) End Temporary Pavement Marking is used to indicate a section of highway that has been recently resurfaced and that does not have permanent centre-line markings.

TC-106(PEI) may be placed at the end of a temporarily marked section.

TC-106(PEI) should remain in place until the permanent centre-line has been painted.

Minimum size . . . . . 90 cm x 120 cm

TC-107(PEI)

TC-107(PEI) Traffic Control Signals is used to indicate the presence of traffic control signals directing traffic using standard red amber green signal displays. Motorists are warned that they must obey the signals.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-107A(PEI)

TC-107A(PEI) Traffic Control Signals Ahead is used to provide additional advance warning of the presence of traffic control signals.

TC-107A(PEI) may also be combined with **TC-112(PEI)** to provide additional advance warning of a work area.

Minimum size . . . . . 90 cm x 90 cm

TC-108(PEI)

TC -108(PEI) Flying Stones is used to indicate the presence of loose stone chips on the roadway as the result of recent chip seal resurfacing operations.

TC-108(PEI) must be erected in advance of the resurfaced roadway section with loose stone chips.

TC-108(PEI) must remain in place until the roadway is restored to its normal condition.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-112(PEI)

TC-112(PEI) Be Prepared To Stop is used as part of the work area signing for a lane closure on *low volume urban streets* when traffic control persons are not used to direct traffic. It must be used on the approach to the closed lane to advise drivers that they must give priority to on-coming traffic.

TC-112(PEI) may also be combined with **TC-21** or **TC-107A(PEI)** to provide additional advance warning of a work area.

Minimum size . . . . . 90 cm x 90 cm

TC-113(PEI)

TC-113(PEI) Road Ends is used to indicate that the road has been closed to permit construction or maintenance operations. **TC-113(PEI)** must be used on rural two-lane highways and must be erected in advance of a Barricade.

Minimum size . . . . . 90 cm x 90 cm

TC-114(PEI)

TC-114(PEI) Overhead Utility Work is used to indicate that overhead work activities are occurring over the roadway and that workers or equipment may be at risk or may pose a risk to the driver. Drivers of high vehicles are warned that a bucket truck's boom may be over part of the travel lane or that there may be low overhead wires.

TC-114(PEI) should replace **TC-2** in all utility work areas that consist of overhead line work.

If the work activity does not involve overhead work **TC-2** should be used.

If the work activity involves an excavation **TC-2** must be used.

TC-114(PEI) must not be displayed when work is not in progress.

TC-114(PEI) must display two red-orange flags mounted on the top of the sign.

Minimum size . . . . . 75 cm x 75 cm

TC-115Y(PEI)

TC-115(PEI) Wet Paint Ahead is used to indicate that line painting is occurring ahead of the trail vehicle displaying the **TC-115(PEI)** and that both the trail vehicle and the line paint truck should be passed with caution.

TC-115(PEI) are available in **Y** (Yellow Paint), and **W** (White Paint). The appropriate sign must be used.

TC-115(PEI) must be attached to the trail vehicle in a manner that does not obscure any of the vehicles warning lights or tail lights.

TC-115(PEI) must be removed or covered when the trail vehicle is travelling but line painting is not being carried out.

Minimum size . . . . . 240 cm x 120 cm

TC-116(PEI)

TC-116(PEI) Over-dimensional Load may be used to indicate that a work vehicle is encroaching upon an adjacent lane. Drivers are warned to exercise care when meeting or overtaking the vehicle.

The lead work vehicle in a work vehicle "train" may display **TC-116(PEI)** on both the front and rear. A trail vehicle may display **TC-116(PEI)** on the rear only.

Minimum size . . . . . 245 cm x 30 cm

TC-117(PEI)

TC-117(PEI) Slow Moving Vehicles Ahead is used to warn drivers of the possible presence of slow moving construction project trucks that have entered the highway and require some distance to reach a reasonable highway speed. When required **TC-117(PEI)** must be erected 400m in advance of the entrance used by the trucks.

TC-54 is often used with **TC-117(PEI)**.

Minimum size . . . . . 270 cm x 120 cm

TC-118(PEI)

TC-118(PEI) Follow Me Do Not Pass is used to advise drivers that a pilot vehicle will lead traffic through a construction project and that the pilot vehicle should be followed.

TC-118(PEI) must be displayed on the rear of the pilot vehicle.

Minimum size . . . . . 120 cm x 60 cm

TC-131(PEI)

TC-131(PEI) TCP Ahead / Be Prepared To Stop is used to warn drivers of the presence of a lane closure and the possibility of a queue of stopped vehicles extending back from the closure. Drivers are expected to pay increased attention and reduce their speed.

TC-131(PEI) must be displayed with three red-orange flags on the sign or in combination with a **Flashing Light Unit**.

Minimum size . . . . . 240 cm x 120 cm

TC-132(PEI)

TC-132(PEI) Signals Ahead is used to warn drivers of the presence of a lane closure and the possibility of a queue of stopped vehicles extending back from the closure. Drivers are expected to pay increased attention and reduce their speed.

Minimum size . . . . . 240 cm x 120 cm

TC-141(PEI)

TC-141(PEI) Street Closed is used as an acceptable sign for Light Barricade TC-64A to warn drivers that an Urban / Residential street is closed to through traffic. **TC-141(PEI)** must only be displayed in combination with a Barricade.

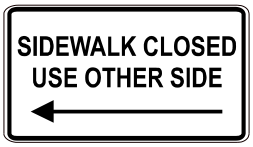
Minimum size . . . . . 120 cm x 60 cm

TC-142(PEI)

TC-142(PEI) Local Traffic Only is used as an acceptable sign for Light Barricade TC-64A to warn drivers that an Urban / Residential street is closed to through traffic but that traffic with a destination on the closed portion of the street is permitted to use the street.

Local Traffic Only must only be displayed in combination with a Barricade.

Minimum size . . . . . 120 cm x 60 cm



TC-144L(PEI)

TC-144(PEI) Sidewalk Closed Use Other Sidewalk is used to advise pedestrians that a sidewalk is closed and to continue their journey they must cross the street and use the sidewalk on the other side. The appropriate **L** (Cross to the Left Sidewalk) or **R** (Cross to the Right Sidewalk) version of the sign must be used where the referenced sidewalk exists.

Minimum size . . . . . 100 cm x 60 cm

TC-161R(PEI)

TC-161(PEI) **Right Lane Closed 1 km**
Left Lane Closed 1 km
Centre Lane Closed 1 km

must be mounted on Trail Vehicles to advise motorists that a lane is closed due to a Mobile Intermittent Operation and that a lane change is required.

The appropriate **R** (Right Lane Closed), **L** (Left Lane Closed), or **C** (Centre Lane Closed) version of the sign must be used.

Minimum size . . . . . 180 cm x 90 cm

TC-165(PEI)

TC-165(PEI) Road Work Ahead / Be Prepared To Stop
must be mounted on Trail Vehicles when work is being carried out in the traffic lane using an Observer.

Minimum size . . . . . 180 cm x 90 cm

TC-170(PEI)

TC-170(PEI) Barricade Ahead is used in advance of a barricade used for construction activities.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

TC-175(PEI)

TC-175(PEI) Road Closed is used to warn drivers that the road is closed as a result of construction activity.

Minimum size:
for ***Arterials, Collectors, and Multi-Lane*** . . . . . 90 cm x 90 cm
for ***Locals, and Urban / Residential Streets*** . . . . . 75 cm x 75 cm

12.0 Temporary Condition Devices

Temporary condition devices have three functions for drivers and pedestrians:

- they warn them that highway construction or maintenance is being carried out on the road immediately ahead.
- they advise them of the appropriate response.
- they guide their passage through the work area.

All temporary condition devices must meet the standards shown in this *Manual* for appearance, size, shape, colour, and level of reflectivity and luminance.

Company names or logos may be placed on the back or underside of Temporary Condition Devices. The maximum size of a name or logo is 1000 cm^2.

All temporary condition devices must be removed or covered immediately after they are no longer applicable.

The following temporary condition devices have been approved for use in Prince Edward Island:

12.1 Delineation Devices
12.2 Warning Devices
12.3 Guidance Devices
12.4 Protection Devices
12.5 Regulatory Devices

Regulatory devices used to regulate and direct traffic through work areas must meet the standards specified by the Minister of Transportation and Public Works. Regulatory devices must be authorized by the appropriate Traffic Authority for the street or highway under consideration before being displayed. The unauthorized use of regulatory devices is potentially dangerous to traffic and workers and is a punishable and potentially liable offence.

12.1 Delineation Devices

TC-61 Traffic Cones
450 mm and 700 mm

Use - Traffic Cones may be used to delineate work areas and tapers for transition and termination areas.

Prohibited Use - Never use 450 mm Traffic Cones for night work, even if they have reflective material.

Night Use - Traffic Cones used at night must be 700 mm cones and have a 100 mm reflectorized white stripe 100 mm from the top of the cone. The white stripe must be reflectorized with ASTM Type III (high intensity) material.

Weighted Base - Traffic Cones must have a weighted base sufficient to keep the device upright and in position during its expected use. The weight must not present a hazard if the Cone is struck by a vehicle.

TC-62 Hazard Markers
300 mm x 600 mm
300 mm x 900 mm

Use - Hazard Markers must be used to warn drivers of hazards on the edge of the travel lane.

Markings - Hazard Markers must be marked with 100 mm reflectorized (ASTM Type III -

high intensity) horizontal orange stripes alternating with 100 mm non-reflectorized horizontal black stripes.

Spacing - Maximum spacing for 300 mm x 600 mm Hazard Markers is 50 metres. Maximum spacing for 300 mm x 900 mm Hazard Markers is 100 metres.

TC-63 Drums

Use - Drums may be used to delineate work areas, and transition area and termination area tapers. Drums must be used to delineate excavations.

Markings - Drums must be marked with 100 mm reflectorized horizontal orange stripes alternating with 100 mm reflectorized horizontal white stripes. The stripes must be reflectorized with ASTM Type III (high intensity), or brighter, material.

Prohibited Marking - Drums marked with orange and black stripes are prohibited in Prince Edward Island.

Size - Drums must have minimum dimensions of 550 mm diameter at the base, tapering to 330 mm diameter at the top, and be 900 mm in height.

Weighted Base - Drums must have a weighted base sufficient to keep the drum upright and in position during its expected use. The weight must not present a hazard if the Drum is struck by a vehicle. Weights must never be placed on the top of Drums.

High Delineators
1000 mm

Use - High Delineators may be used to delineate work areas and transition area and termination area tapers. High Delineators may be substituted for Traffic Cones.

Prohibited Use - High Delineators must not be used in place of Drums.

Size - High Delineators must be a minimum 1000 mm in height.

Markings - High Delineators must have a 150 mm reflectorized white stripe 75 mm from the top of the cone. The white stripe must be reflectorized with ASTM Type III (high intensity), or brighter, material.

Weighted Base - High Delineators must have a weighted base sufficient to keep the device upright and in position during normal use. The weight must not present a hazard if the Delineator is struck by a vehicle.

Pavement Marking Tape or
Retro Reflector Pavement Markers

Use - Pavement Marking Tape or Retro Reflector Pavement Markers must be used for temporary pavement line markings.

Colour- Whether Tape or Markers are used, centreline marking must be yellow and lane line marking must be white.

Tape Length and Spacing - When Pavement Marking Tape is used, it must consist of 30 cm strips of reflective tape at 20 m intervals.

Retro Reflector Spacing - When Retro Reflector Pavement Markers are used, centerline markers must be installed at 10 m intervals and lane line markers at 20 m intervals.

Longitudinal Barrier Retro Reflectors
100 mm x 200 mm

Use - Retro reflectors must be placed on the top, or within 10 cm of the top, of Longitudinal Barrier sections to provide night-time guidance.

Colour - The Retro reflectors must consist of yellow reflective material if the barrier is on the centreline of the roadway, and white reflective material if the barrier is on the edge line of the roadway.

Reflectivity - The Retro reflectors must meet the specifications for ASTM Type III (high intensity), or brighter, material.

Spacing - Retro reflectors spacing for a temporary work site is significantly less than that recommended for a permanent barrier installation. At temporary work sites the spacing regulations for Traffic Cones and Drums (Spacing D in Table 10.1) should be followed for Longitudinal Barrier Retro reflectors, with the further stipulation that five Retro reflectors always be visible to a driver on horizontal curves. This may require a further reduction in spacing on the entrance and exit to the curve, as well as on the curve itself.

12.2 Warning Devices

Flags (on Signs)

Use - Two red-orange flags must be displayed on all signs depicting 'human activity'.

Prohibited Use - Flags must not be used alone as warning devices or used with any other devices or signs except human-activity signs.

Description - Flags must consist of a bright red-orange cloth or cloth-like material securely mounted on a short staff so that the bottom of the flag hangs just above the sign.

Size - Flags must be a minimum of 300 mm x 300 mm.

Variable Message Signs

Description - Variable Message Signs are signs capable of displaying a number of fixed messages displayed one at a time. The messages can be changed manually, by remote control, or by automatic control.

Use - Variable Message Signs warn drivers of work operations that are outside their expectations, such as lane closures associated with Mobile Operations and Special Operations.

Variable Message Signs messages must provide drivers with a legible, concise message directly relevant to the roadway condition they are approaching.

Flashing Amber Light 360°

Description - Flashing Amber Light 360° is a light that emits an amber flash pattern visible from 360° around the light for a minimum of 300 metres during daylight hours.

Use - Flashing Amber Light 360° must be mounted on all trucks and equipment used in a temporary work area to provide a warning of their presence.

Position - Flashing Amber Light 360° are usually mounted on the roof of the cab of trucks and other equipment. However, their light must be visible from 360° around the equipment which may necessitate a different mounting location or the use of more than one light.

TC-8 (PEI) Flashing Light Bar (Minbar)
55 cm

Description - Flashing Light Bars must be vehicle mounted. They must be a minimum of 55 cm in length and mounted a minimum of 2.2 m from the pavement to the centreline of the Bar.

Use - Flashing Light Bars may be used as an alternate to Flashing Light Units in some applications.

Approved Displays - Flashing Light Bars contain a minimum of two 55 watt flashing halogen lights and an internal reflector mirror that creates the appearance of a 'double flash' with every rotation of the lights.

Position - Flashing Light Bars must be positioned to obtain optimum driver visibility.

Flash Rate - Flashing Light Bars must maintain a flash rate of 30 flashes per minute.

TC-9 FLU Flashing Light Unit
145 cm x 60 cm

Description - Flashing Light Units may be vehicle or trailer mounted. They must be a minimum of 145 cm x 60 cm and be mounted a minimum of 2.2 m from the pavement to the centreline of the Unit when it is in its upright position.

Approved Displays - Flashing Light Units have a matrix of lights capable of flashing a horizontal bar of lights (Bar Mode) or a pattern of lights forming a directional arrow (Arrow Mode). The approved displays are

- Left Arrow
- Right Arrow
- Left and Right Arrow
- Warning Bar

The display must consist of a minimum of

- six lighted indications in Warning Bar mode
- nine lighted indications in a Left Arrow or Right Arrow mode
- twelve lighted indications in Left and Right Arrow mode.

Night Operation -The intensity of the display must be reduced during night operation.

Prohibited Displays - Displays, such as sequential arrow or four corner warning lights, are prohibited.

Use - The arrow modes must be displayed only on Multi-lane Highways and must indicate to an approaching driver that the lane occupied by the Flashing Light Unit is closed and that a lane change is required. The direction of the arrow must indicate the direction of the required lane change.

Position - Flashing Light Units must be positioned to obtain optimum driver visibility.

Truck-mounted Flashing Light Units must be positioned in the Buffer Area in advance of the work area.

Trailer-mounted Flashing Light Units may be positioned in either the Buffer Area or within the second half of the Approach Taper in the Transition Area, which means the half closer to the work area.

Flash Rate - Flashing Light Units must maintain a flash rate of 30 flashes per minute.

Bulbs - Flashing Light Units using 35 watt incandescent bulbs are the standard unit against which alternate bulbs and power sources must be measured. Units using halogen bulbs, solar-powered units using low wattage bulbs, and units using light-emitting diodes (LEDs) must maintain the same apparent flash rate, brightness, and angularity as the 35 watt incandescent bulb units.

Trail Vehicle

Use - A Trail Vehicle is used to 'trail' a Mobile Operation to provide advance warning to traffic overtaking the operation.

Trail Vehicles are to operate on the shoulder as much as possible with limited encroachment on the travel lane.

Prohibited Use - A Trail Vehicle must not carry passengers.

Description - Trail Vehicles should be standard pick-up size and must be equipped with appropriate advance signs and a Flashing Light Bar or a Flashing Light Unit.

Operators - Operators of Trail Vehicles must receive training for their duties and must remain in constant radio contact with the operators of other Trail Vehicles and Work Vehicles.

Operators of Trail Vehicles must maintain an established distance between their vehicle and the Work Vehicle. The distance will depend upon the type of highway, the prevailing highway speed, and the number of Trail Vehicles used in the operation.

12.3 Guidance Devices

Pilot Vehicles

Description - A Pilot Vehicle is used to lead drivers through a Work Area. A Pilot Vehicle must prominently display sign **TC-118(PEI)** on the rear of the vehicle and a 360° Flashing Amber Light or a Flashing Light Bar or a Flashing Light Unit in Bar Mode.

TCPs Needed - A Pilot Vehicle is not a substitute for Traffic Control Persons who continue to be required to stop and hold traffic at each end of the job while awaiting the return of the Pilot Vehicle.

Cones Needed - Traffic Cones or Drums are generally required to separate the edge of the work area from the adjacent traffic lanes for the protection of both motorists and workers.

This requirement is difficult to apply during some resurfacing operations. If the road surface is narrow, as on some older highways with 6 metres of pavement, there is not enough width to place Traffic Cones without forcing traffic onto the (possibly low) shoulder.

Some resurfacing operations (particularly double spreader operations) create rather complex vehicle paths around the spreaders. These are difficult to keep delineated as the operation progresses.

In these instances, Pilot Vehicles may be operated without using Traffic Cones if

- the operator of the Pilot vehicle gives suitable warning when approaching the active work area, **and**
- all workers physically on the road (not on machinery) step off the roadway until the convoy passes.

12.4 Protection Devices

TC-64 Barricades
64A Light Barricade
64B Heavy Barricade
64C Heavy Barricade

Use - Barricades may be used when it is necessary to close roads or streets at, or in advance of, the work area. Light Barricades may also be used to close shoulders at, or in advance of, the work area.

Prohibited Use - Barricades should not:
- be used as delineation devices.
- be used as sign supports.
- be located in the Buffer Area.

Weights must never be placed on top of Barricades.

Location - Barricades should be located at, or in advance of, the work area (but not in the Buffer Area), to act as a physical barrier between motorists and the work area.

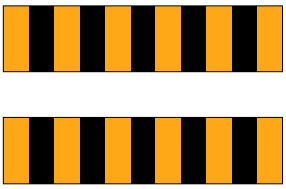
Position - Barricades should be positioned at an approximate angle of 90º to the traffic lane to display the largest target area to a driver.

TC-64A Light Barricades may be used to close a work area for a short time period. They are usually constructed of lightweight material and mounted on 'saw-horse' type supports so that they can be easily relocated. Light barricade rails must have minimum dimensions of 2.4 m length and 150 mm width, with a mounting height of 900 mm. Light Barricades used to close narrow shoulders may be shorter.

Light Barricade rails, as illustrated, must be marked with 160 mm vertical orange stripes reflectorized with ASTM Type III (high intensity) sheeting alternating with 160 mm non-reflectorized vertical black stripes.

TC-64B and TC-64C Heavy Barricades are used to close a road or work area for an extended period of time. Their supports may consist of posts set in the ground or posts set on weighted bases. Heavy Barricades must have a minimum of two rails, as illustrated below, with minimum dimensions of 2.4 m length and 600 mm width. The space between the rails must be a minimum of 400 mm and may be used to hold appropriate Temporary Condition signs. The mounting height to the top of the barricade must be a minimum of 2.0 m.

The **TC-64B Heavy Barricade** is used when it is intended that no directional information be given to an approaching driver. It must have a minimum of two rails with alternate 220 mm orange stripes reflectorized with ASTM Type III (high intensity) sheeting and 220 mm non-reflectorized black vertical stripes.



The **TC-64C Heavy Barricade** must be constructed so that the barricade sections point towards the detour to indicate directional information (right illustrated below) to an approaching driver. The TC-64C must have a minimum of two rails, both having alternating 240 mm orange stripes reflectorized with ASTM Type III (high intensity) sheeting and 240 mm non-reflectorized black stripes in a chevron pattern. Only TC-11 **Detour** signs are permitted on TC-64C Heavy Barricades.

New Jersey Barrier

Use - New Jersey Barriers have four uses:

- provide worker protection by preventing errant vehicles from entering a work area.
- provide protection from an exposed object or excavation.
- separate two-way traffic, particularly when a section of a multi-lane highway is operated as two-way.
- provide protection for falsework or scaffolding.

To be effective, the sections of a New Jersey Barrier must be rigidly fastened together in accordance with design provisions, so that the barrier acts as a unit under impact.

Position - Errant vehicles must be protected from the exposed end of a New Jersey Barrier by using an Impact Attenuator or by flaring the Barrier away from approaching traffic.

Other Designs - The New Jersey Barrier is the approved barrier for use in Prince Edward Island. Other barrier types and designs, including portable barriers and low profile concrete barriers, may be considered for use if a detailed structural analysis is provided proving that the alternate barrier meets the requirements of NCHRP 350 Level TL-3 (100 km/h impact speed).

Blocker Vehicle

Description - A Blocker Vehicle is a truck without an energy attenuator used to block a travel lane to protect workers on a roadway from errant vehicles.

Use - Blocker Vehicles do not provide crash protection for striking vehicles. Limit their use to those situations where work must be carried out, workers are at risk, and a Protection Vehicle is not available. If used, Blocker Vehicles must be equipped with a Flashing Light Bar or a Flashing Light Unit to provide warning and guidance to approaching drivers.

Prohibited Use - A Blocker Vehicle at a temporary workplace must not be loaded with materials that have a reasonable expectation of causing a fire or a chemical hazard in an impact-related collision.

Position - Blocker Vehicles used to protect stationary work areas must be positioned to protect workers and to prevent vehicle under-ride if struck by a smaller vehicle. A Blocker Vehicle must be turned to face on-coming traffic **unless** it is equipped with under-ride bars.

Operators of Blocker Vehicles used to protect stationary work areas must ensure that the vehicle is positioned correctly, the brakes locked, the truck in a low gear, and the front wheels angled slightly away from the work area and traffic flow. The operator then must leave the vehicle for the duration of the work.

Protection Vehicle

Description - A Protection Vehicle is a truck of suitable weight with a truck-mounted attenuator (TMA) used to block a travel lane to protect workers on a roadway. The Protection Vehicle with its Truck Mounted Attenuator must meet the requirements of NCHRP 350 Level TL-3 (100 km/h impact speed).

A Protection Vehicle must be fitted with a high-back seat and a head rest for the operator.

A Protection Vehicle used in a mobile operation must be fitted with a Flashing Light Unit (FLU) to provide warning and guidance to overtaking traffic.

Prohibited Use - A Protection Vehicle at a temporary workplace must not be loaded with materials that have a reasonable expectation of causing a fire or a chemical hazard in the event of an impact-related collision.

A Protection Vehicle must not carry passengers.

Operator Requirements - Operators of Protection Vehicles used in Mobile Operations must receive training for their duties and must remain in constant radio contact with the operators of Trail Vehicles and Work Vehicles.

Operators of Protection Vehicles used to protect stationary work areas must ensure that the vehicle is positioned correctly, the brakes locked, the truck in a low gear, and the front wheels angled slightly away from the work area and traffic flow, and that the Flashing Light Unit displays the correct message. The operator then must leave the vehicle for the duration of the work.

Truck Mounted Attenuator (TMA)

Description - A Truck Mounted Attenuator (TMA) is an energy-absorbing device mounted on the rear of a truck used as a Protection Vehicle.

A Truck Mounted Attenuator must satisfy the requirements of NCHRP 350 Level TL-3 (100 km/h impact speed).

Impact Attenuator

Description - An Impact Attenuator is a stationary energy-absorbing device.

An Impact Attenuator must meet the requirements of NCHRP 350 Level TL-3 (100 km/h impact speed).

Use - An Impact Attenuator may be installed to shield the exposed end of fixed objects such as New Jersey Barriers that may be struck by an errant driver.

Impact Attenuators may also be installed to shield permanent objects that are being constructed or have become a hazard during a construction or maintenance project.

12.5 Regulatory Devices

Stop / Slow Paddle

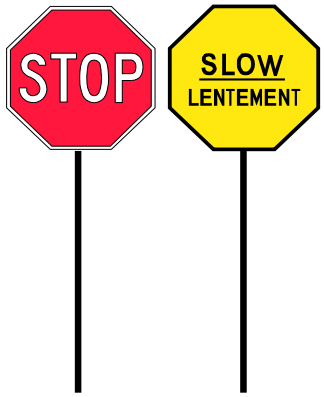
Use - The Stop/Slow Paddle is used by Traffic Control Persons.

Description - The Stop/Slow Paddle must consist of a STOP sign 50 cm x 50 cm (or larger) and a SLOW sign of the same size mounted back-to-back on a pole with a minimum height of 170 cm.

The STOP sign must be an octagon in shape with white letters on a red background.

The SLOW sign must have black letters on a yellow background.

For night use the STOP sign and SLOW sign must be reflectorized with ASTM Type III (high intensity), or brighter, sheeting.



Temporary Signals

Authorization Needed - Temporary Signals must only be erected and maintained with authorization from the appropriate Traffic Authority for the street or highway under consideration.

Description and Use - Traffic control signals used as Temporary Signals to regulate the flow of traffic through a temporary work area must meet the same requirements for signal head numbers and location and signal display, as a permanent signal installation. Specifications must be obtained from the appropriate authority for the highway or street.

Installation - Temporary Signals may be erected on temporary wooden poles.

Operation - Temporary Signals may operate as fixed-time signals if the Traffic Authority for the street or highway agrees.

Portable Signals

Use - With the authorization from the appropriate Traffic Authority for the street or highway, Portable Traffic Control Signals may be used instead of Traffic Control Persons to control traffic flow reduced to a single lane at a work area requiring a lane closure.

Portable Traffic Control Signals must only be used to regulate traffic when there are accredited Traffic Control Persons available at the work site to assume traffic control duties if the signals fail to operate properly or fail to achieve sufficient driver attention and compliance.

Description - Portable Traffic Control Signals must display two standard-size signal heads on each approach and be positioned within the driver's cone of acute vision. The signal display must be of comparable brightness to that of a permanent signal installation.

Weighted Base - Poles for Portable Traffic Control Signals must have a weighted base sufficient to keep the signal pole upright and the signal head in position during its expected use. The weight must not present a hazard if the pole is struck by a vehicle.

13.0 Temporary Workplace Accredited Traffic Control Personnel

13.1 Traffic Control Persons

Traffic Control Persons have a unique and important position on construction and maintenance projects. They regulate the flow of traffic past temporary work areas to maintain maximum safety for workers and motorists.

Physical and Mental Requirements

Persons employed as Traffic Control Persons must be alert, conscientious, trained, accredited, and properly equipped. They must possess

- good physical health, good vision, and good hearing.
- good physical and mental alertness.
- mature judgement.
- a pleasant, cooperative manner.

Responsibilities

Traffic Control Persons regulate traffic flow to provide for the safety of both workers and motorists. Their role is to

- direct traffic safely through work areas.
- allow work to proceed safely and efficiently.
- ensure that highway traffic has priority over work-related traffic as much as is practical.
- stop traffic whenever required by the progress of the work.
- warn workers of impending danger.

Training

Traffic Control Persons working on any highway, road, or street in the Province of Prince Edward Island must be accredited. This means that they must receive approved training and pass an examination. They must

- have a valid accreditation certificate issued by the Prince Edward Island Department of Transportation and Public Works.
- carry the accreditation certificate at all times while on the job.
- present the accreditation certificate on demand to appropriate authorities.

Clothing and Equipment

Traffic Control Persons must wear the following clothing and protective equipment:

- full-length jeans or work pants and a shirt with sleeves; short sleeve shirts with minimum six inch sleeves are acceptable.
- hard hat CSA certified Class B. Elasticized reflective bands or cuffs ASTM Type III (high intensity) required on the hat for night operations.
- safety boots CSA certified Grade 1 (green triangular CSA patch on the outside, green rectangular label on the inside).
- safety vests must meet the requirements of a Class 2 - Vest as detailed in CSA Z96-02 with fluorescent background material and Level 2 retroreflective striping of a colour contrasting the background material. The vest must be worn over all clothing.
- arm bands or arm cuffs must be constructed of materials meeting the same requirements as safety vests.

The following additional clothing and protective equipment must be used when deemed necessary by the Traffic Control Person or the Traffic Control Manager:

- eye protection - safety sunglasses for sunny conditions and safety goggles for windy sites and chip seal operations.
- rain gear in a highly visible shade of orange or yellow.
- a two-way communicating device - head sets or receivers covering both ears must not be used.
- flashlight with red cone attachment for night operations.

Stop / Slow Paddle

The Stop / Slow Paddle to be used by Traffic Control Persons must meet the following requirements:
Stop sign:

- 50 cm x 50 cm (or larger).
- octagonal in shape.
- white letters on a red background.

Slow sign:

- 45 cm x 45 cm (or larger).
- diamond in shape.
- black letters on a yellow background.

The signs must be mounted back to back, on a pole with a minimum height of 170 cm. For night use both signs must be reflectorized with ASTM Type III (high intensity) sheeting.

Position on the Roadway

The traffic control person's position on the roadway is important. The correct position

- allows the traffic control person to both see and be seen by on-coming traffic.
- provides an avenue of escape from the path of errant drivers.
- is just outside the travel lane, with sign paddle resting on the edge line.
- is never in a group.
- is one-third to one-half the distance between the beginning of the Transition Taper and the Traffic Control Person sign.

A third active traffic control person on a job should stand outside the travel lanes at a location visible to the other traffic control persons.

Signalling Procedures

Correct and easily understandable traffic control signals are vital to move traffic safely. Appropriate methods and procedures for many situations are taught in the traffic control person accreditation course. An overview of signals and procedures follows.

To stop traffic, the traffic control person

- stands just outside the travel lane.
- places the sign paddle on the edge of the lane with the Stop sign facing approaching traffic.
- uses hand signals to signal the desired stopping point.
- gives full attention to the approaching vehicle until it has stopped.

Traffic control persons must give drivers adequate warning. Display the Stop sign only when approaching traffic can stop safely and comfortably:

- At 50 km/h a driver may require 65 m (13 car lengths) to stop on dry pavement.
- At 100 km/h a driver may require 200 m (40 car lengths) to stop on dry pavement.
- Stopping distances increase substantially on wet or icy surfaces.

To move traffic from a stopped position the traffic control person

- ensures that all opposing traffic has passed and that the other traffic control person has stopped approaching traffic from entering the controlled section.
- advises the other traffic control person using previously agreed upon signals that stopped traffic is about to be released.
- turns the sign paddle so that the Slow sign faces traffic.
- uses hand signals to wave traffic forward, as needed.

To allow traffic to proceed at a reduced speed the traffic control person

- displays the Slow sign to approaching traffic - If the intent is to only slow traffic the Stop sign should not be displayed and then the paddle turned to Slow.
- uses hand signals to wave traffic forward or to reduce traffic speed, as needed.

Communications

Traffic control persons must work together to control traffic through a work area. They must communicate with each other to accomplish their task.

When the traffic control persons are in sight of each other

- Use pre-arranged visual signals to communicate. Effective signals include raising and lowering or waving the sign paddle before changing from Slow to Stop or vice versa.
- Wait until signals are acknowledged by the other traffic control person before changing traffic flow.

When the traffic control persons are not in sight of each other

- Station an additional traffic control person between the two so that signals can be visually relayed, or
- Equip the intermediate traffic control person with back-to-back Slow signs. This person will not actually be directing traffic, but will display the Slow sign to traffic moving through the area. A Slow / Slow paddle is needed because drivers travelling in the opposite direction may see the back of the paddle. They may become confused if a Stop sign is visible and may take inappropriate action.
- Ensure that all three traffic control persons fully understand and acknowledge the pre-arranged signals.

When the traffic control persons are not in sight of each other and are using two-way radios to communicate

- Test radios before starting traffic control.
- Carry spare batteries for the radio.
- Establish clear pre-arranged voice signals for every situation and do not deviate from them.
- Speak crisply and distinctly.
- Ask that any unclear messages be repeated.
- Avoid unnecessary talk.
- Remember that everything said on a radio can be picked up by other radios and scanners. Avoid unnecessary and inappropriate comments.
- Do not use two-way radios in blasting areas.

Night Operations

Traffic control persons working at night must be highly visible to be seen by approaching drivers in time for them to recognize and respond. To increase visibility

- add elasticized bands or cuffs CSA Class III or ASTM Type III (high intensity) reflective tape to hard hats
- use a flashlight with red cone attachments
  - If using two-way radios for communication, they should be equipped with voice activated microphones so that the flashlight is in a free hand.
- illuminate the traffic control person position with overhead lighting.
  - If street lighting is available, the traffic control person should stand under a light.
  - If using temporary overhead lighting, take care to ensure that approaching drivers are not subjected to excessive glare.

Legal Issues

Motorists may fail to obey a traffic control person's directions. This continuing problem affects the safety of everyone in a temporary work area, including the motorists.

It is an offence under the Motor Vehicle Act for a driver to fail to stop for the Stop sign on a traffic control person's sign paddle within a temporary work area.

Training courses for traffic control person accreditation deal with how to help enforce this provision of the act.

Emergency Vehicles

The approach of an emergency vehicle displaying emergency red flashing lights presents a special challenge to traffic control persons.

Do not attempt to direct the driver of an emergency vehicle. Directing such a vehicle is potentially dangerous and exceeds the traffic control persons' legal authority.

Experience has shown that the best method of passing an emergency vehicle through a work area is for traffic control persons to

- stop all other traffic by holding the Stop /Slow paddles in the 'Stop' position
- allow the driver of the emergency vehicle to decide upon the best course of action:
  - The driver has the legal authority to pass the 'Stop' sign.
  - Any approaching traffic should yield and give the emergency vehicle the right-of-way.

Forbidden Behaviour

Traffic Control Persons actively working as traffic control persons must not

- be assigned or attempt to carry out any other work.
- permit the Traffic Control Person sign to be displayed when a traffic control person is not directing traffic.
- stand near any other persons.
- carry out a conversation with any person that is not work related--all work-related conversation must be both necessary and brief.
- stand near a vehicle or sit in a vehicle.
- sit on the roadway or lean on a post or object.
- use a tv, radio, tape player, disk player or any device that impairs sight, hearing, or diverts attention.
- turn their back on approaching traffic.
- become impatient or enraged.
- attempt to slow traffic by displaying the Stop sign rather than the Slow sign.
- leave their post without being replaced--arrange meal, coffee, toilet, and rest breaks with the supervisor or traffic control manager before work starts.

13.2 Traffic Control Managers

Traffic Control Managers are responsible for implementing a Workplace Traffic Plan (WTP) that regulate the flow of traffic past temporary work areas. Often, they must also prepare plans. The goal of all such plans is to maintain maximum safety for both workers and motorists.

Whether carrying out a plan prepared by themselves or a 'Guide' taken from the ***Manual***, Traffic Control Managers must make sure that the plan is adequate for the particular work site under consideration. Frequently, they must modify the plan to optimize safety and efficiency.

Responsibilities:

Traffic Control Managers must prepare and carry out traffic control plans that satisfy all of the following:

- guide traffic safely through work areas.
- provide for the safety of workers and motorists.
- allow work to proceed safely and efficiently.

Traffic Control Managers must consider all the variables for every work site for which they are responsible, including traffic volume, traffic speed, and roadway conditions. At the work site these factors may vary significantly from that which was anticipated when the plan was prepared. They must exercise good technical judgement in designing a temporary workplace traffic control plan that suits current conditions. This includes setting up additional signs, markings, devices, and worker protection if they deem them necessary.

Traffic Control Managers must review the traffic control plan as soon as it is implemented and correct the plan as needed. They must also review the plan whenever conditions change and adjust the plan to the new conditions.

Physical and Mental Requirements:

Traffic Control Managers must be alert, conscientious, trained and accredited. They should possess all of the following:

- good physical health, good vision, good hearing.
- good physical and mental alertness
- mature judgement.
- a pleasant cooperative manner.

Training:

Traffic Control Managers must be accredited before they prepare or set up a signing plan for a temporary work site on any highway, road, or street in the Province of Prince Edward Island. That means they must receive approved training and pass an examination. They must

- have a valid accreditation certificate issued by the Prince Edward Island Department of Transportation and Public Works.
- carry their accreditation certificate at all times while on the job.
- present their accreditation certificate on demand to the appropriate authorities.

14.0 Set-up & Take-down Procedures

Sections 14.1 to 14.7 illustrate the approved procedures for placing and removing signs and devices.

Each illustrated procedure includes directions for Set-up, conditions that must be met before work can commence, and directions for Take-down.

Service Vehicle Restrictions

The following restrictions for Service Vehicles apply to all Set-up and Take-down Procedures, unless specifically noted:

A Service Vehicle setting up, maintaining, or taking down signs and devices must

- display a 360° Flashing Amber Light **unless** the Application Guide for the intended Work Activity states that the Work Vehicle must display a Flashing Light Unit. The service vehicle must then display a Flashing Light Unit operating in *Bar* mode.
- stop on the highway shoulder or park lane or near the curb to minimize encroachment on the travel lane.
- never back up during the procedure.

A Service Vehicle setting up, maintaining, or taking down taper cones or drums must only stop in the travel lane when

- Traffic Control Persons are regulating traffic on two-way two-lane roads, or
- a Flashing Light Unit is displaying the appropriate Arrow mode on a multi-lane road.

The operator of a Service Vehicle used for setting up, maintaining, or taking down signs and devices must not permit workers to place, adjust, or remove signs or devices while the vehicle is moving unless the workers are seated in secure seating.

Flashing Light Requirements

A Service Vehicle setting up, maintaining, or taking down signs and devices as a minimum must display a 360° Flashing Amber Light (unless the Application Guide for the intended Work Activity states that the Work Vehicle must display a Flashing Light Unit which requires that the service vehicle also display a Flashing Light Unit in *Bar* mode). However, it is recommended that the service vehicle exceed the minimum requirements and display a Flashing Light Bar or a Flashing Light Unit whenever possible.

14.1 Arterial, Collector and Local Highways Two-Way Two-Lane

Service Vehicle Restrictions

Service vehicles must be operated according to the restrictions indicated in Section 14.0

Direction of Work during Set-up

The Service Vehicle must

- begin sign set-up on the highway shoulder opposite the Work Area and proceed towards the Work Area setting up signs (Positions 1 and 2 Part A Figure 14.1).

- proceed past the Work Area, turn and approach the Work Area setting up signs (Positions 3 and 4 Part A Figure 14.1).

Conditions to Be Met before Work Can Commence

If the Work Activity is Shoulder Work or a Partial Lane Closure and delineation devices (cones or drums) are required, the Service Vehicle must stop on the shoulder in advance of the Work Area and wait until the cones or drums are set-up. (Position 5 Part B Figure 14.1)

If the Work Activity is a Lane Closure and a delineated taper is required, the Service Vehicle must wait on the shoulder until Traffic Control Persons begin to regulate traffic. The Service Vehicle must then be moved to a position partially in the lane and wait until the cones or drums are set-up (Position 6 Part C Figure 14.1).

If a Blocker Vehicle or a Protection Vehicle is used it must then assume its position in the Buffer Area (Position 7 Part D Figure 14.1).

Work can then begin in the Work Area.

Direction of Work during Take-down

Remove devices in the Work Area in the reverse order from that in which they were set-up:

1. Vacate the Work Area.
2. Remove the Protection Vehicle.
3. Remove the cones or drums in the taper.
4. Remove the Service Vehicle.
5. Direct the Traffic Control Persons to stand down.

The Service Vehicle retrieves the signs in the order in which they were set-up:

1. Retrieve the signs on the opposite side of the highway.
2. Retrieve the signs in advance of the Work Area.

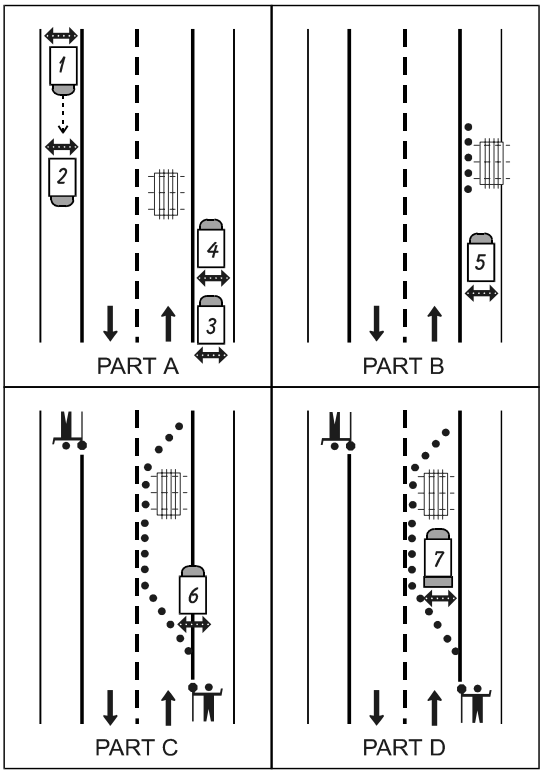


Figure 14.1

14.2 Urban / Residential Two-Way Two-Lane

Service Vehicle Restrictions
Service vehicles must be operated according to the restrictions indicated in Section 14.0.

Direction of Work during Set-up
The Service Vehicle must

- begin sign set-up in the Park Lane or near the curb or shoulder opposite the Work Area and proceed towards the Work Area setting up signs (Positions 1 and 2 Part A Figure 14.2). These signs are not required if the Work Activity is Park Lane Work or Partial Lane Closure Low Volume.

- proceed past the Work Area, turn and approach the Work Area setting up signs (Positions 3 and 4 Part A Figure 14.2). These signs are not required if the Work Activity is Park Lane Work No Excavation.

Conditions To Be Met before Work Can Commence
If the Work Area is in the Park Lane or a Partial Lane Closure or a Lane Closure Low Volume and delineation devices (cones or drums) are required, the Service Vehicle must stop in the Park Lane or near the curb in advance of the Work Area until the cones or drums are set-up (Position 5 Part B Figure 14.2).

If the Work Activity is a Lane Closure and a delineated taper is required, the Service Vehicle must wait in the Park Lane or near the curb until Traffic Control Persons begin to regulate traffic. The Service Vehicle must then move to a position partially in the lane and wait until the cones or drums are set-up (Position 6 Part C Figure 14.2).

If a Protection Vehicle or Blocker Vehicle is used it must then assume its position in the Buffer Area (Position 7 Part D Figure 14.2).

Work can then begin in the Work Area.

Direction of Work during Take-down
Remove signs and devices in the Work Area in the reverse order from that in which they were set-up:

1. Vacate the Work Area.
2. Remove the Protection Vehicle.
3. Remove the cones or drums in the taper.
4. Remove the Service Vehicle.
5. Direct the Traffic Control Persons to stand down.

The Service Vehicle retrieves the signs in the order in which they were set-up:

1. Retrieve the signs on the opposite side of the road.
2. Retrieve the signs in advance of the Work Area

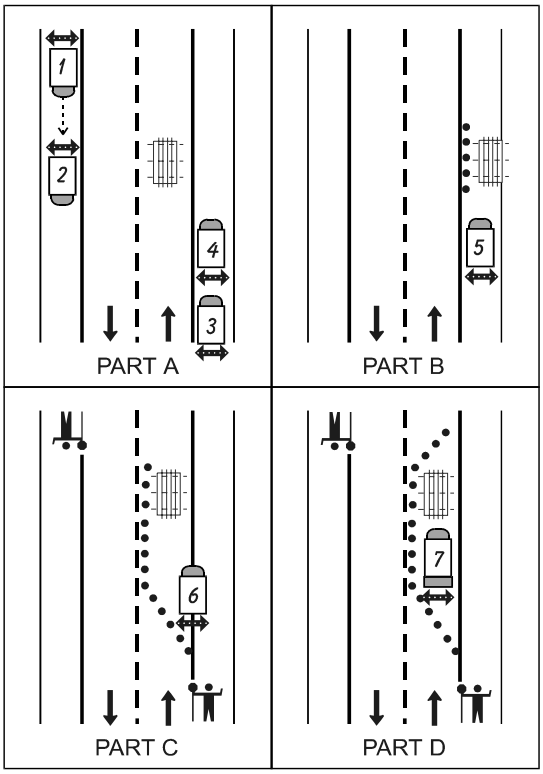


Figure 14.2

14.3 Urban / Residential One-Way

Service Vehicle Restrictions
Service vehicles must be operated according to the restrictions indicated in Section 14.0.

Direction of Work during Set-up
The Service Vehicle must

- begin sign set-up in the Park Lane or near the curb or shoulder opposite the Work Area and proceed towards the Work Area setting up signs (Positions 1 and 2 Part A Figure 14.3). These signs are not required if the Work Activity is Park Lane Work.

- proceed past the Work Area, circle the block(s), and approach the Work Area setting up signs on the Park Lane or near the curb or shoulder (Positions 3 and 4 Part A Figure 14.3). These signs are not required if the Work Activity is Park Lane Work No Excavation.

Conditions To Be Met before Work Can Commence
If the Work Area is in the Park Lane and delineation devices (cones or drums) are required, the Service Vehicle must stop in the Park Lane or near the curb in advance of the Work Area until the cones or drums are set-up (Position 5 Part B Figure 14.3).

If the Work Activity is a Lane Closure and a delineated taper is required, the Service Vehicle must change the display of the Flashing Light Unit to the appropriate Left or Right *Arrow* mode. The Service Vehicle must then stop in the lane within the taper distance and wait until the cones or drums are set-up (Position 6 Part C Figure 14.3).

If required for the intended Work Activity, the Service Vehicle with a Flashing Light Unit or a trailer mounted Flashing Light Unit in appropriate *Arrow* mode must be positioned within the taper.

If a Blocker Vehicle or a Protection Vehicle is used, it must then assume its position in the Buffer Area (Position 7 Part D Figure 14.3).

Work can then begin in the Work Area.

Direction of Work during Take-down
Remove devices in the Work Area in the reverse order from that in which they were set-up:

1. Vacate the Work Area.
2. Remove the Protection Vehicle.
3. Remove the cones or drums in the taper.
4. Remove the Service Vehicle.

The Service Vehicle retrieves the signs in the order in which they were set-up:

1. Retrieve the signs on the opposite side of the road.
2. Retrieve the signs in advance of the Work Area

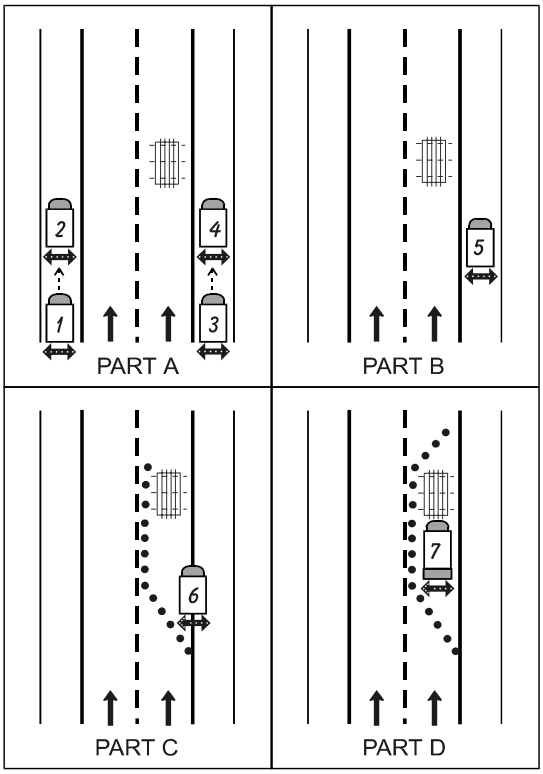


Figure 14.3

14.4 Arterial Highways Two-Way Two-Lane Double Post

Service Vehicle Restrictions
Service vehicles must operate according to the restrictions indicated in Section 14.0.

Direction of Work during Set-Up
The Service Vehicle must

- begin sign set-up on the highway shoulder beyond the Work Area and proceed away from the Work Area setting up signs. (Positions 1 and 2 Part A Figure 14.4)

- turn and set-up signs on the highway shoulder opposite the Work Area and proceed towards the Work Area setting up signs. (Positions 3 and 4 Part A Figure 14.4)

- proceed past the Work Area setting up signs on the highway shoulder opposite the Work Area. (Positions 5 and 6 Part A Figure 14.4)

- turn and approach the Work Area setting up signs. (Positions 7 and 8 Part A Figure 14.4)

Conditions to Be Met before Work Can Commence
If the Work Activity is Shoulder Work and delineation devices (cones or drums) are required, the Service Vehicle must stop on the shoulder in advance of the Work Area and wait until the cones or drums are set-up (Position 9 Part B Figure 14.4).

If the Work Activity is a Lane Closure and a delineated taper is required, the Service Vehicle must wait on the shoulder until Traffic Control Persons begin to regulate traffic. The Service Vehicle must then move to a position partially in the lane and wait until the cones or drums are set-up (Position 10 Part C Figure 14.4).

If a Blocker Vehicle or a Protection Vehicle is used it must then assume its position in the Buffer Area (Position 11 Part D Figure 14.4).

Work can then begin in the Work Area.

Direction of Work during Take-Down
Remove devices in the Work Area in the reverse order from that in which they were set-up:

1. Vacate the Work Area.
2. Remove the Protection Vehicle.
3. Remove the cones or drums in the taper.
4. Remove the Service Vehicle.
5. Direct the Traffic Control Persons to stand down.

The Service Vehicle retrieves the signs in the order in which they were set-up:

1. Retrieve the signs past the Work Area.
2. Retrieve the signs on the opposite side of the highway.
3. Retrieve the signs in advance of the Work Area.

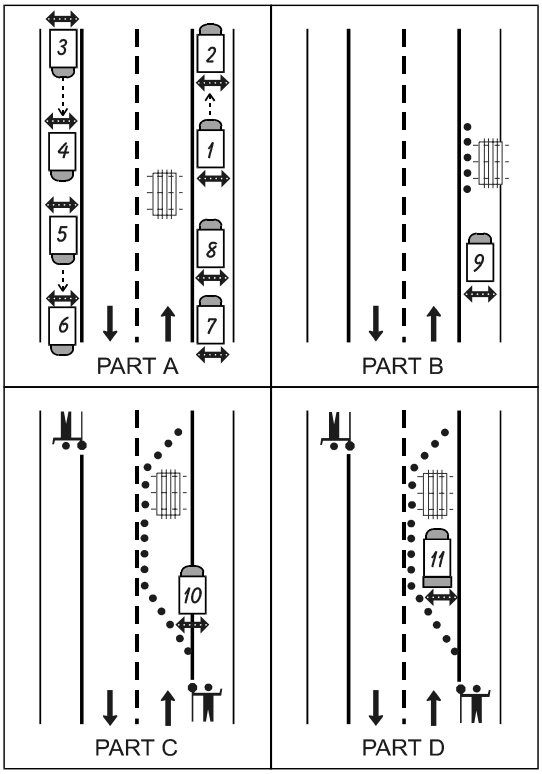


Figure 14.4

14.5 Arterial, Collector, Local, Urban / Residential Multi-Lane Undivided

Service Vehicle Restrictions
Service vehicles must be operated according to the restrictions indicated in Section 14.0.

Direction of Work during Set-up
The Service Vehicle must

- begin sign set-up on the highway shoulder beyond the Work Area and proceed away from the Work Area setting up signs. (Positions 1 and 2 Part A Figure 14.5) These signs are not required if the Work Activity is Shoulder Work.

- turn and set-up signs on the highway shoulder opposite the Work Area and proceed towards the Work Area setting up signs. (Positions 3 and 4 Part A Figure 14.5).

- proceed past the Work Area setting up signs on the highway shoulder opposite the Work Area. (Positions 5 and 6 Part A Figure 14.5) These signs are not required if the Work Activity is Shoulder Work.

- turn and approach the Work Area setting up signs. (Positions 7 and 8 Part A Figure 14.5)

Conditions To Be Met before Work Can Commence
If the Work Activity is Shoulder Work and delineation devices (cones or drums) are required, the Service Vehicle must stop on the shoulder in advance of the Work Area and wait until the cones or drums are set-up (Position 9 Part B Figure 14.5).

If the Work Activity is a Lane Closure, the Service Vehicle must

- change the display of the Flashing Light Unit to the appropriate Left or Right *Arrow* mode.
- stop in the lane within the taper distance.
- wait until the cones or drums are set-up (Position 10 Part C Figure 14.5).

The Service Vehicle with a FLU or a trailer mounted FLU in appropriate *Arrow* mode must be positioned within the taper.

If a Blocker Vehicle or a Protection Vehicle is used, it must then assume its position in the Buffer Area. (Position 11 Part D Figure 14.5).

Work can then begin in the Work Area.

Direction of Work during Take-down
Remove devices in the Work Area in the reverse order from that in which they were set-up:

1. Vacate the Work Area.
2. Remove the Protection Vehicle.
3. Remove the cones or drums in the taper.
4. Remove the Service Vehicle.

The Service Vehicle retrieves the signs in the order in which they were set-up:

1. Retrieve the signs past the Work Area.
2. Retrieve the signs on the opposite side of the highway.
3. Retrieve the signs in advance of the Work Area.

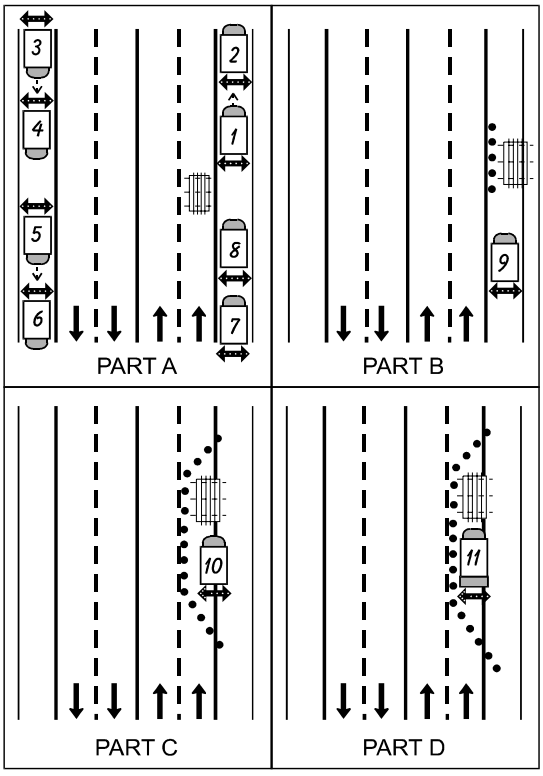


Figure 14.5

14.6 Arterial, Collector and Local, Urban / Residential, Divided Wide Median

Service Vehicle Restrictions

Service vehicles must be operated according to the restrictions indicated in Section 14.0.

Direction of Work during Set-up

The Service Vehicle must

- begin sign set-up on the highway shoulder opposite the Work Area and proceed towards the Work Area setting up signs (Positions 1 and 2 Part A Figure 14.6).

- drive to an interchange or median cross-over, turn around and proceed to the next interchange or median cross-over and then proceed towards the **Work Area** setting up signs (Positions 3 and 4 Part A Figure 14.6).

Conditions to Be Met before Work Can Commence

If the Work Activity is Shoulder Work and delineation devices (cones or drums) are required, the Service Vehicle must stop on the shoulder in advance of the Work Area and wait until the cones or drums are set-up (Position 5 Part B Figure 14.6).

If the Work Activity is a Lane Closure, the Service Vehicle must

- change the display of the Flashing Light Unit to the appropriate Left or Right *Arrow* mode.
- stop in the lane within the taper distance
- wait until the cones or drums are set-up (Position 6 Part C Figure 14.6).

The Service Vehicle with a FLU or a trailer mounted FLU in appropriate *Arrow* mode must be positioned within the taper.

If a Blocker Vehicle or a Protection Vehicle is used, it must then assume its position in the Buffer Area. (Position 7 Part D Figure 14.6)

Work can then begin in the Work Area.

Direction of Work during Take-down

Remove devices in the Work Area in the reverse order from that in which they were set-up:

1. Vacate the Work Area.
2. Remove the Protection Vehicle.
3. Remove the cones or drums in the taper.
4. Remove the Service Vehicle.

The Service Vehicle retrieves the signs in the order in which they were set-up:

1. Retrieve the signs on the opposite side of the highway.
2. Retrieve the signs in advance of the Work Area.

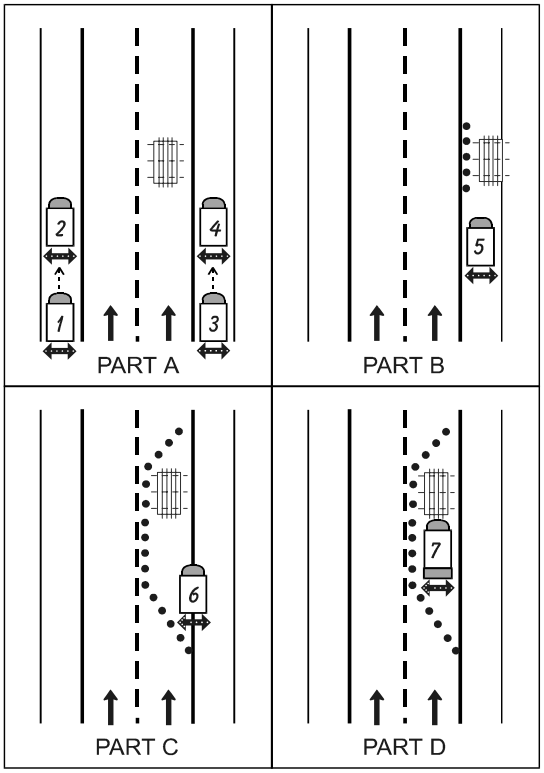


Figure 14.6

14.7 Barrier Change-over Bridge Repair

When a barrier used to protect the closed lane on a two-way two-lane bridge or a multi-lane bridge needs to be relocated, a coordinated procedure is required to avoid exposing motorists to the blunt end of the barrier. An acceptable procedure requires the following:

- Clear all workers and equipment not required for the change-over from the work area.
- Increase the Buffer Area and Work Area using drums to a distance equal to the full length of the barrier.
- If the increase in the length of the Buffer Area causes the Transition Area Taper to be shortened by more than 10% a new Transition Area Taper must be established (Part A Figure 14.7).
- Working within the closed lane, move the taper(s) lengths of the barrier to the centreline (two-way two-lane bridge) or to the centre of the lane line (multi-lane bridge).
- Place a delineation marker on the blunt end of the barrier exposed to approaching traffic (Part B Figure 14.7).
- Remove the drums forming the Transition Area Taper using the prescribed take-down procedure shown in the *Manual* (Part C Figure 14.7).
- Re-establish a Transition Area Taper with drums in the other lane using the prescribed set-up procedure shown in the *Manual*.
- Working within the closed lane, move barrier sections to re-establish the barrier taper(s) (Part D Figure 14.7).

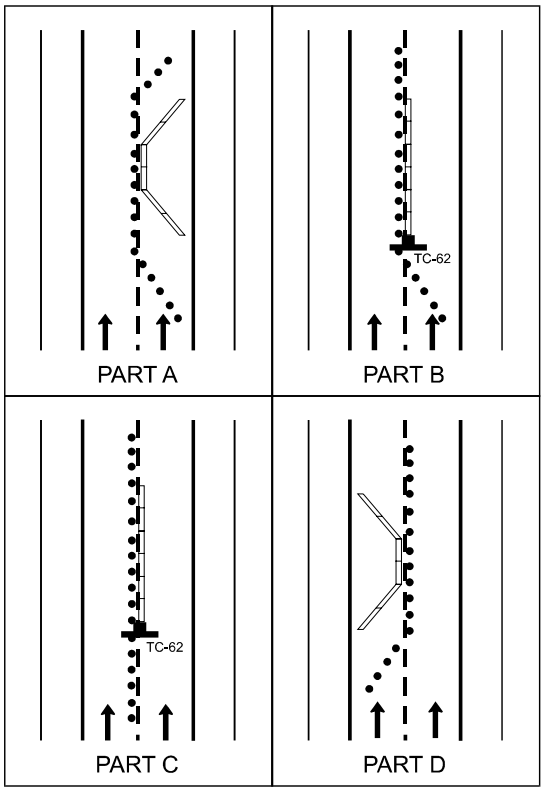


Figure 14.7

15.0 Application Guides Flow Chart

Use the following decision matrix to locate the appropriate Application Guide. Find the applicable section of the index and double click the Guide number.

- **Determine Road Class and Type**
  - **Arterial Highways** Two-Way Two-Lane and Multi-Lane — Guide **A**
  - **Collector Highways** Multi-Lane — Guide **A**
  - **Collector Highways** Two-Way Two-Lane — Guide **B**
  - **Local Highways** Multi-Lane — Guide **A**
  - **Local Highways** Two-Way Two-Lane — Guide **B**
  - **Urban Residential Streets** Multi-Lane and One Way — Guide **A**
  - **Urban Residential Streets** Two-Way Two-Lane — Guide **C**

- **Determine Encroachment on Road OR Special Operation**
  - Off Shoulder Work
  - Shoulder Work
  - Partial Lane Closure (not permitted on Arterial or Multi-Lane Highways)
  - Lane Closure

- **Determine Work Duration**
  - Mobile Operation — continuously moving
  - Very Short Duration Work — less than 30 minutes
  - Short Duration Work — less than 24 hours continuous work
  - Long Duration — more than 24 hours continuous work

- **Special Operations**
  - Centreline & Lane Line Painting
  - Mobile Continuous
  - Mobile Intermittent
    - Dynaflect tests and surveys
    - Mechanical pot hole patcher
  - Survey Crew
  - Observer

Refer to Section 14.0 Set-up and Take-down for approved procedures for placing and removing signs and devices.

15.1 Application Guides 'A': Arterial Highways (Two-Way Two-Lane, Double Post, and Multi-lane)

The **Application Guides: Arterial Highways** (Guides A) apply to all of the following:

- Two-Way Two-Lane Arterial Highways
- Multi-Lane Arterial Highways
- Multi-Lane Collector and Local highways and nominal two-way two-lane highways where the work area is on a climbing lane section
- Multi-Lane Urban Residential Streets.

The **Application Guides: Arterial Highways** (Guides A) may apply to two-way two-lane Collector Highways when:

- the Summer Average Daily Traffic (SADT) exceeds 2000 vpd.
- traffic speed or driver expectations make a higher level of signing prudent.

Unless specified differently in a particular application guide, all signs on two-lane Arterial Highways must be

- displayed on **both** approaches to the work area on two-way highways
- displayed on **both** approaches to the work area on two-way highways with a multi-lane approach to the work area (climbing lanes or turning lanes)

Unless specified differently in a particular application guide, all signs on Multi-Lane highways must be

- double-posted (same signs on both sides of the highway), **except**
  - in advance of Shoulder Work
  - one lane interchange ramps do not require double-posting
  - signs should be positioned on the left side of short radius ramps
- displayed on **both** approaches to the work area on undivided multi-lane highways
- displayed **only** on the approach to the work area on divided multi-lane highways with a non-traversable median (wide median or median barrier)

Signs depicting human activity must display two red-orange flags.

Regulatory signs

- must only be erected with authorization from the appropriate Traffic Authority for the street or highway under consideration.
- must conform to regulatory signs depicted in the *Province of Prince Edward Island Schedule of Official Highway Signs.*
- must be securely mounted on permanent sign posts, **except**
  - speed zone signs for Short Duration Work may be mounted on temporary sign supports.

All temporary condition warning and regulatory signs must be removed or covered immediately when they are no longer applicable. This includes both when the work area becomes inactive and when the job is completed.

Refer to Section 14.0 Set-up and Take-down for approved procedures for placing and removing signs and devices.

15.2 Application Guides 'B': Collector and Local Highways

The **Application Guides: Highways** (Guides B) applies to
- Two-Way Two-Lane Collector highways
- Two-Way Two-Lane Local highways

It does not apply to Urban Residential Streets.

Two-way two-lane Collector and Local highways should be signed using the *Application Guides for Arterial Highways* (Guides A) in special circumstances:
- at the discretion of the Traffic Control Manager.
- when directed by the Provincial Traffic Authority.
- when the Summer Average Daily Traffic (SADT) exceeds 2000 vpd.

Unless specified differently in a particular application guide, all signs on two-way highways must be displayed on **both** approaches to the work area.

Signs depicting human activity must display two red-orange flags.

Regulatory signs
- must only be erected when authorized by the appropriate Traffic Authority for the street or highway under consideration.
- must conform to regulatory signs depicted in the *Province of Prince Edward Island Schedule of Official Highway Signs.*
- must be securely mounted on permanent sign posts, **except**
  - speed zone signs for Short Duration Work may be mounted on temporary sign supports.

All temporary condition warning and regulatory signs must be removed or covered immediately when they no longer apply. This means both when the work area becomes inactive and when the job is completed.

Refer to Section 14.0 Set-up and Take-down for approved procedures for placing and removing signs and devices.

15.3 Application Guides 'C': Urban/Residential

The **Application Guides: Urban/Residential** (Guides C) apply to Urban Residential Streets only. An Urban Residential Street is a street in an urban area with a maximum 50 km/h speed zone.

Unless specified differently in a particular application guide, all signs on two-way urban residential streets must be displayed on the right- hand side of each approach to the work area.

Roadway and work site conditions for a particular location may vary significantly from the typical condition depicted in the guides. Exercise good technical judgement in the design of the temporary workplace traffic control plan. Use additional signs, markings, devices, and worker protection if they seem necessary. In locations with very congested roadsides it may be necessary to place signs closer than the specified minimum distances. This should only be done after completion of a detailed hazard assessment of the risk associated with using shorter sign spacing, and a written report has been placed in the Workplace Traffic Plan (WTP) permanent file.

Signs depicting human activity must display two red-orange flags.

Regulatory signs

- must only be erected with authorization from the Traffic Authority for the street under consideration.
- must conform to regulatory signs depicted in the *Province of Prince Edward Island Schedule of Official Highway Signs.*
- must be securely mounted on permanent sign posts, **except** that
  - speed zone signs for Short Duration Work may be mounted on temporary sign supports.

All temporary condition warning and regulatory signs must be removed or covered immediately when they no longer apply, both when the work area becomes inactive and when the job is completed.

Refer to Section 14.0 Set-up and Take-down for approved procedures for placing and removing signs and devices.

15.4 Application Guides 'A', 'B', and 'C': Utility Work

The **Application Guides for Arterial Highways** (Guide A), **Collector and Local Highways** (Guide B), and **Urban/Residential Streets** (Guide C) are applicable to Utility Work unless otherwise excepted.

In recognition of the nature of Utility Work, particularly the immediacy and short on-site time of repair work and the limited space available on line trucks, the following exceptions from the Application Guides are approved:

General Exception

The Utilities have developed through a complete and thorough hazard assessment and review process, which included the Traffic Authority and appropriate Health and Safety Enforcement organization, their own workplace traffic control manual, which is properly taught to and followed by the employees performing the work.

Exceptions - Arterial Highways (Guide A)

- Sign TC-114(PEI) Overhead Utility Work may be used in place of sign TC-2 Road Work for line work that does not include excavations.
- Sign TC-4 Construction Ends may be omitted.
- A hi-intensity halogen Flashing Light Bar or appropriate combination of multiple lights may be substituted for a Flashing Light Unit. Double Posting of signs is not required.
- Partial Lane Closures may be implemented if both of the following conditions are met:
  - the appropriate typical application from Highways (Guide B) is followed.
  - the centreline is not altered.
- The temporary work area may cover a section of 2 km if the utility operation is a moving operation requiring a line truck to move from pole to pole.
- Trail Vehicles may be omitted when clear and adequate sight distance is available.

Exceptions - Collector and Local (Guide B)

- Sign TC-114(PEI) Overhead Utility Work may be used in place of sign TC-2 Road Work for line work that does not include excavations.
- Sign TC-4 Construction Ends may be omitted.
- A hi-intensity halogen Flashing Light Bar or appropriate combination of multiple lights may be substituted for a Flashing Light Unit.
- The temporary work area may cover a section of 2 km if the utility operation is shoulder work or a partial lane closure requiring a line truck to move from pole to pole. Cones are only required around the line truck when workers are on the road.
- Trail Vehicles may be omitted when clear and adequate sight distance is available.

Exceptions - Urban Residential (Guide C)

- Sign TC-114(PEI) Overhead Utility Work may be used in place of sign TC-2 Road Work for line work that does not include excavations.
- Sign TC-4 Construction Ends may be omitted.
- A hi-intensity halogen Flashing Light Bar or appropriate combination of multiple lights may be substituted for a Flashing Light Unit.
- The temporary work area may cover a section of 2 km if the utility operation is a moving operation requiring a line truck to move from pole to pole.
- Trail Vehicles may be omitted when clear and adequate sight distance is available.

Warning
Never carry out line work over a travel lane open to traffic. If the boom must extend over a lane, implement a partial or a full lane closure.

15.5 Application Guides 'A', 'B', and 'C': Special Operations

The **Application Guides for Special Operations** provide a safe method of carrying out work using methods or equipment that does not easily fit into the system of Work Duration or Roadway Encroachment used throughout this manual.

The Special Operations Guides provide for Mobile Intermittent Moving Operations and also allow limited work in a travel lane from a work area on the shoulder. Lane Line painting, which is actually a Mobile Continuous Moving Operation, is included in this section because it uses a special set of signs and because some traffic regulation can be provided from the work vehicle (the paint truck).

Operators of Trail Vehicles, Protection Vehicles, and Work Vehicles must be specifically trained for Mobile Intermittent Machine Operations.

Operators of all vehicles involved in Mobile Intermittent Machine Operations must remain in constant radio contact.

Workers must not be on the roadway as part of a Mobile Intermittent Machine Operation.

Using an Observer on Two-Way Two-Lane Roads

An Observer watches for and warns of approaching traffic when another worker is on the travel lane of a road. When using an Observer, sign the temporary work area for Very Short Duration or Short Duration shoulder work. The worker enters the travel lane from the shoulder and performs a brief task using only hand tools.

Observers must only be used on two-way two-lane roads, because drivers on a multi-lane road may be unaware of the workers and may suddenly change lanes into the work area. An Observer could not provide timely warning of such an event.

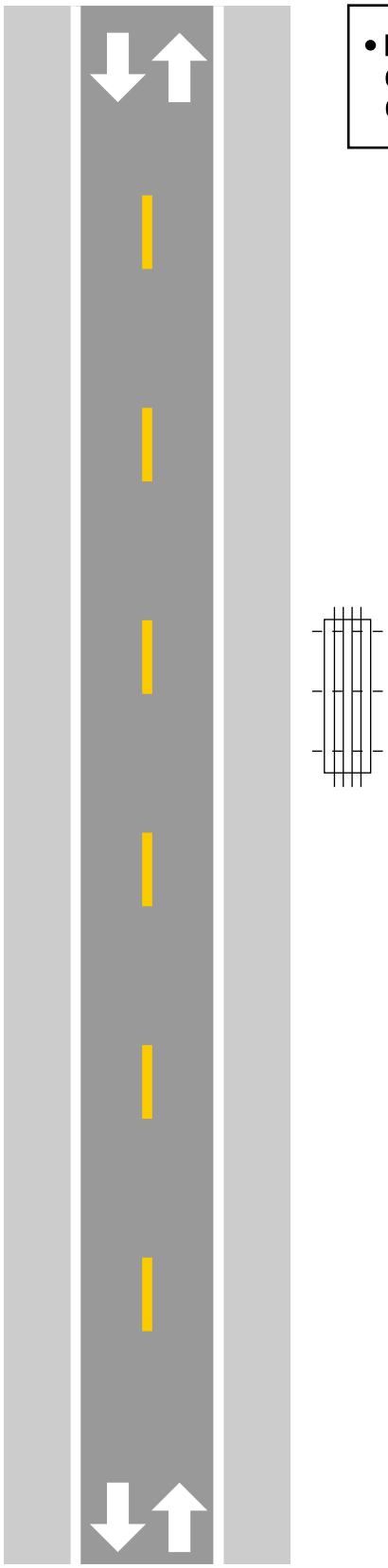
Application Guides 'A'
Arterial Highways

Work Location	Work Duration	Highway Type (Special Condition)	Guide
Off Shoulder Work	All Durations	Two-Way or Multi-Lane	A 1
Shoulder Work	Very Short Duration	Two-Way or Multi-Lane	A 12
Shoulder Work	Short Duration	Two-Way or Multi-Lane	A 13
Lane Closed	Very Short Duration	Two-Way	A 33
Lane Closed	Short Duration	Two-Way (Day Work)	A 35
Lane Closed	Short Duration	Two-Way (Day Work, Long Queue)	A 36
Lane Closed	Short Duration	Two-Way (Night Work)	A 37
Lane Closed	Short Duration	Two-Way (Climbing Lane, Right Lane Closed)	A 45
Lane Closed	Short Duration	Two-Way (Climbing Lane, Centre Lane Closed)	A 46
Lane Closed	Short Duration	Two-Way (Climbing Lane, Downhill Closed)	A 47
Lane Closed	Short Duration	Two-Way (Paved Shoulders)	A 48
Lane Closed	Long Duration	Two-Way (Traffic Control Signals)	A 51
Lane Closed	Very Short Duration	Multi-Lane	A 62
Lane Closed	Short Duration	Multi-Lane	A 63

Signing Illustration	Work Duration	Highway Type	Guide
Construction Zone	Long Duration	Two-Way or Multi-Lane	A 72
Construction and Long Patch	Long Duration	Two-Way or Multi-Lane	A 73
Temporary Markings	All Durations	Two-Way or Multi-Lane	A 74
Temporary Haul Road	All Durations	Two-Way or Multi-Lane	A 76
Detour	All Durations	Two-Way or Multi-Lane	A 77
Low Shoulder	Short or Long Duration	Two-Way or Multi-Lane	A 79

Special Operations

Work Type	Work Duration	Highway Type	Guide
Line Painting	Mobile Continuous	Two-Way	A 91
Survey Crew	Short Duration	Two-Way or Multi-Lane	A 93
Observer Workers	Very Short Duration	Two-Way	A 98
Seasonal Machine Operation	Mobile Intermittent	Two-Way	A 99



- No encroachment permitted on shoulder by workers, equipment, or vehicles

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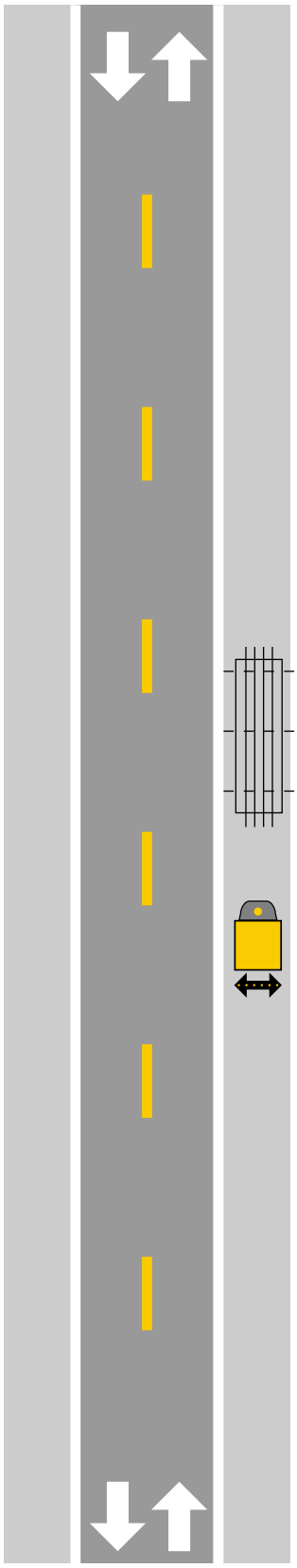
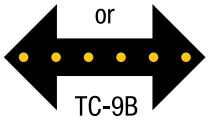


- No encroachment permitted on travel lane by workers, equipment, or vehicles
- Vehicle may be equipped with a 360° Flashing Light in place of TC-8(PEI) or TC-9B(PEI)

Work Vehicle with

TC-8(PEI)

or



TC-9B
(PEI)

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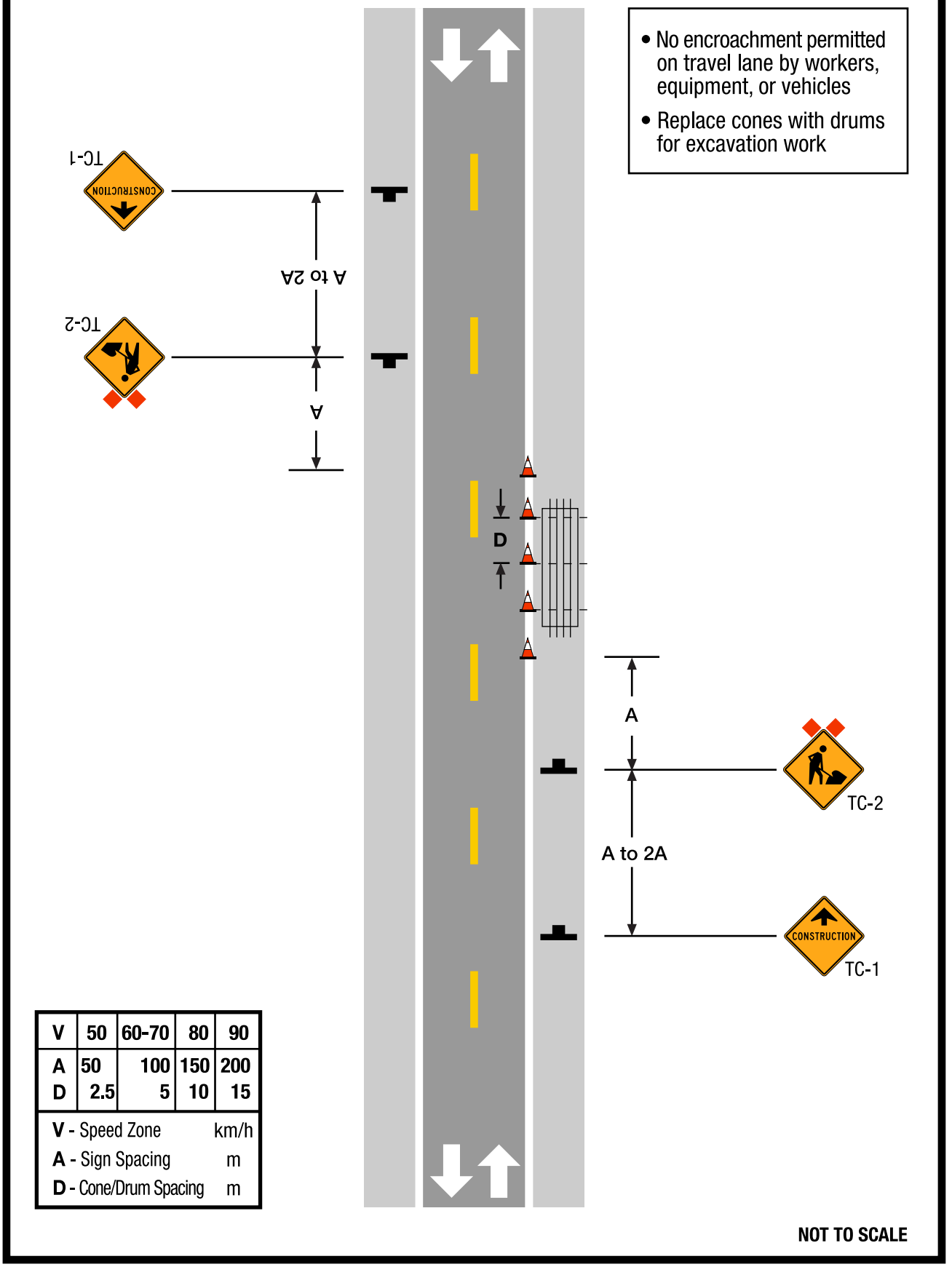

V	50	60-70	80	90
A	50	100	150	200
D	2.5	5	10	15

V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

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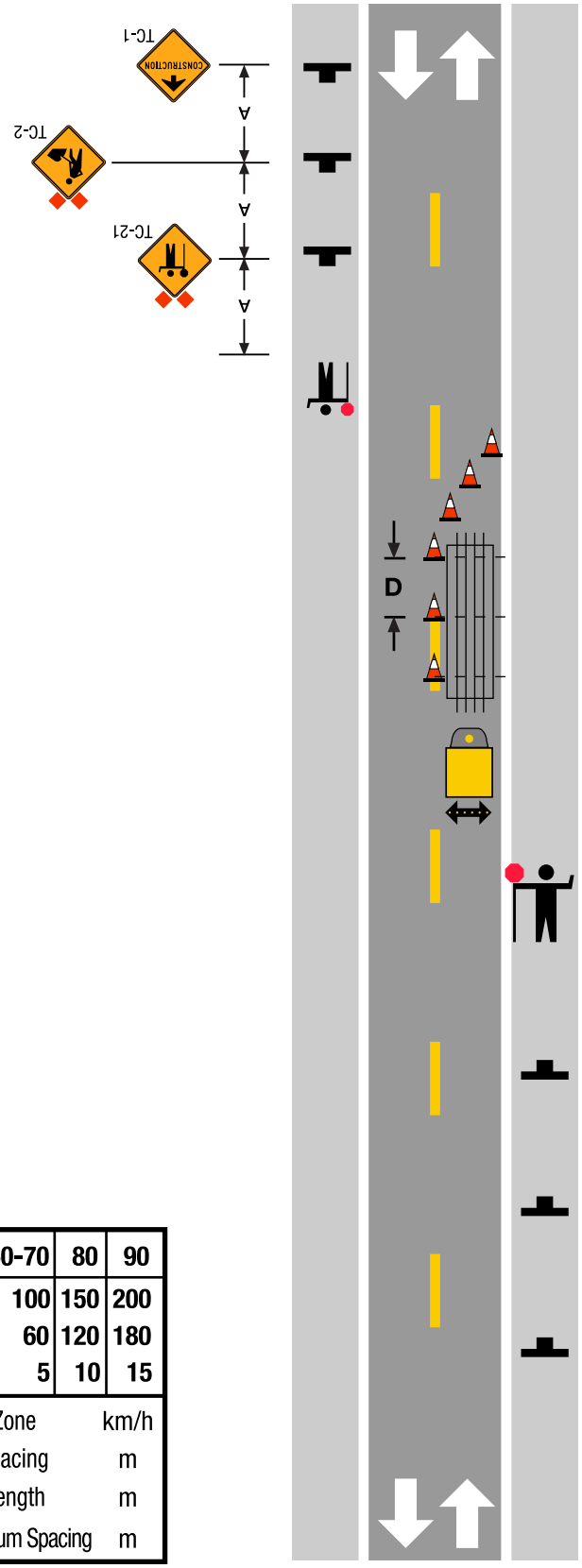

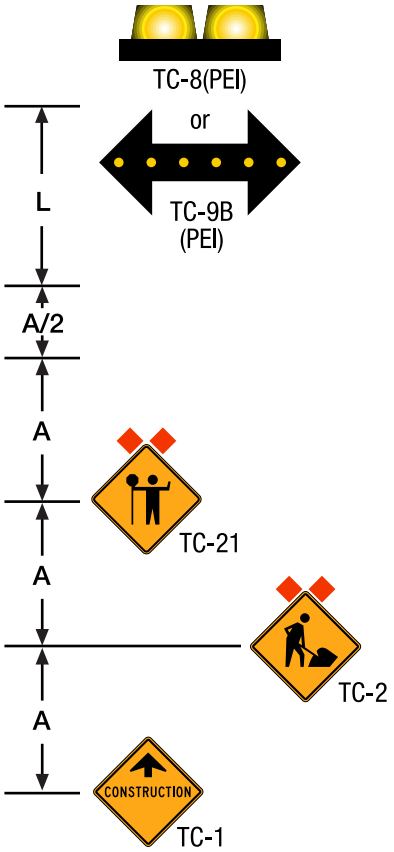

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A	50	100	150	200
L	30	60	120	180
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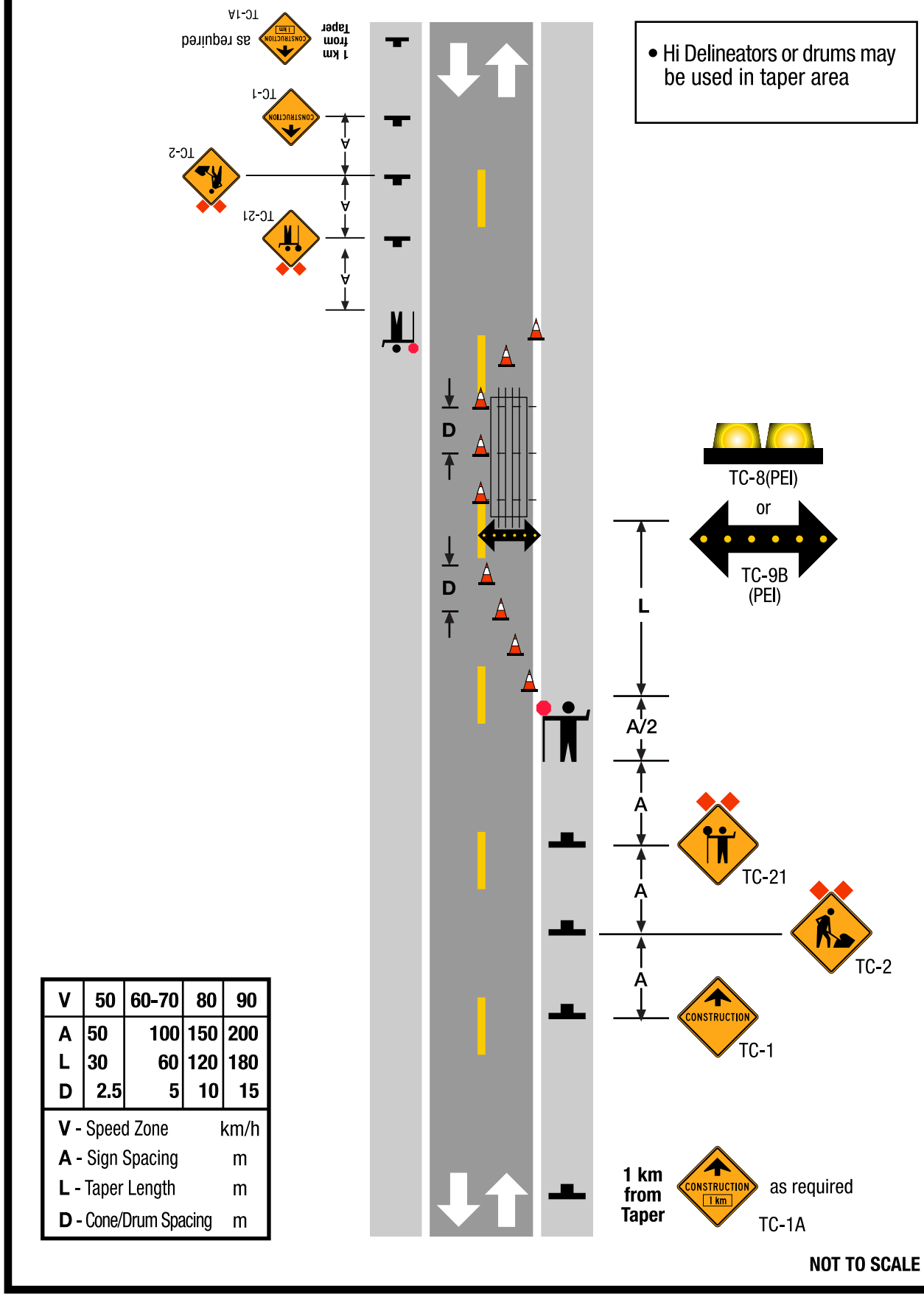

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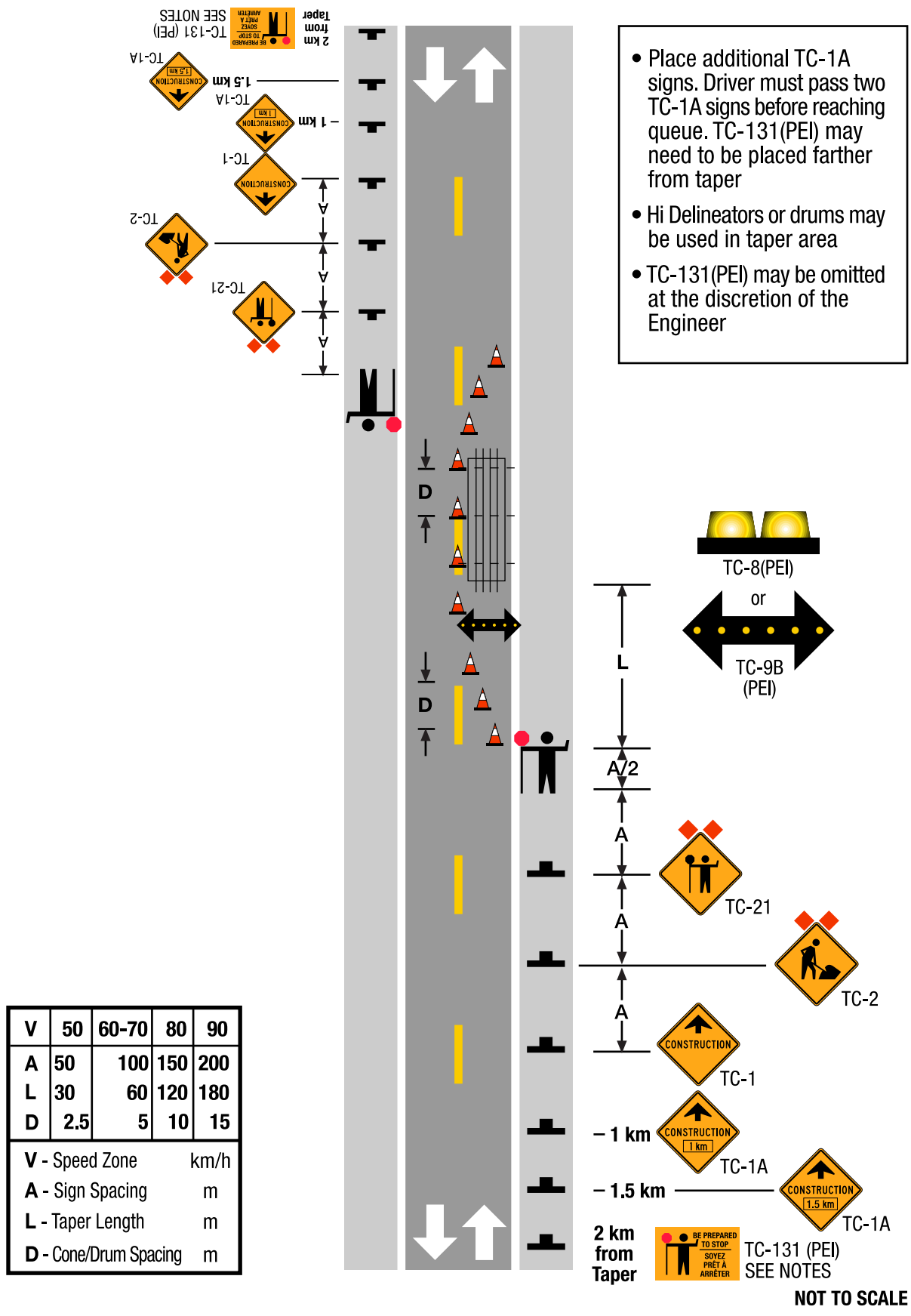

- Place additional TC-1A signs. Driver must pass two TC-1A signs before reaching queue. TC-131(PEI) may need to be placed farther from taper
- Hi Delineators or drums may be used in taper area
- TC-131(PEI) may be omitted at the discretion of the Engineer

V	50	60-70	80	90
A	50	100	150	200
L	30	60	120	180
D	2.5	5	10	15

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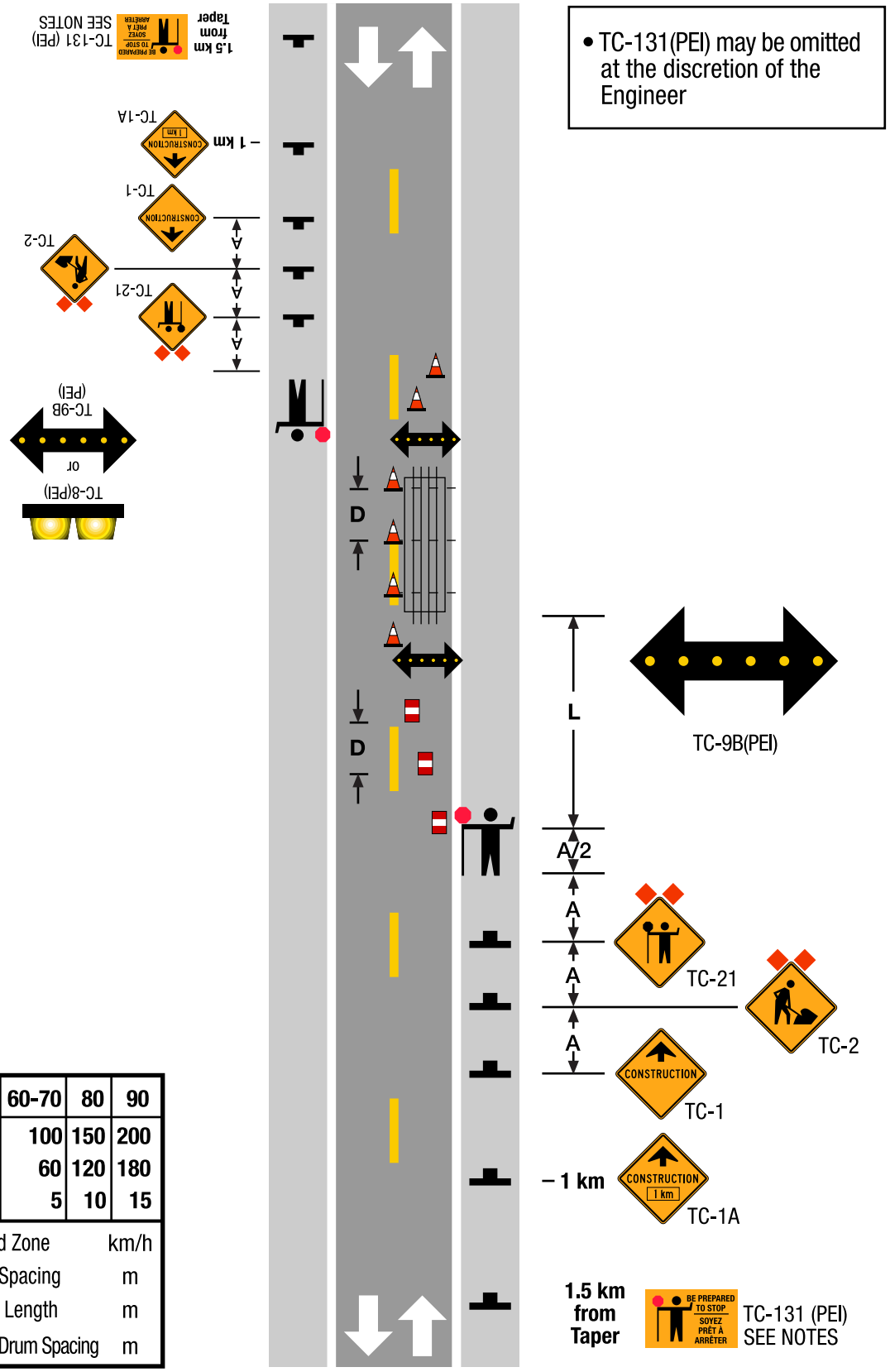
L - Taper Length m
D - Cone/Drum Spacing m



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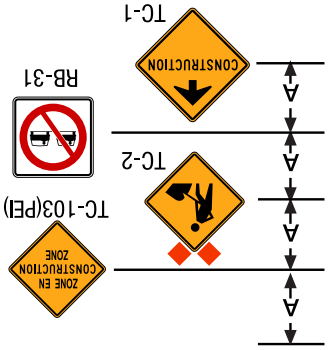
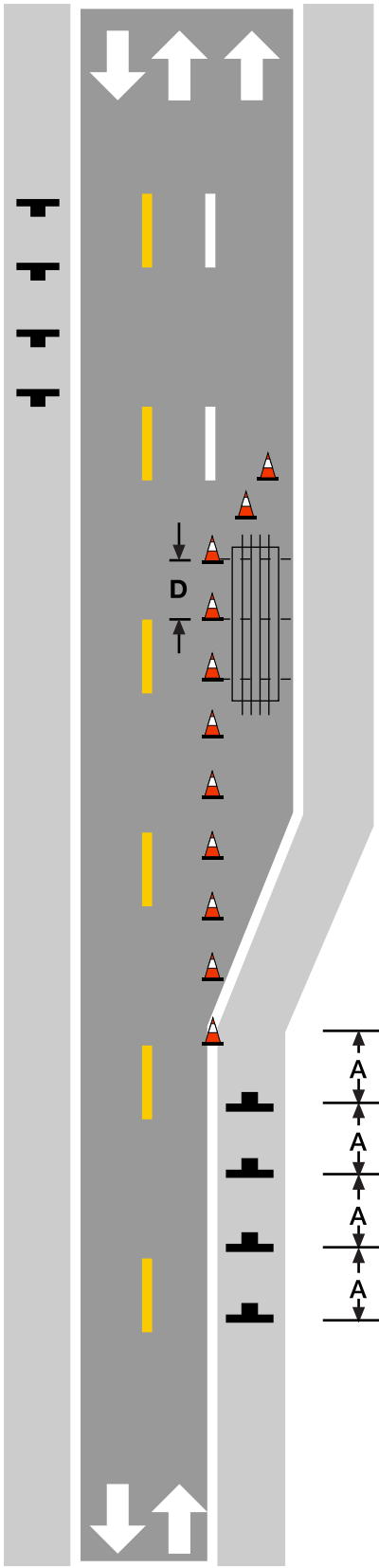


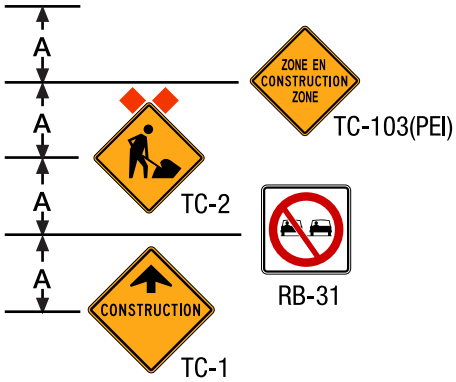


- Climbing Lane 2 km ID-23 and Keep Right Except to Pass RB-34 must be removed or covered

ID-23

RB-34

- If less than 200 m of climbing lane available past work area then entire lane must be closed
- If more than 600 m of climbing lane is available in advance of the beginning of the required sign sequence to close the right lane, then the initial portion of the climbing lane should remain open, and the lane closed according to Guide A 63



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A	50	100	150	200
D	2.5	5	10	15

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A - Sign Spacing m
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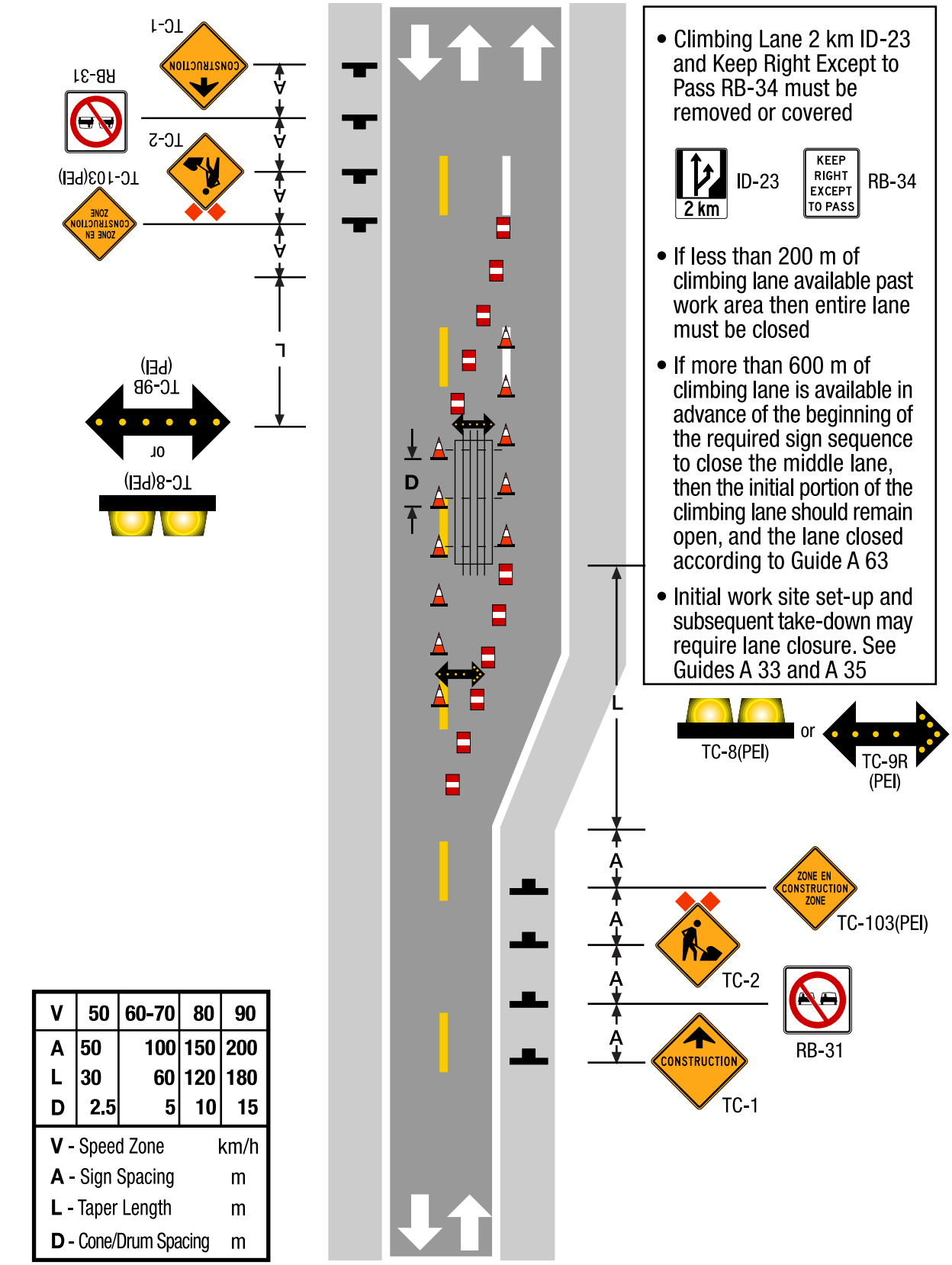

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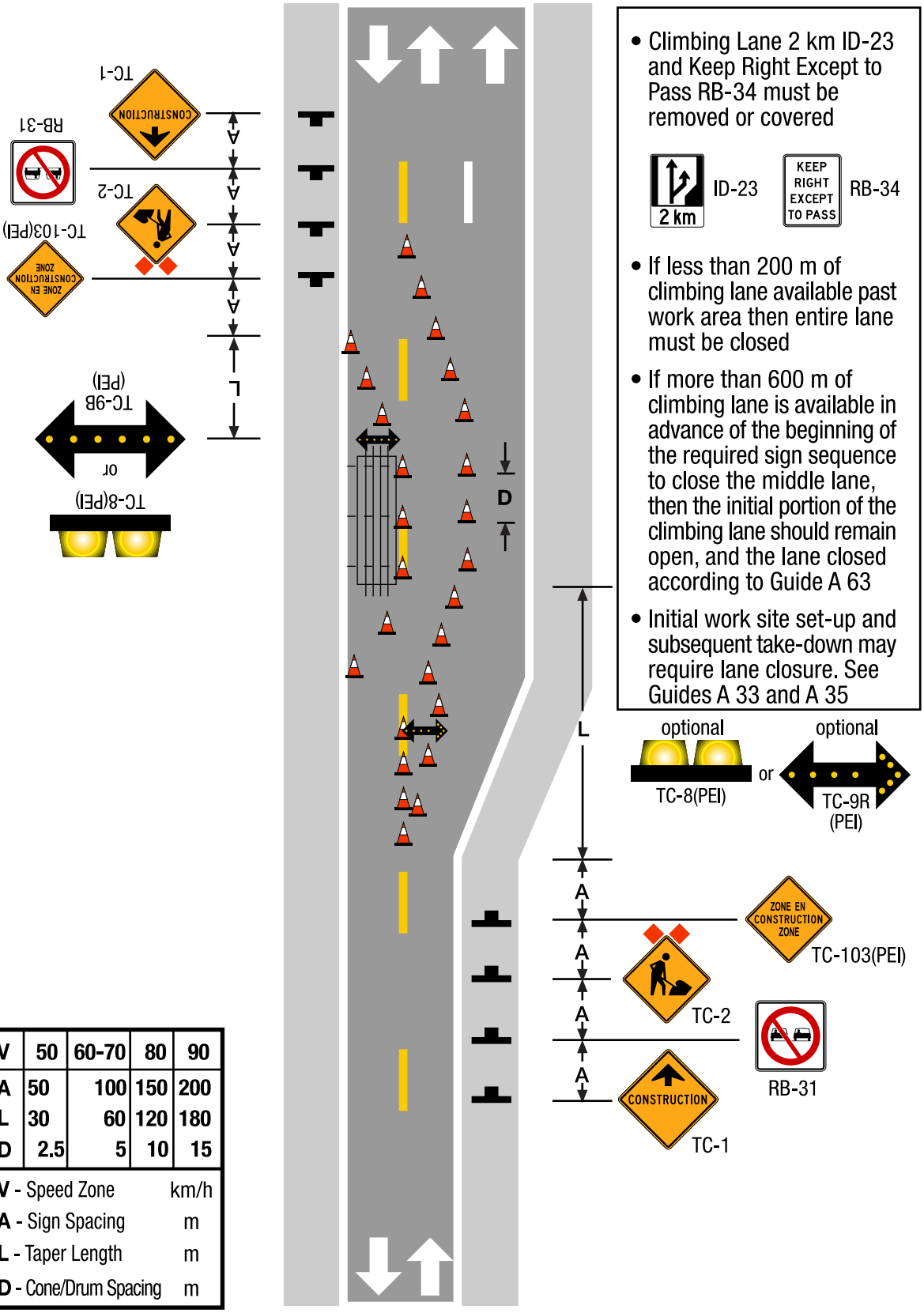

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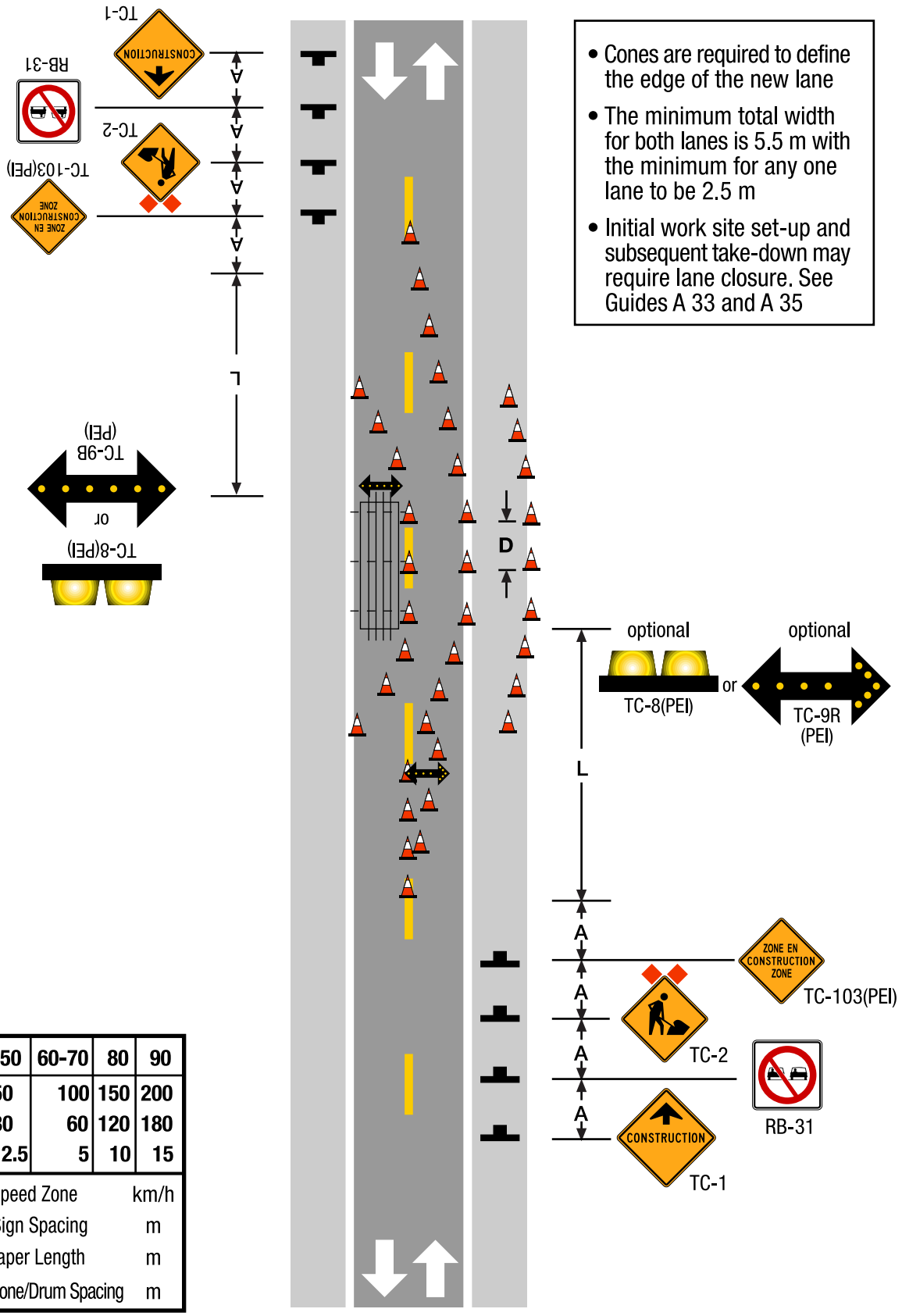

- Cones are required to define the edge of the new lane
- The minimum total width for both lanes is 5.5 m with the minimum for any one lane to be 2.5 m
- Initial work site set-up and subsequent take-down may require lane closure. See Guides A 33 and A 35

V	50	60-70	80	90
A	50	100	150	200
L	30	60	120	180
D	2.5	5	10	15

V - Speed Zone km/h
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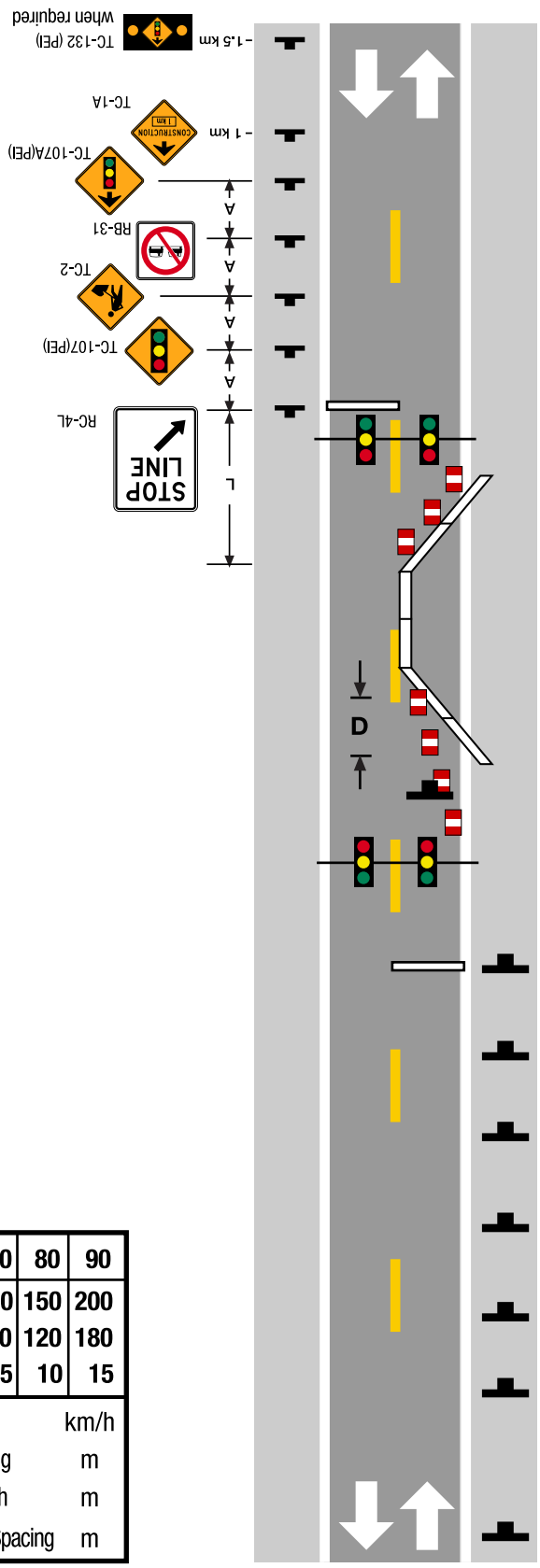
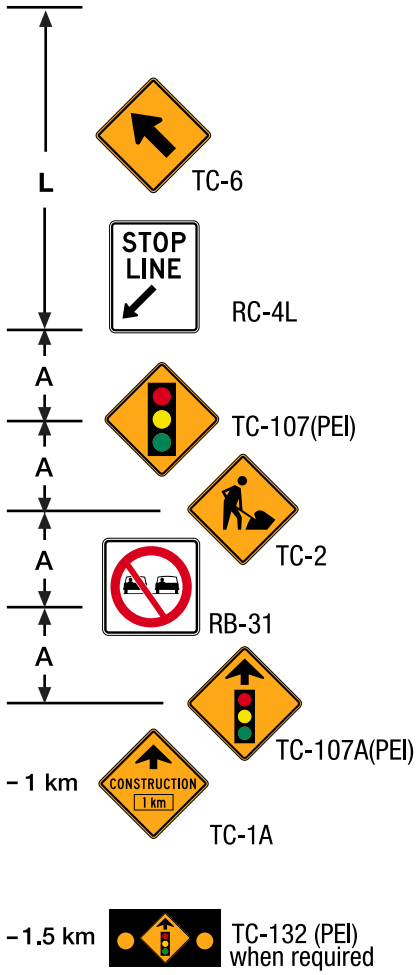


- For a long duration lane closure New Jersey Barriers must be used to protect workers
- Installation of traffic signals requires approval of the Traffic Authority
- If traffic control signals are not operating, replace TC-107(PEI) with TC-21 and TC-107A(PEI) with TC-21A(PEI) and use TCPs



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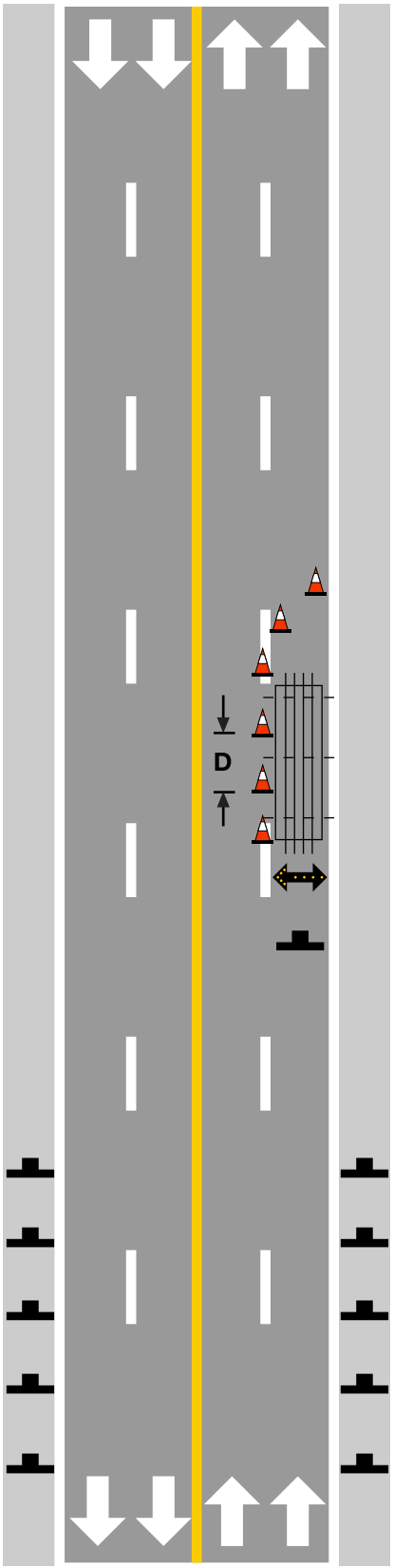

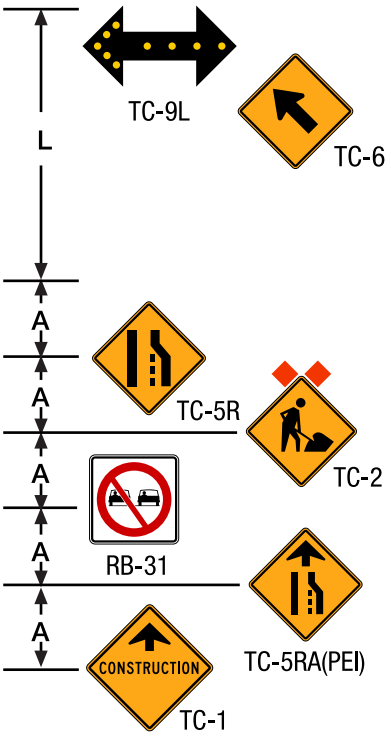

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A	50	100	150	200
L	30	60	120	180
D	2.5	5	10	15

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A - Sign Spacing m
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D - Cone/Drum Spacing m

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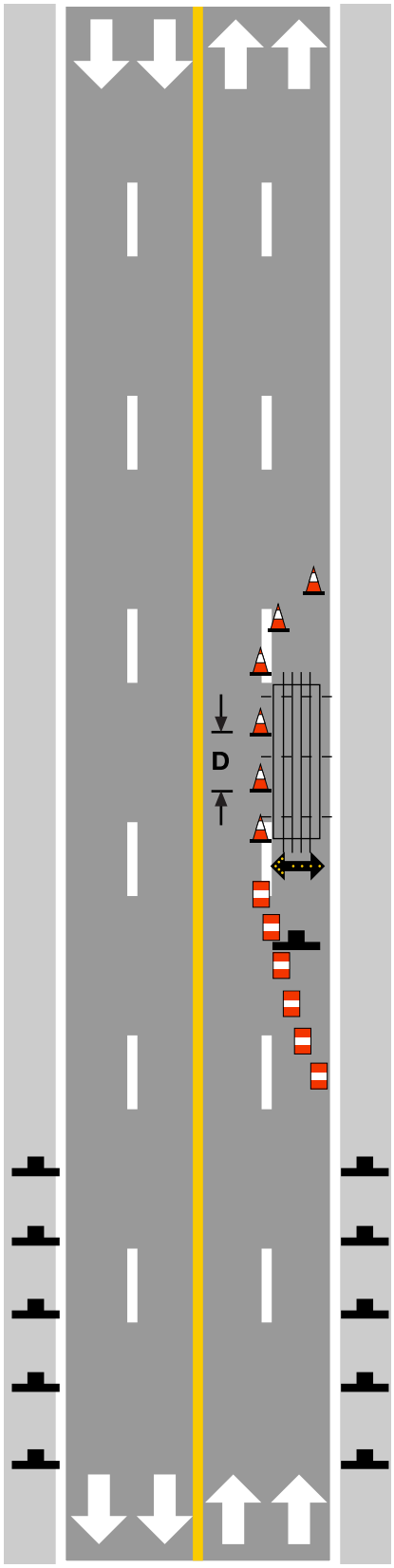

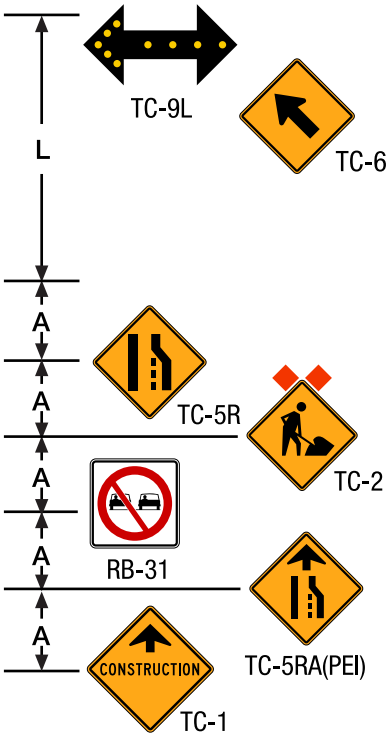

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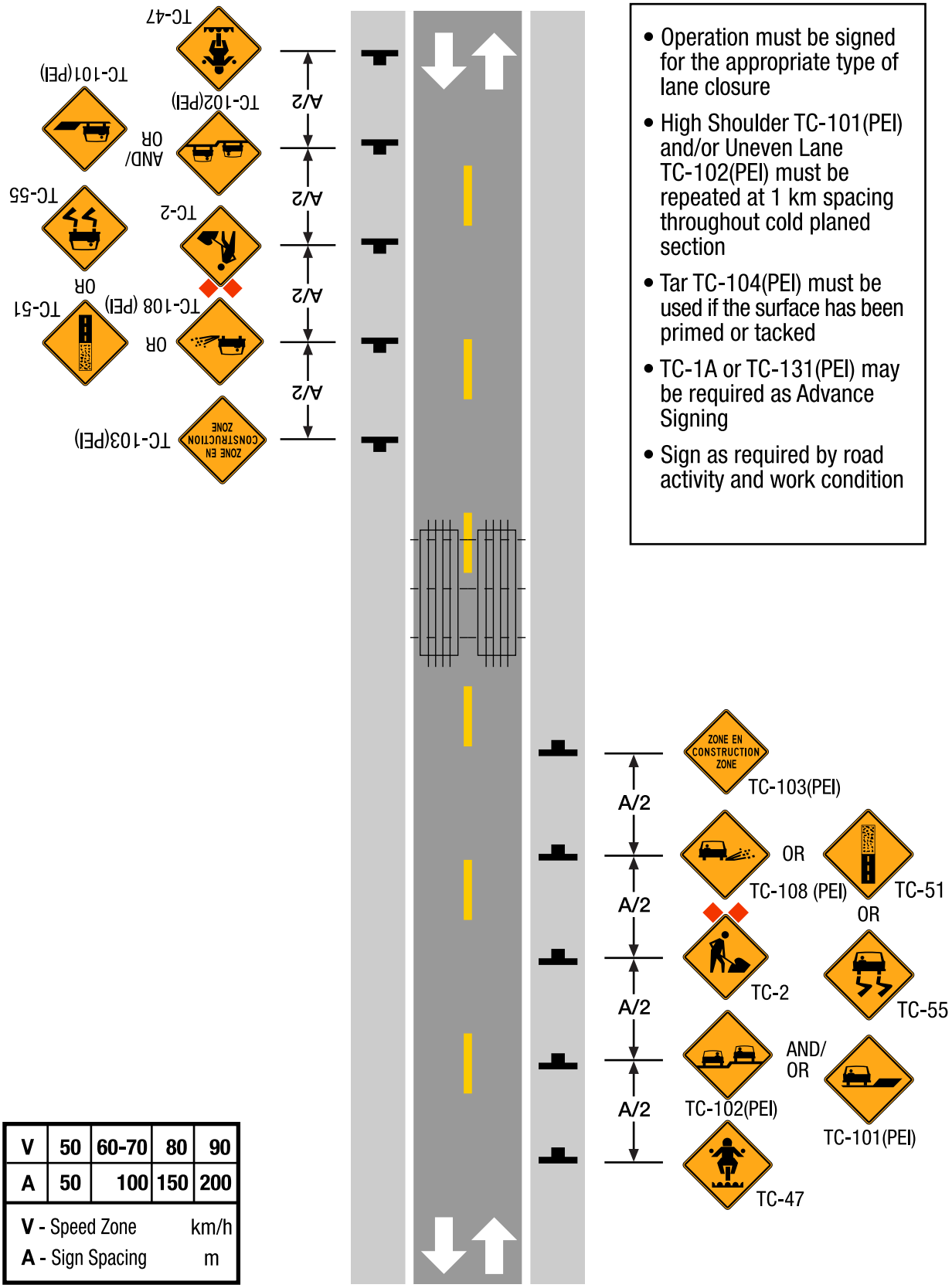
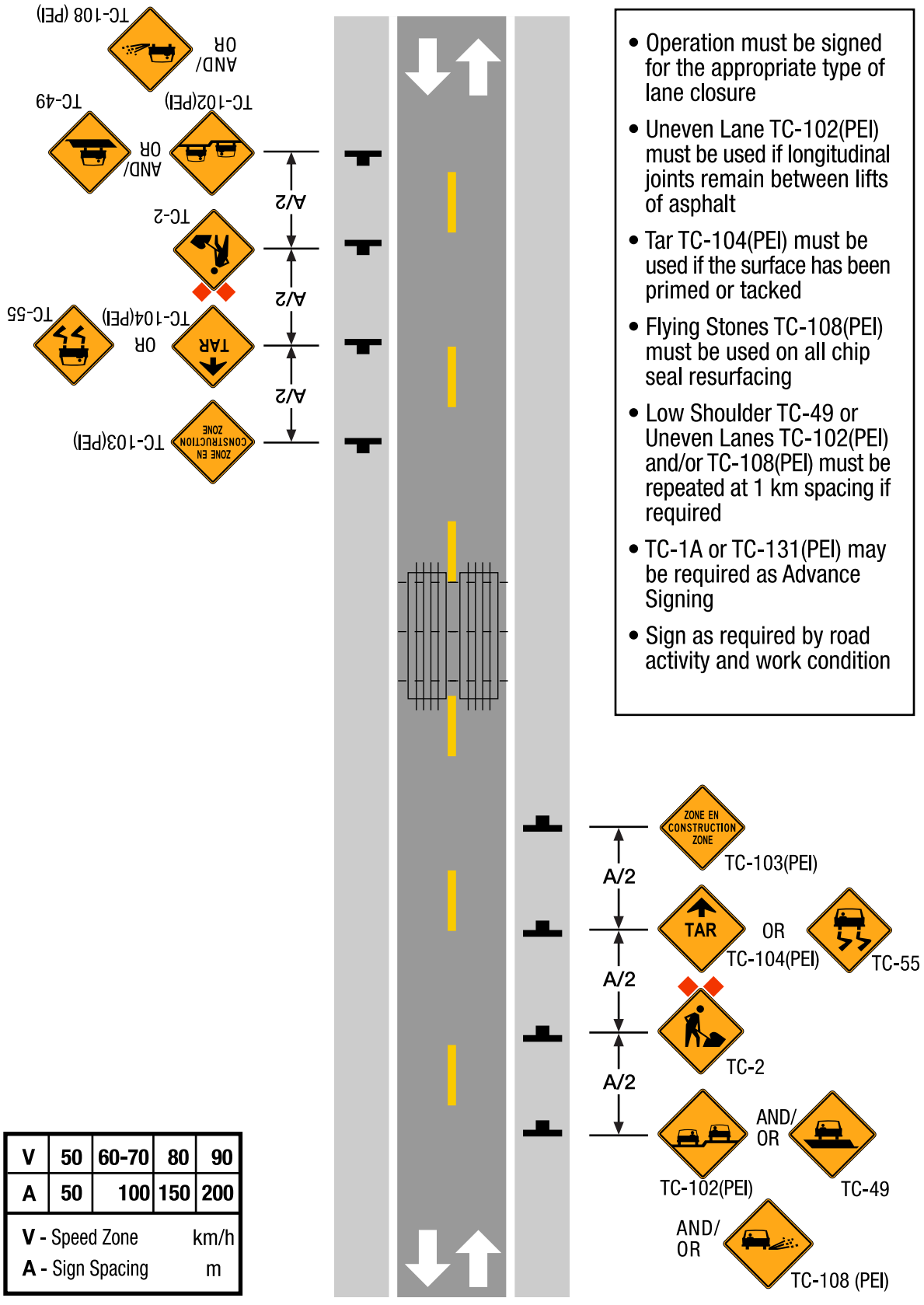


- Operation must be signed for the appropriate type of lane closure
- High Shoulder TC-101(PEI) and/or Uneven Lane TC-102(PEI) must be repeated at 1 km spacing throughout cold planed section
- Tar TC-104(PEI) must be used if the surface has been primed or tacked
- TC-1A or TC-131(PEI) may be required as Advance Signing
- Sign as required by road activity and work condition

V	50	60-70	80	90
A	50	100	150	200

V - Speed Zone km/h
A - Sign Spacing m

NOT TO SCALE

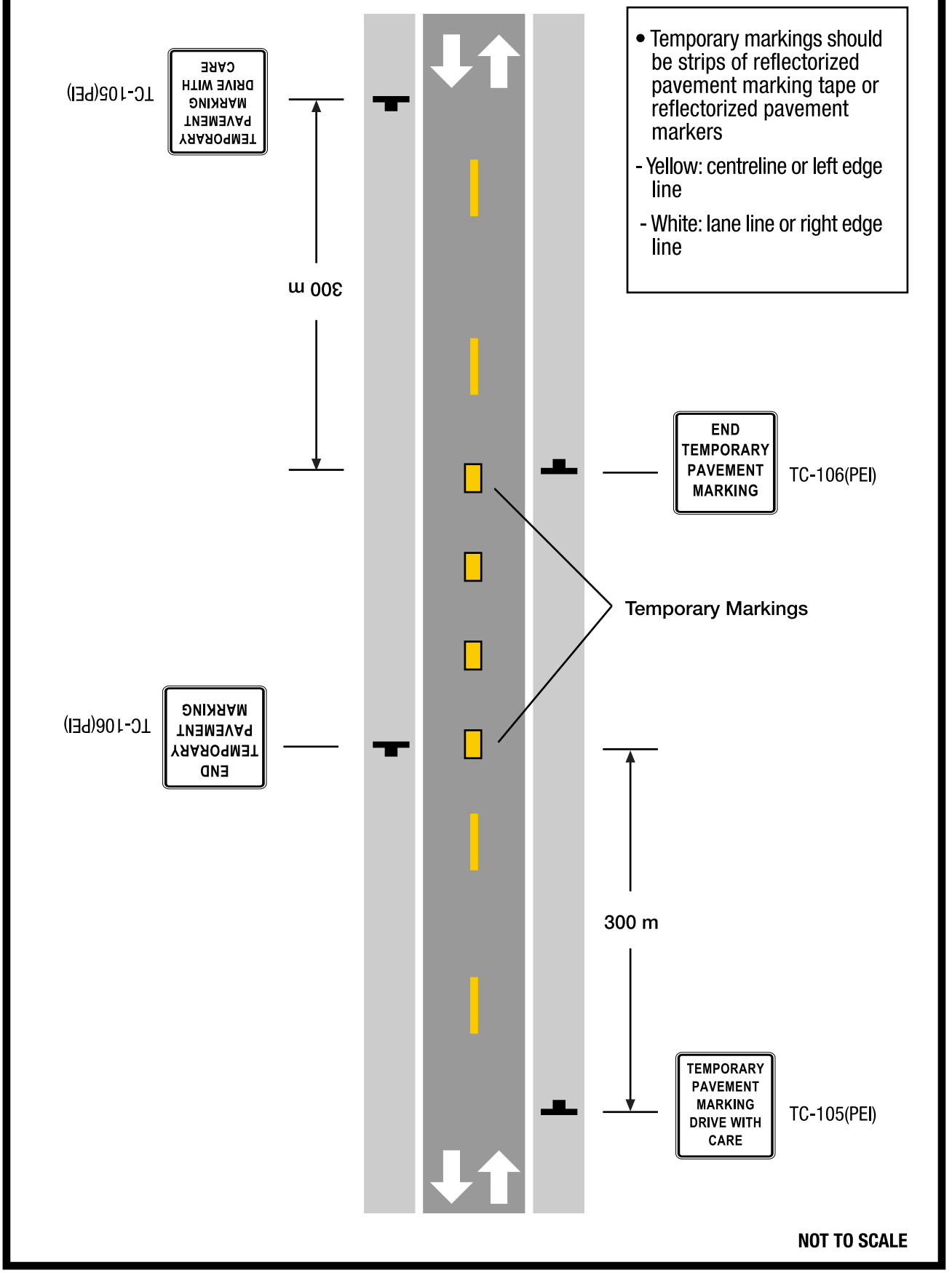


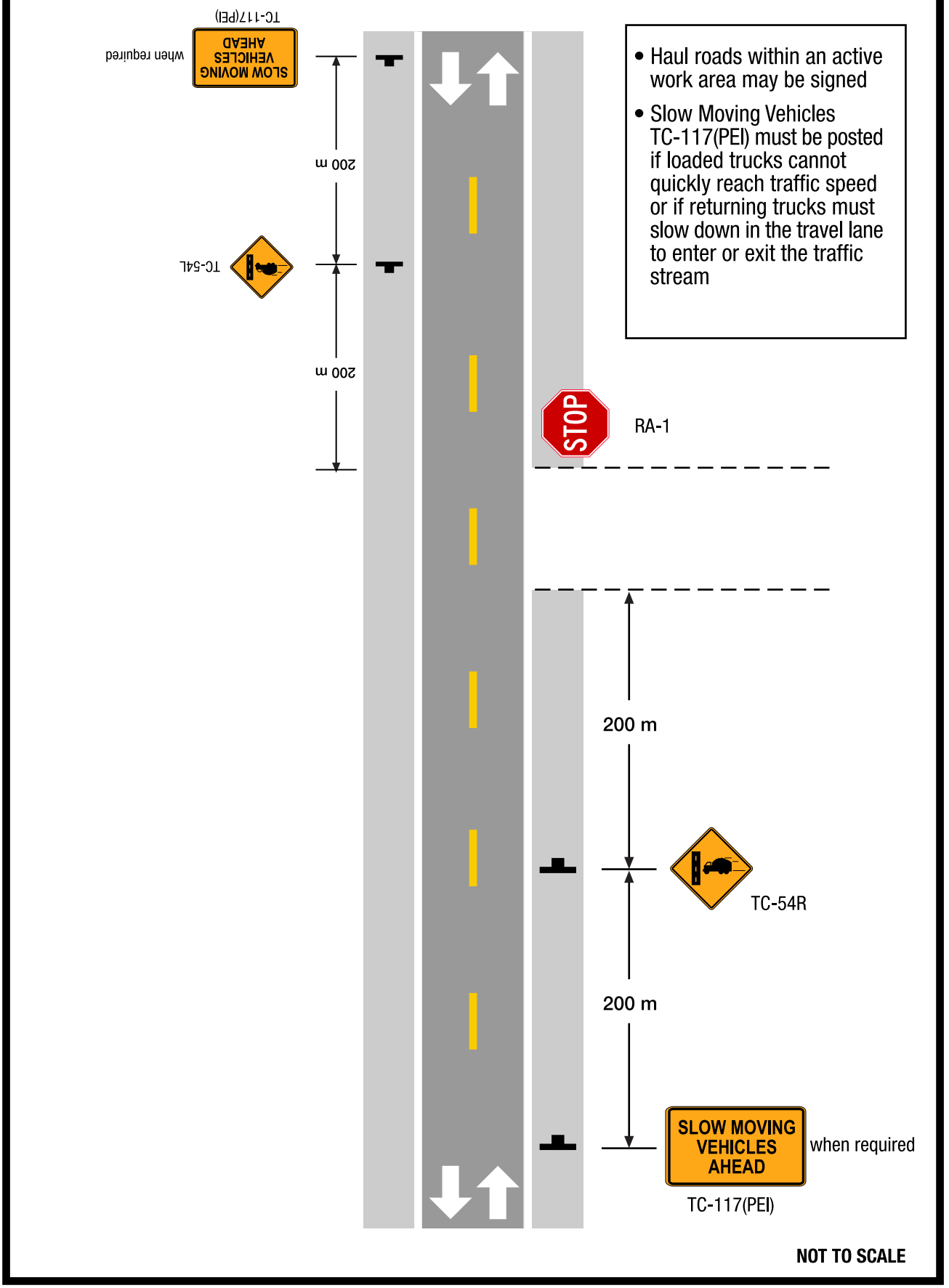
- Operation must be signed for the appropriate type of lane closure
- Uneven Lane TC-102(PEI) must be used if longitudinal joints remain between lifts of asphalt
- Tar TC-104(PEI) must be used if the surface has been primed or tacked
- Flying Stones TC-108(PEI) must be used on all chip seal resurfacing
- Low Shoulder TC-49 or Uneven Lanes TC-102(PEI) and/or TC-108(PEI) must be repeated at 1 km spacing if required
- TC-1A or TC-131(PEI) may be required as Advance Signing
- Sign as required by road activity and work condition

V	50	60-70	80	90
A	50	100	150	200

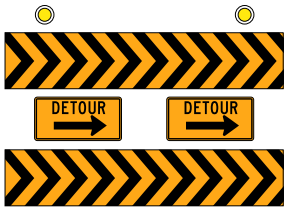
V - Speed Zone km/h
A - Sign Spacing m

NOT TO SCALE

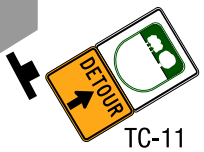

• Temporary markings should be strips of reflectorized pavement marking tape or reflectorized pavement markers
- Yellow: centreline or left edge line
- White: lane line or right edge line
END TEMPORARY PAVEMENT MARKING
TC-106(PEI)
Temporary Markings
300 m
TEMPORARY PAVEMENT MARKING DRIVE WITH CARE
TC-105(PEI)
END TEMPORARY PAVEMENT MARKING
TC-106(PEI)
300 m
TEMPORARY PAVEMENT MARKING DRIVE WITH CARE
TC-105(PEI)
NOT TO SCALE


TC-117(PEI)
SLOW MOVING VEHICLES AHEAD
when required
200 m
TC-54L
200 m
STOP
RA-1
200 m
TC-54R
200 m
SLOW MOVING VEHICLES AHEAD
when required
TC-117(PEI)
• Haul roads within an active work area may be signed
• Slow Moving Vehicles TC-117(PEI) must be posted if loaded trucks cannot quickly reach traffic speed or if returning trucks must slow down in the travel lane to enter or exit the traffic stream
NOT TO SCALE

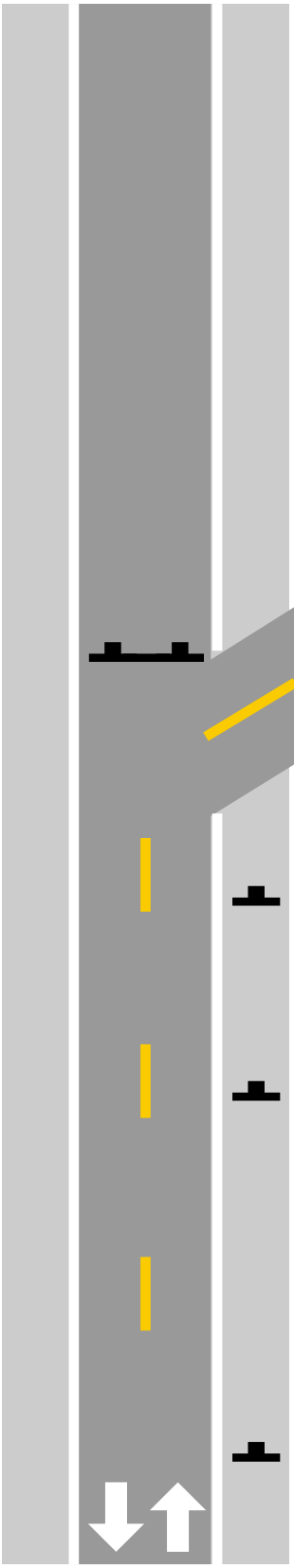
- Curve warning sign with appropriate speed tab to be posted if required as determined by Traffic Authority
- Detour from a multi-lane road must be preceded by a lane closure to one moving lane
- Detour should be signed with appropriate guide signs
- Detour must be signed with appropriate warning and regulatory signs
- Traffic Authority must be consulted prior to establishment of a detour



TC-64C



TC-11
(S or R or L)



TC-11R

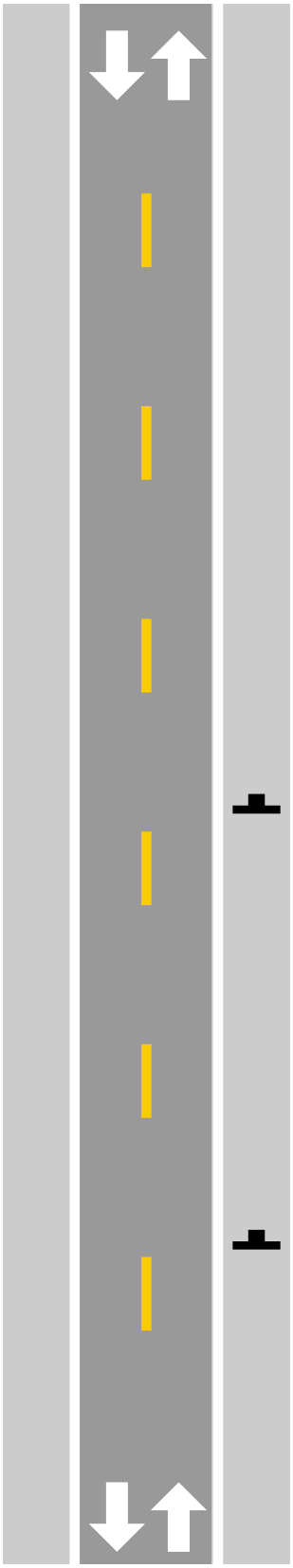
TC-10

TC-10A

V	50	60-70	80	90
A	50	100	150	200

V - Speed Zone km/h
A - Sign Spacing m

NOT TO SCALE



- Low Shoulder TC-49 must be posted 200m from the beginning of the low shoulder and be repeated at 1km spacing
- When Hazard Marker TC-62 is used:

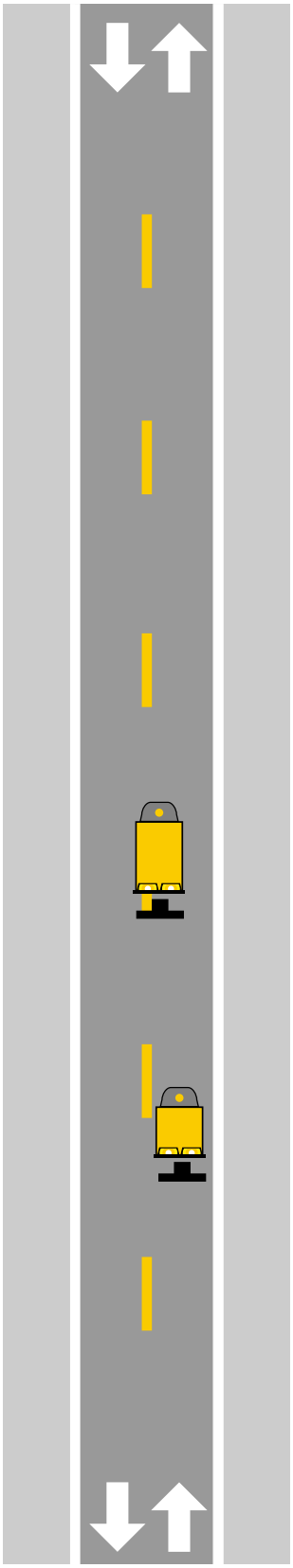
- repeat 30cm X 60cm signs at 50 meter intervals or repeat 30cm X 90cm signs at 100 meter intervals
- reduce spacing of signs around short radius curves

TC-62

200 m

TC-49

NOT TO SCALE



- Replace TC-115Y(PEI) with TC-115W(PEI) when painting white lines

CAUTION
Wet
Yellow
Paint

ATTENTION
Peinture
Jaune
Fraîche

Wet Yellow Paint
Peinture Jaune Fraîche

TC-8(PEI) and TC-8(PEI)

Wet Yellow Paint
Peinture Jaune Fraîche

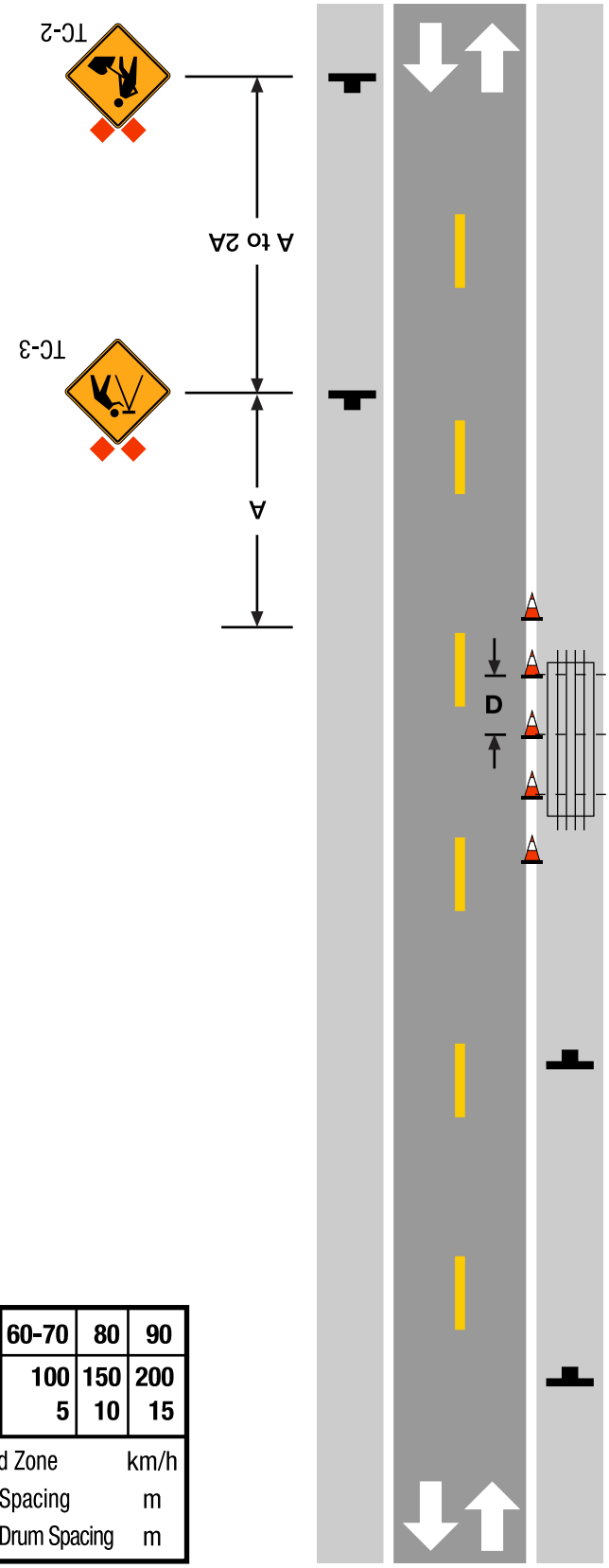
TC-115Y(PEI)

TC-8(PEI) and TC-8(PEI)

or

TC-9B
(PEI)

NOT TO SCALE

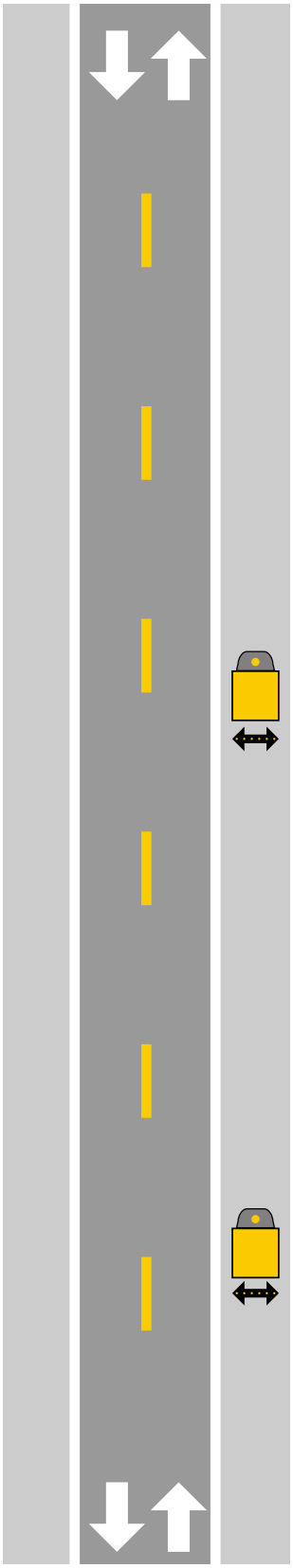


- Survey crews working off shoulder do not require signing
- Survey crews working in a travel lane must sign for a lane closure using Guides A 33 or A 35 as appropriate, and use TCPs
- Survey crews working on the shoulder using Guide A 93 may use an observer to facilitate occasional trips on or across the travel lanes

V	50	60-70	80	90
A	50	100	150	200
D	2.5	5	10	15

V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

NOT TO SCALE

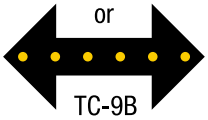


- Observer to remain on shoulder in position with a clear view of approaching traffic from both directions
- Workers in the traffic lanes:
  - to remain on their feet
  - use only hand tools
  - do not use hearing protectors

Work Vehicle with

TC-8(PEI)

or



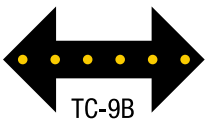
TC-9B
(PEI)

500m to 750m

Trail Vehicle with

TC-8(PEI)

or

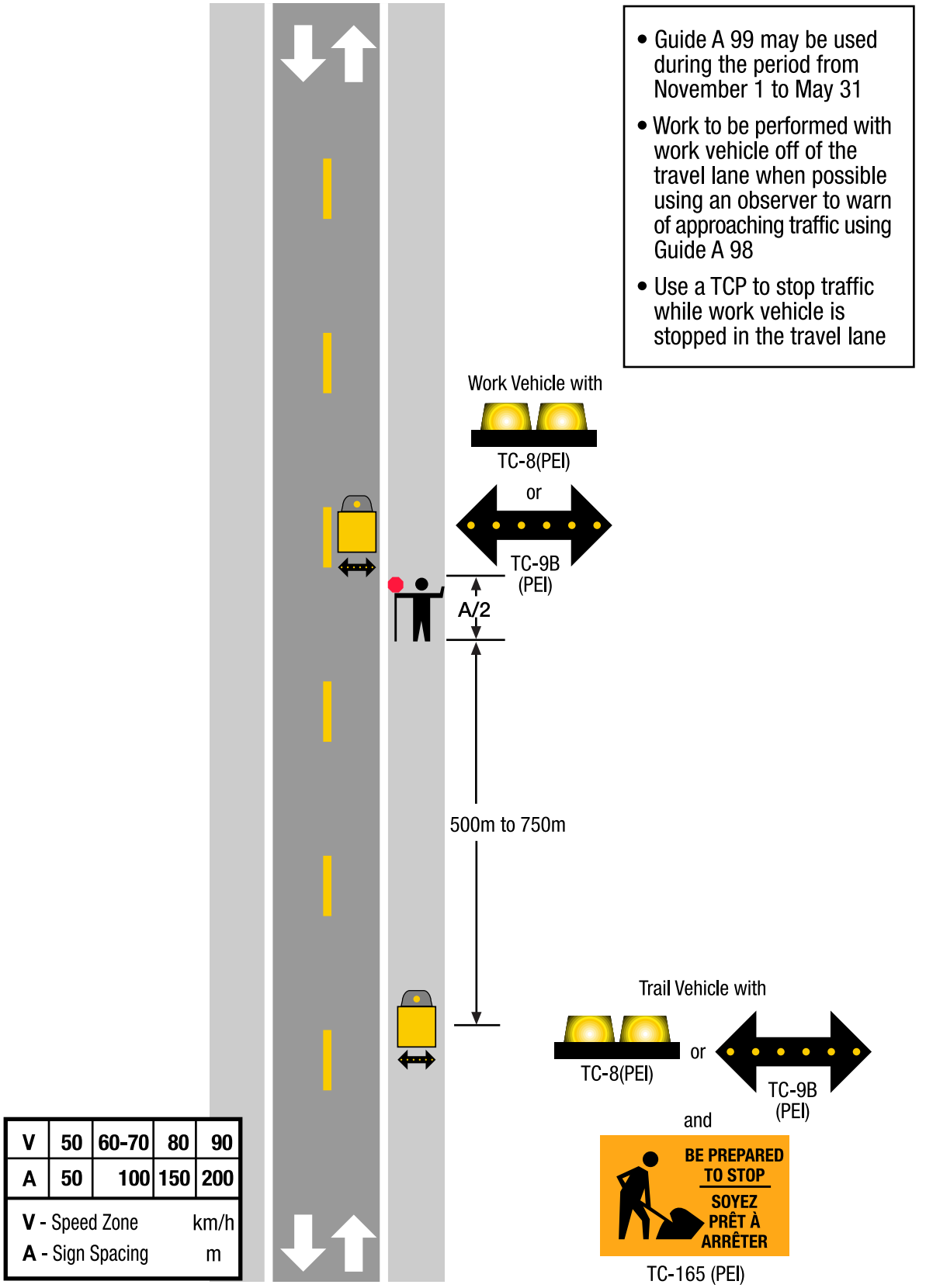


TC-9B
(PEI)

and

TC-165 (PEI)

NOT TO SCALE



V	50	60-70	80	90
A	50	100	150	200

V - Speed Zone km/h
A - Sign Spacing m

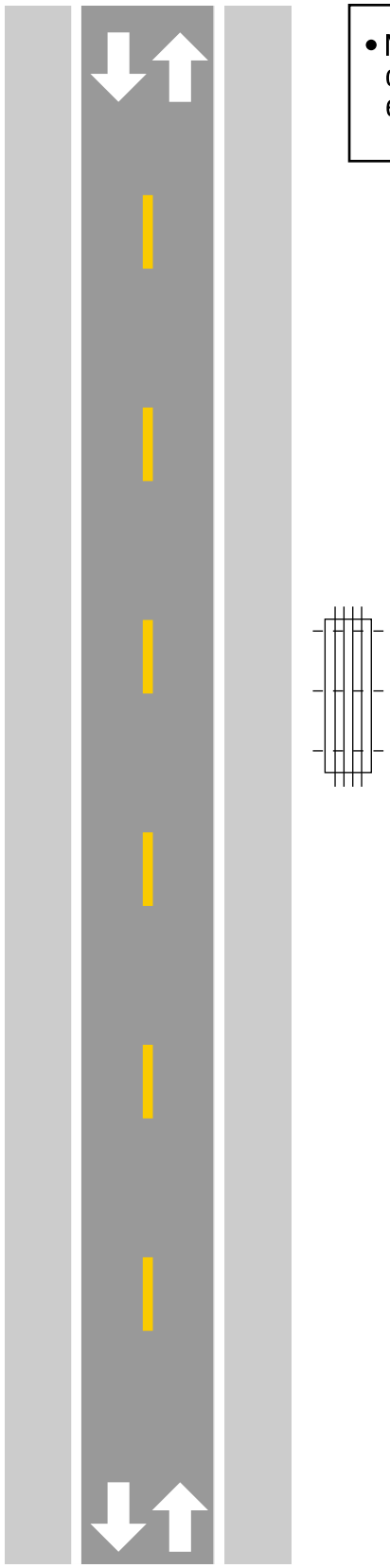
Application Guides 'B'
Collector and Local Highways

Work Location	**Work Duration**	**Highway Type** (Special Condition)	**Guide**
Off Shoulder Work	All Durations	Two-Way Two-Lane	B 1
Shoulder Work	Very Short Duration	Two-Way Two-Lane	B 12
Shoulder Work	Short Duration	Two-Way Two-Lane	B 13
Partial Lane Closed	Short Duration	Two-Way Two-Lane	B 22
Partial Lane Closed	Short Duration	Two-Way Two-Lane (Altered Centerline)	B 23
Lane Closed	Very Short Duration	Two-Way Two-Lane	B 33
Lane Closed	Short Duration	Two-Way Two-Lane (Day Work)	B 35
Lane Closed	Short Duration	Two-Way Two-Lane (Night Work)	B 36
Lane Closed	Short Duration	Two-Lane Two-Lane (Bridge Work)	B 38
Lane Closed	Long Duration	Two-Way (Traffic Control Signals)	B 51

Signing Illustration	**Work Duration**	**Highway Type**	**Guide**
Construction Zone	Long Duration	Two-Way Two-Lane	B 72
Construction and Long Patch	Long Duration	Two-Way Two-Lane	B 73
Temporary Haul Road	All Durations	Two-Way Two-Lane	B 76
Detour	All Durations	Two-Way Two-Lane	B 77
Low Shoulder	Short or Long Duration	Two-Way Two-Lane	B 79

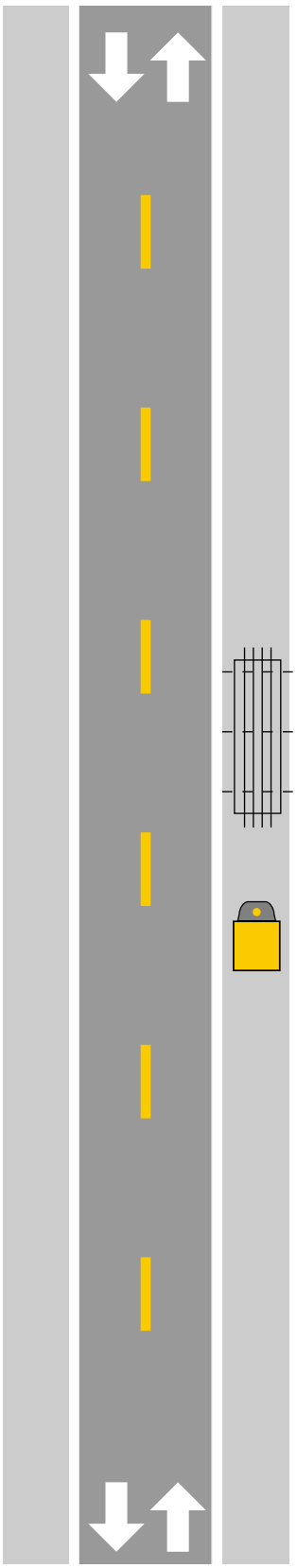
Special Operations

Work Type	**Work Duration**	**Highway Type** (Special Condition)	**Guide**
Line Painting	Mobile Continuous	Two-Way Two-Lane	B 91
Survey Crew	Short Duration	Two-Way Two-Lane	B 93
Work Zone	Mobile Intermittent	Two-Way Two-Lane	B 95
Lane Closed	Mobile Continuous	Two-Way Two-Lane (Low Volume)	B 97
Observer Workers	Very Short Duration	Two-Way Two-Lane	B 98
Seasonal Machine Operation	Mobile Intermittent	Two-Way	B 99



- No encroachment permitted on shoulder by workers, equipment, or vehicles

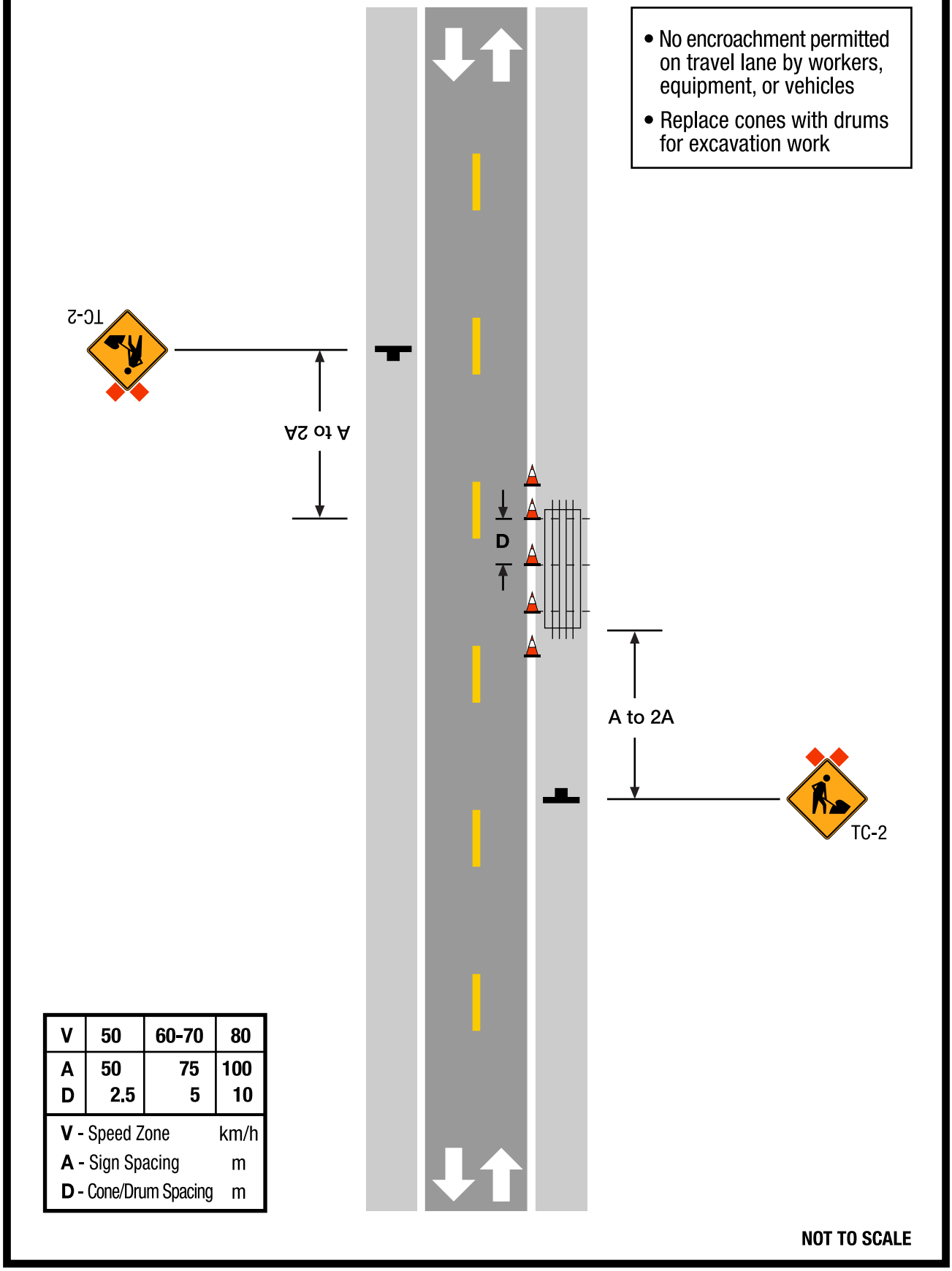
NOT TO SCALE



- No encroachment permitted on travel lane by workers, equipment, or vehicles

Work Vehicle

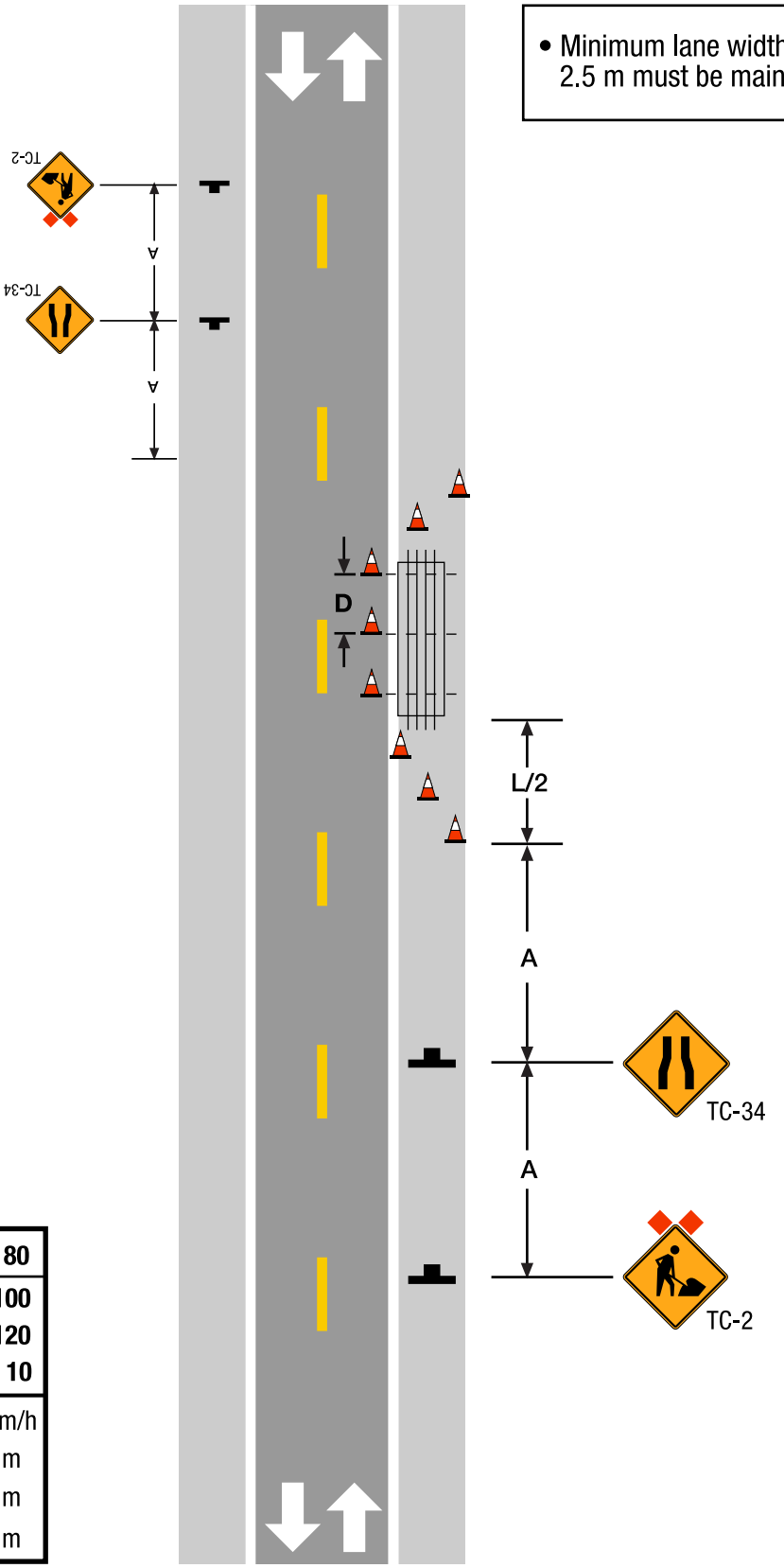
NOT TO SCALE



V	50	60-70	80
A	50	75	100
D	2.5	5	10

V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

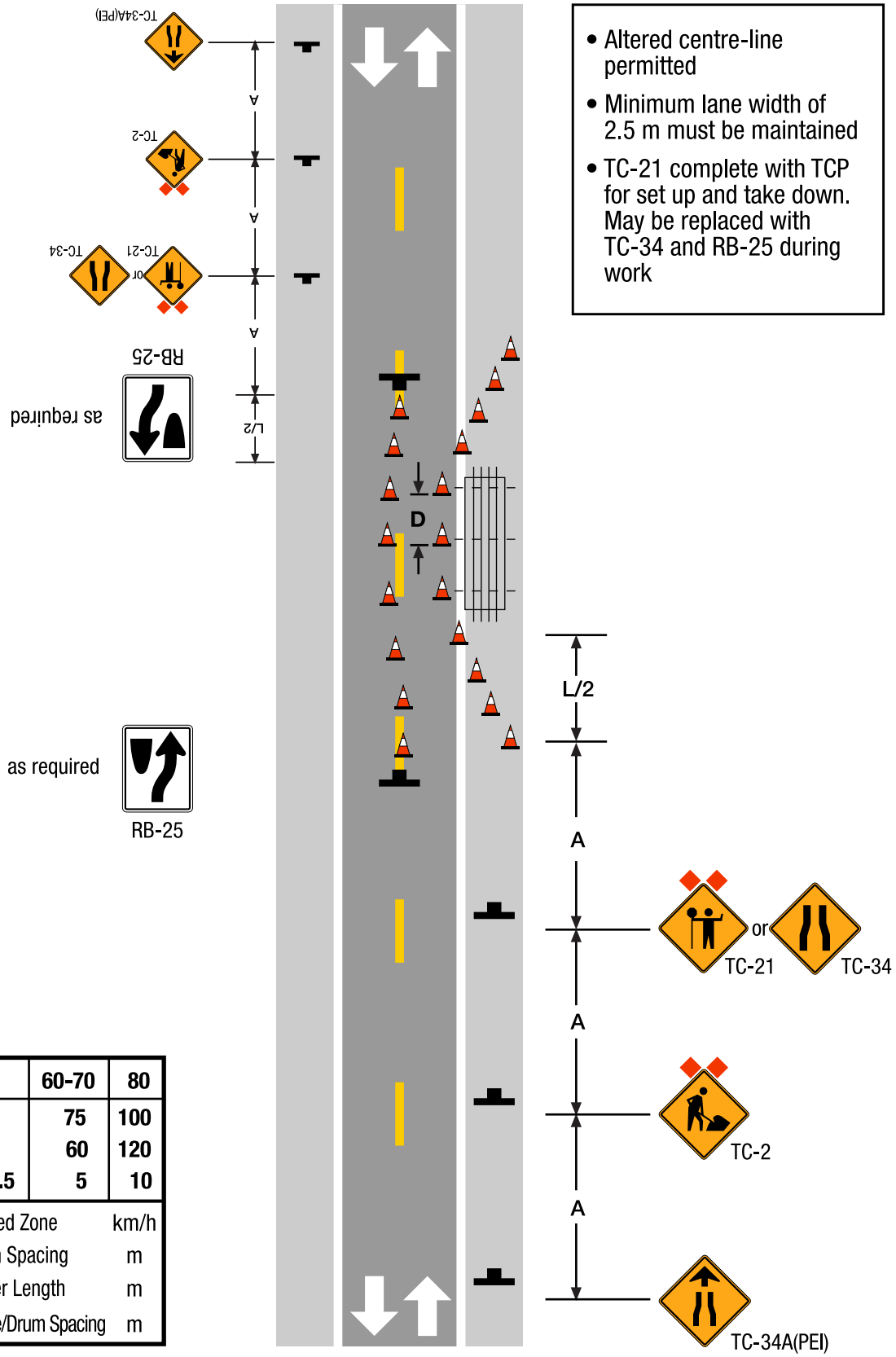
NOT TO SCALE



V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

NOT TO SCALE

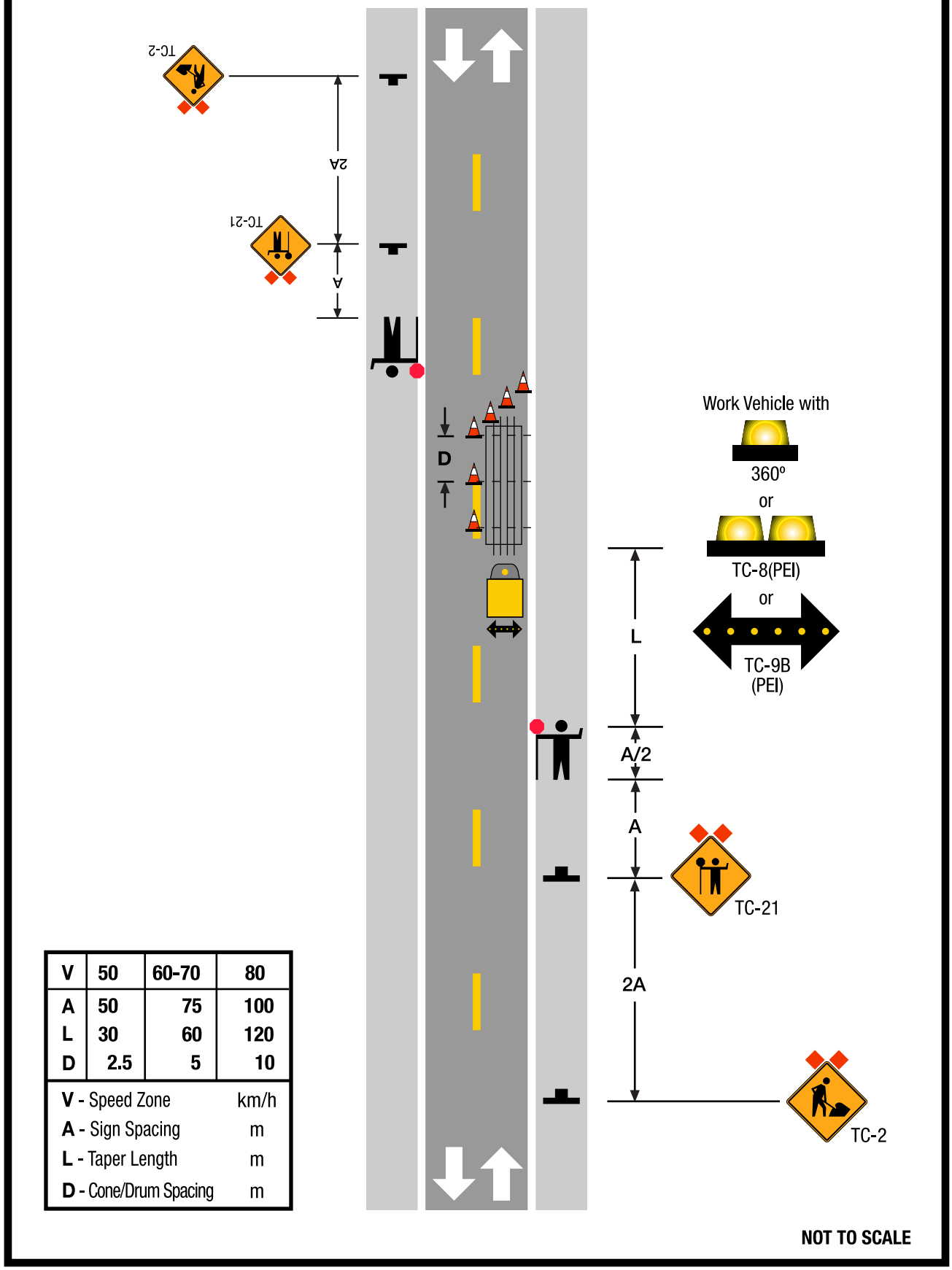


- Altered centre-line permitted
- Minimum lane width of 2.5 m must be maintained
- TC-21 complete with TCP for set up and take down. May be replaced with TC-34 and RB-25 during work

V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

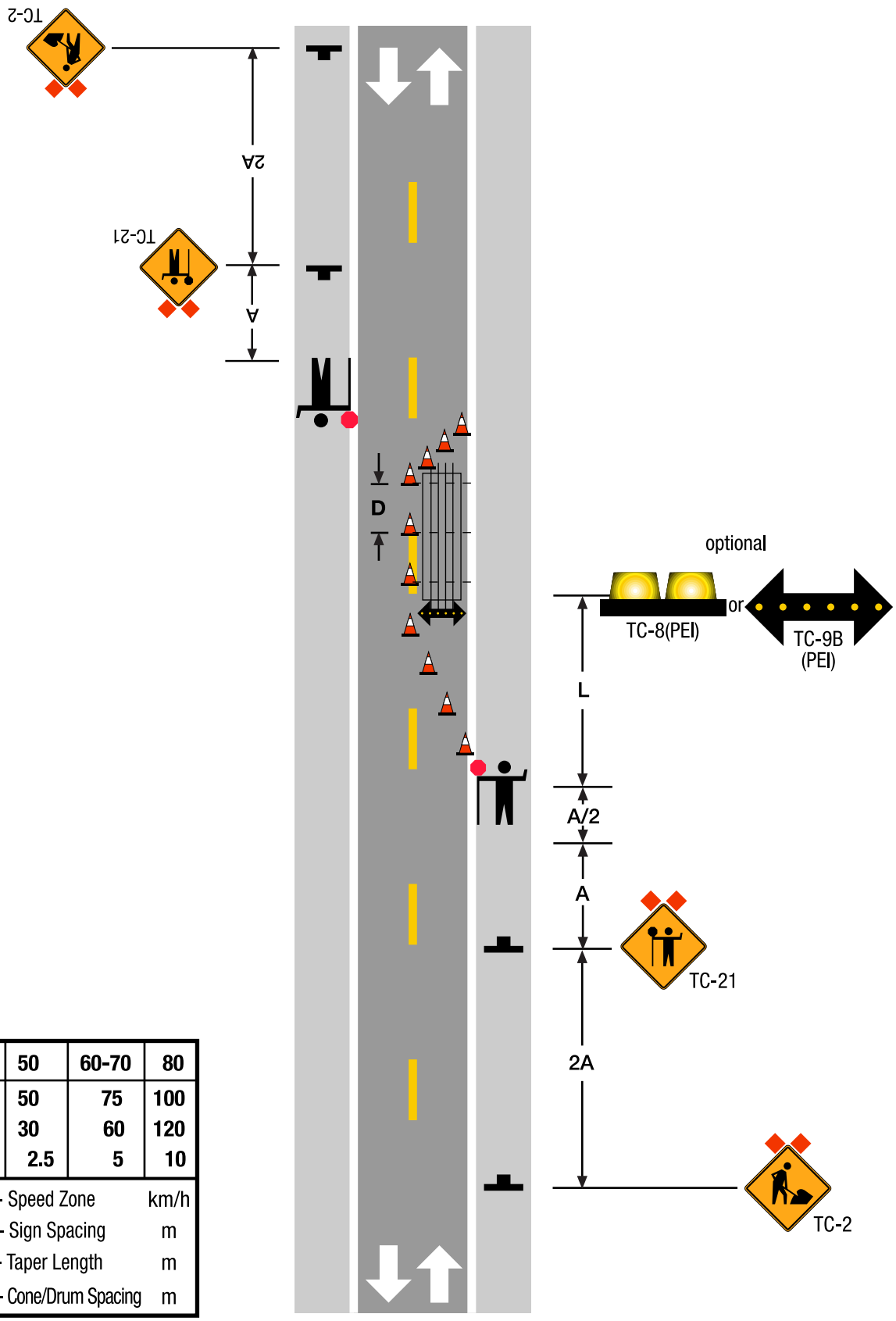
V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

NOT TO SCALE



V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

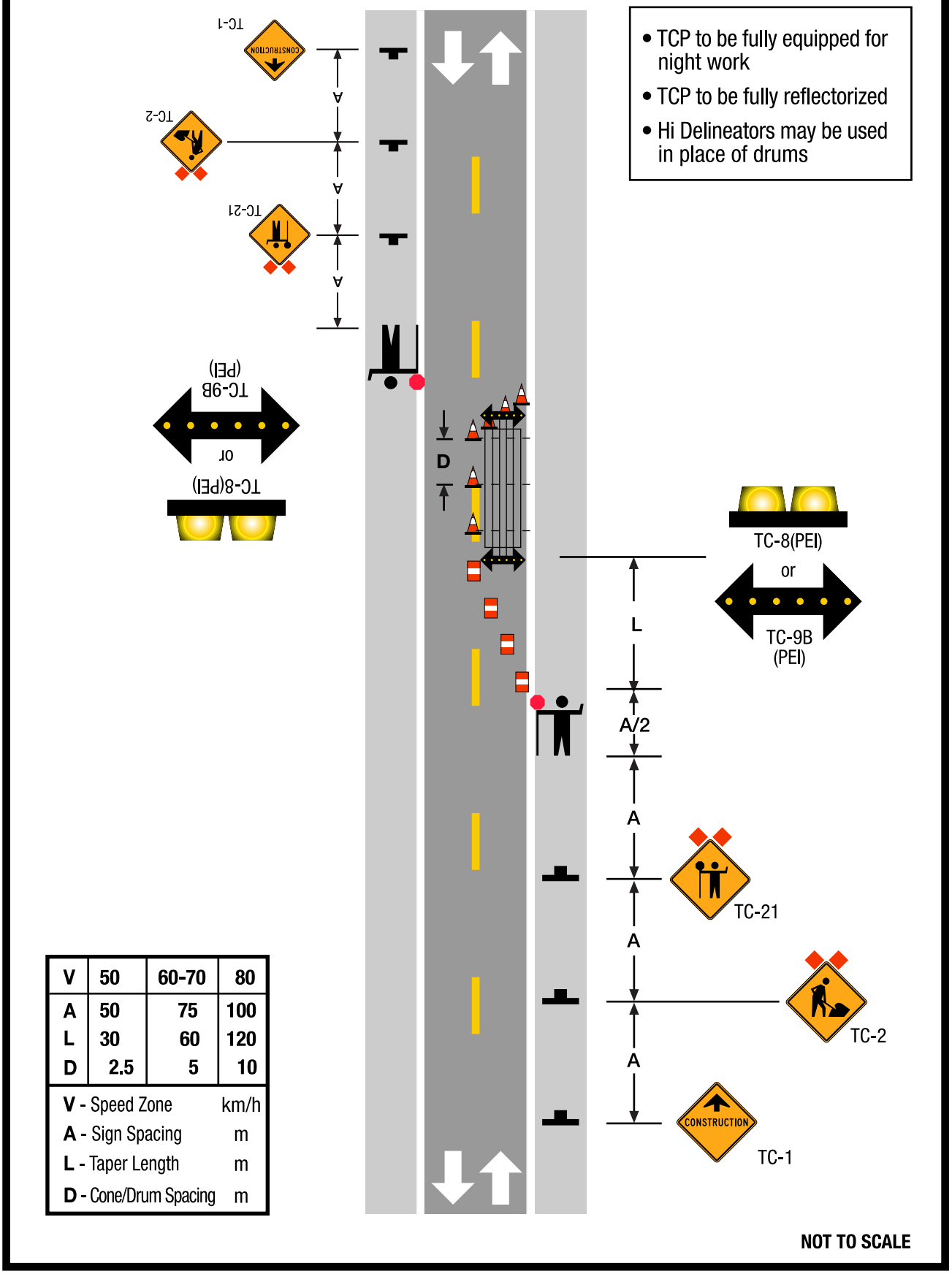
V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m



V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

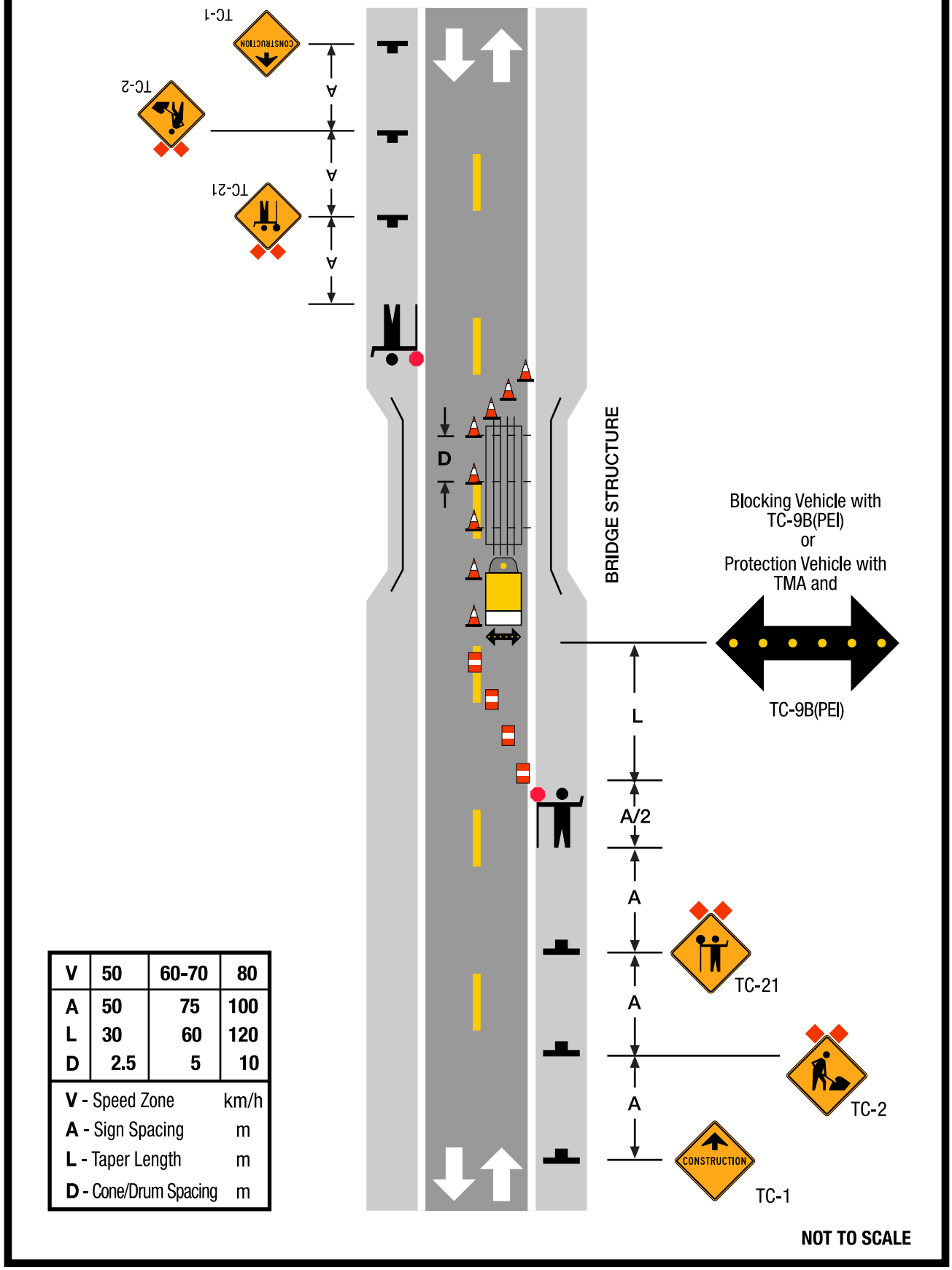
NOT TO SCALE



V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

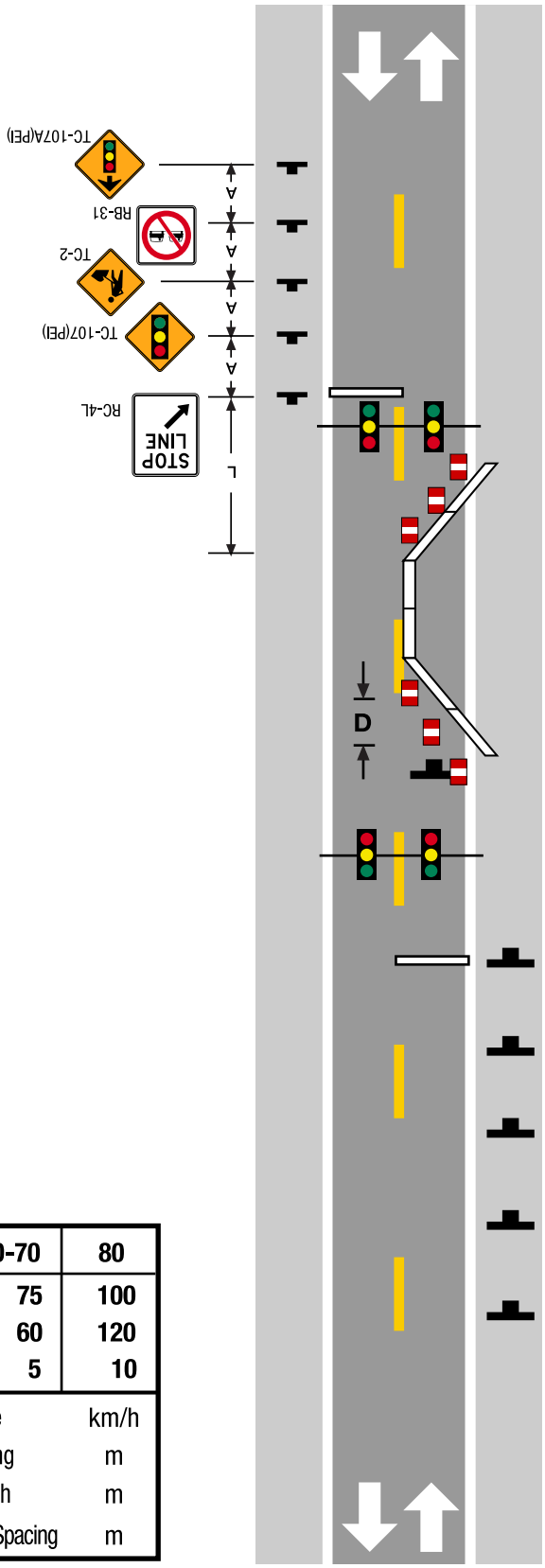
V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

NOT TO SCALE

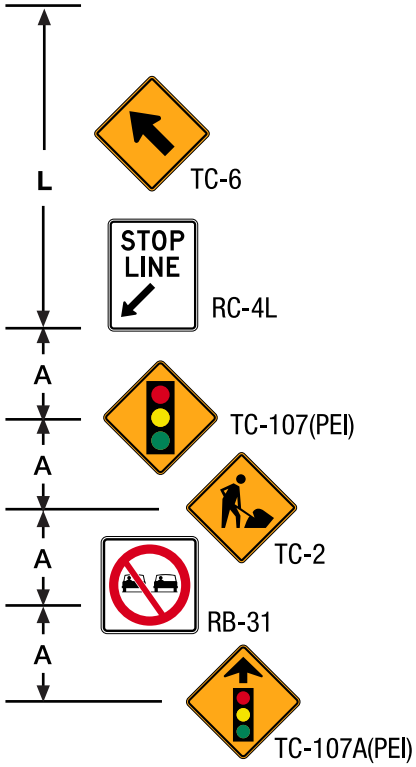


V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m



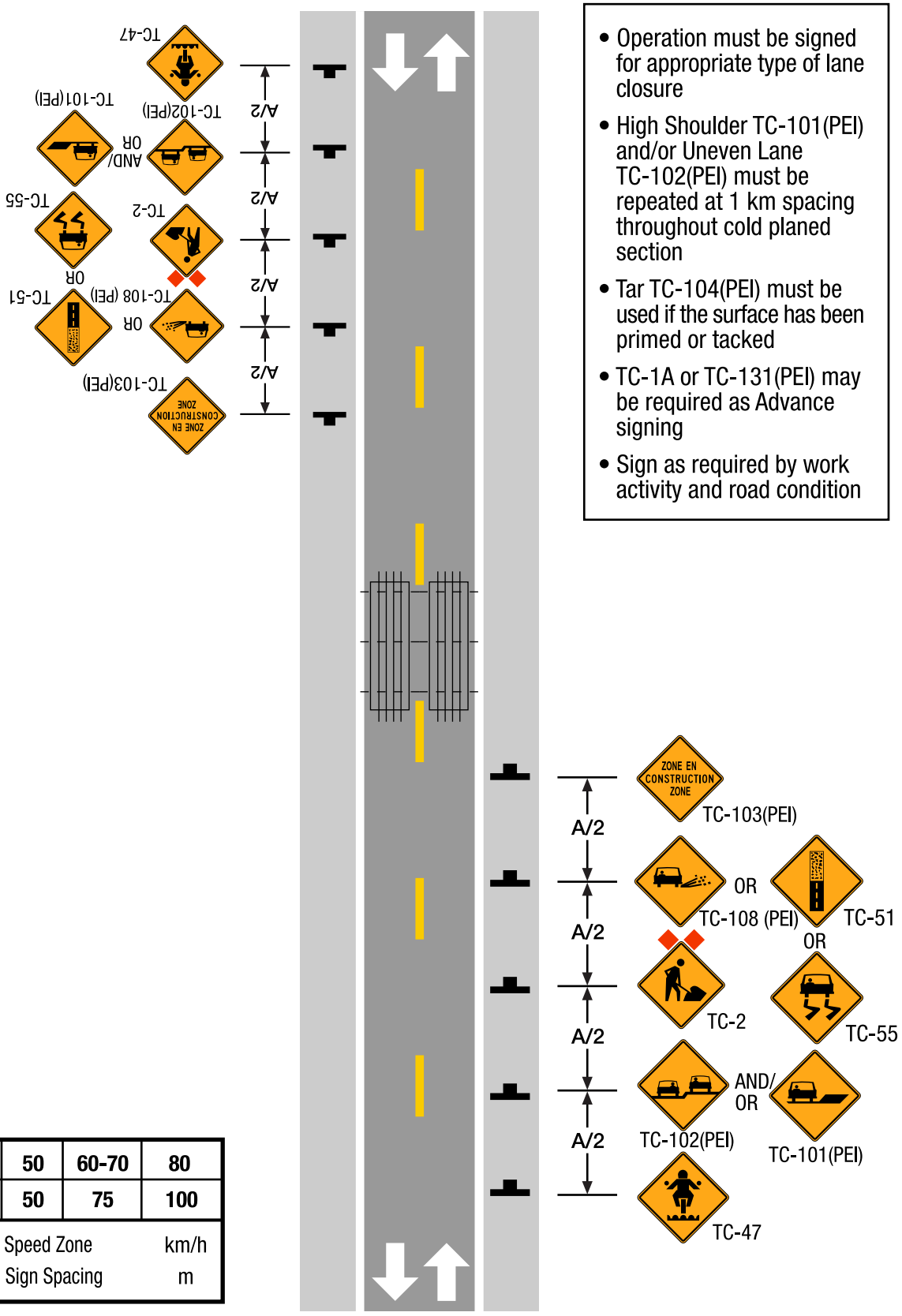
- For a long duration lane closure New Jersey Barriers must be used to protect workers
- Installation of traffic signals requires approval of the Traffic Authority
- If traffic control signals are not operating, replace TC-107(PEI) with TC-21 and TC-107A(PEI) with TC-21A(PEI) and use TCPs



V	50	60-70	80
A	50	75	100
L	30	60	120
D	2.5	5	10

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m

NOT TO SCALE

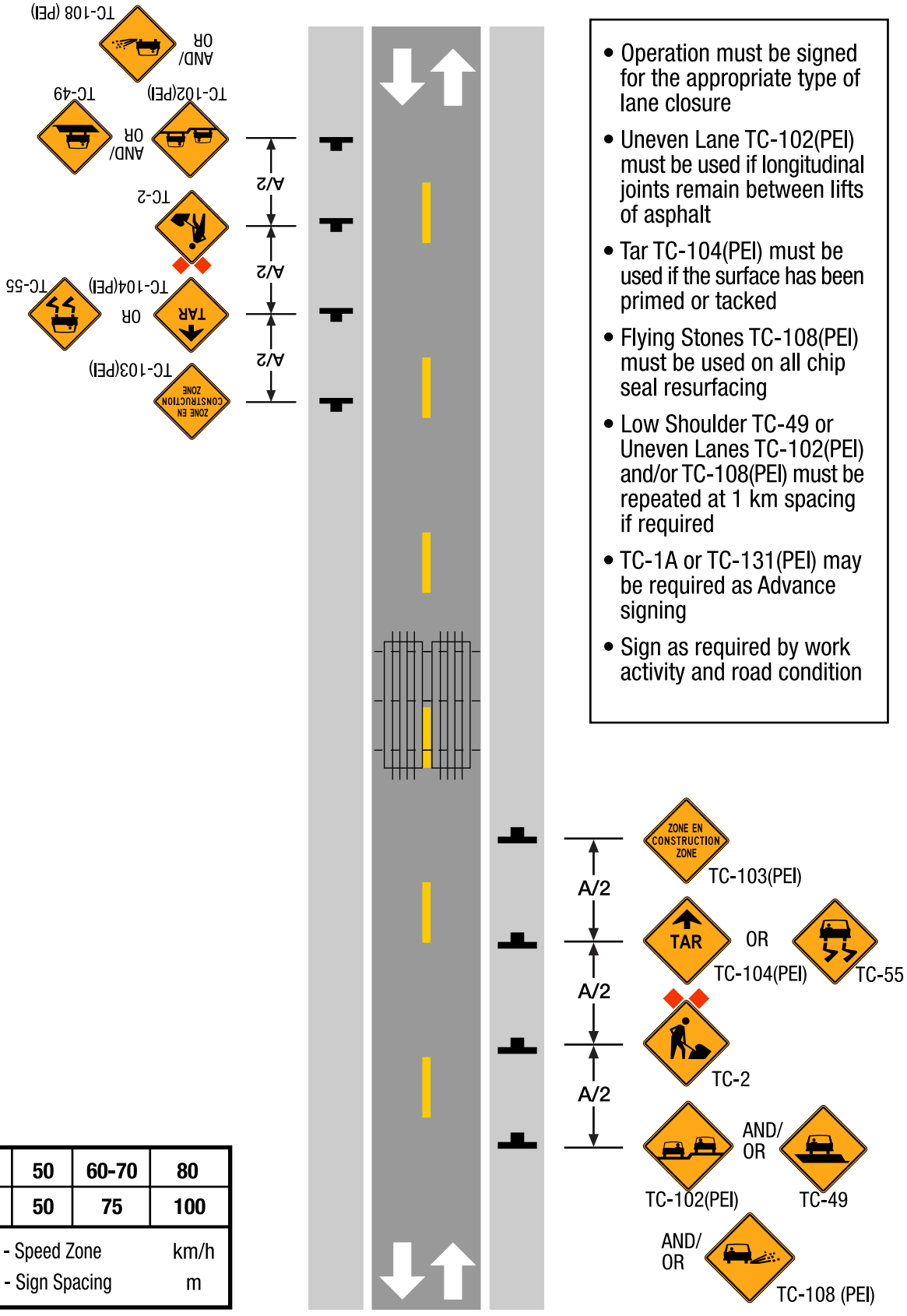


- Operation must be signed for appropriate type of lane closure
- High Shoulder TC-101(PEI) and/or Uneven Lane TC-102(PEI) must be repeated at 1 km spacing throughout cold planed section
- Tar TC-104(PEI) must be used if the surface has been primed or tacked
- TC-1A or TC-131(PEI) may be required as Advance signing
- Sign as required by work activity and road condition

V	50	60-70	80
A	50	75	100

V - Speed Zone km/h
A - Sign Spacing m

NOT TO SCALE

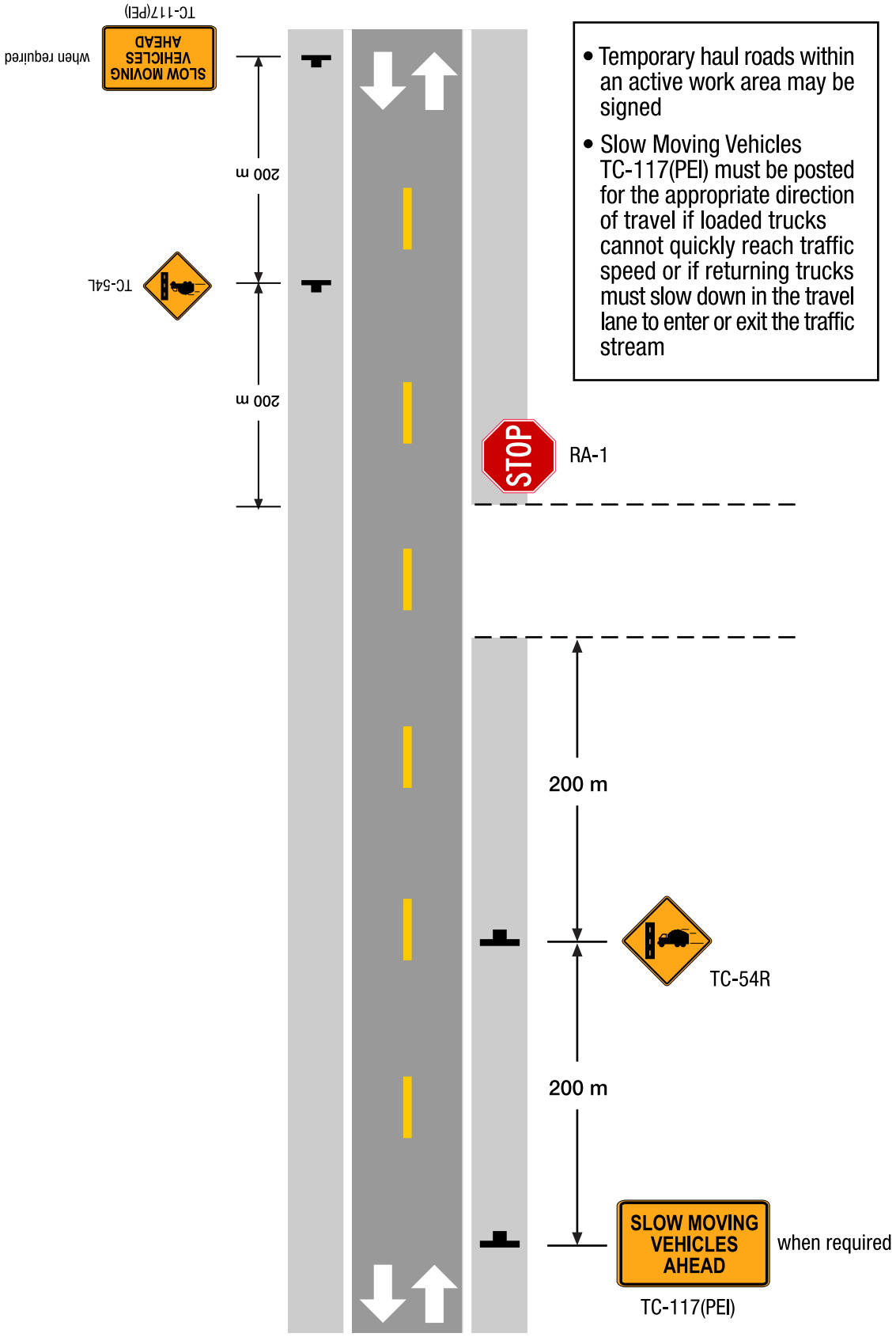


- Operation must be signed for the appropriate type of lane closure
- Uneven Lane TC-102(PEI) must be used if longitudinal joints remain between lifts of asphalt
- Tar TC-104(PEI) must be used if the surface has been primed or tacked
- Flying Stones TC-108(PEI) must be used on all chip seal resurfacing
- Low Shoulder TC-49 or Uneven Lanes TC-102(PEI) and/or TC-108(PEI) must be repeated at 1 km spacing if required
- TC-1A or TC-131(PEI) may be required as Advance signing
- Sign as required by work activity and road condition

V	50	60-70	80
A	50	75	100

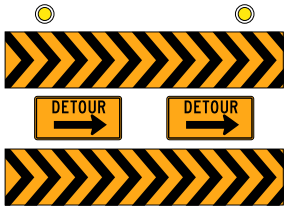
V - Speed Zone km/h
A - Sign Spacing m

NOT TO SCALE

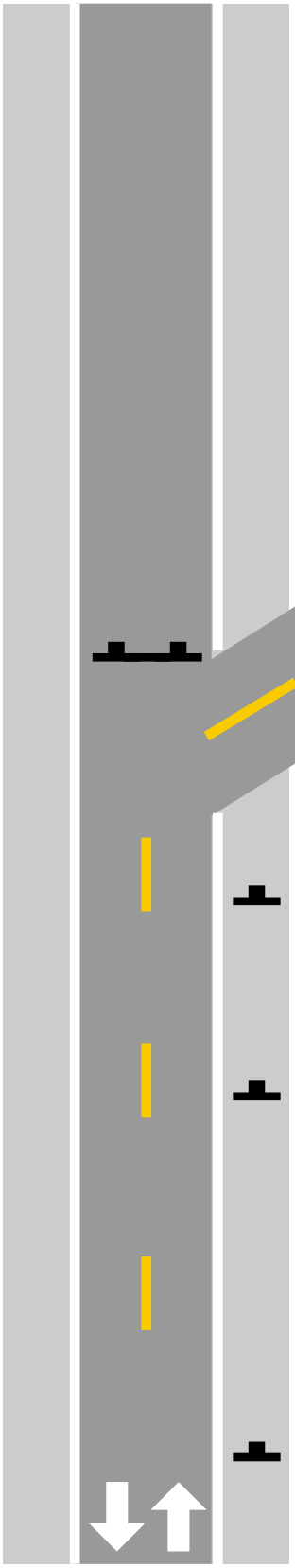


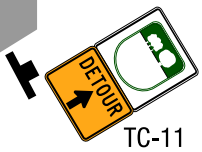
- Temporary haul roads within an active work area may be signed
- Slow Moving Vehicles TC-117(PEI) must be posted for the appropriate direction of travel if loaded trucks cannot quickly reach traffic speed or if returning trucks must slow down in the travel lane to enter or exit the traffic stream

- Curve warning sign with appropriate speed tab to be posted if required as determined by Traffic Authority
- Detour should be signed with appropriate guide signs
- Detour must be signed with appropriate warning and regulatory signs
- Traffic Authority must be consulted prior to establishment of a detour



TC-64C





TC-11
(S or R or L)

A

500 m

1 km

TC-11R

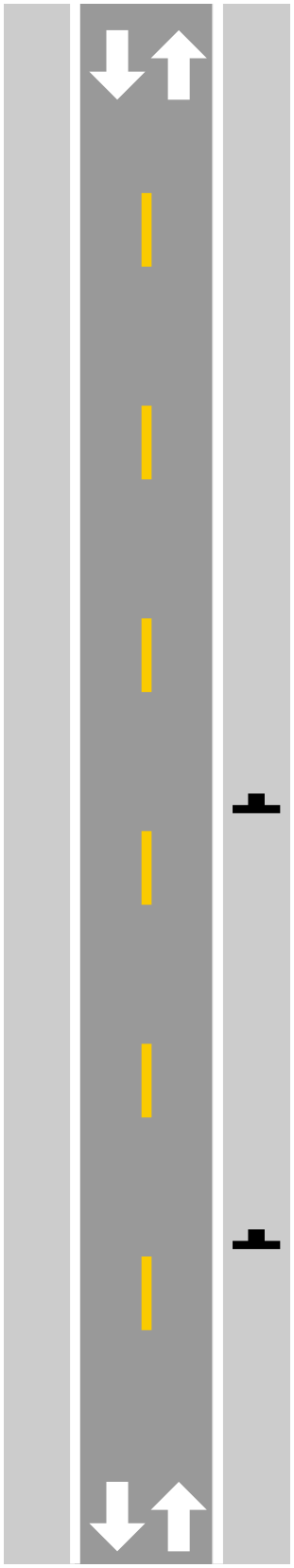
TC-10

TC-10A

V	50	60-70	80
A	50	75	100

V - Speed Zone km/h
A - Sign Spacing m

NOT TO SCALE



- Low Shoulder TC-49 must be posted 200m from the beginning of the low shoulder and must be repeated at 1km spacing
- When Hazard Marker TC-62 is used:

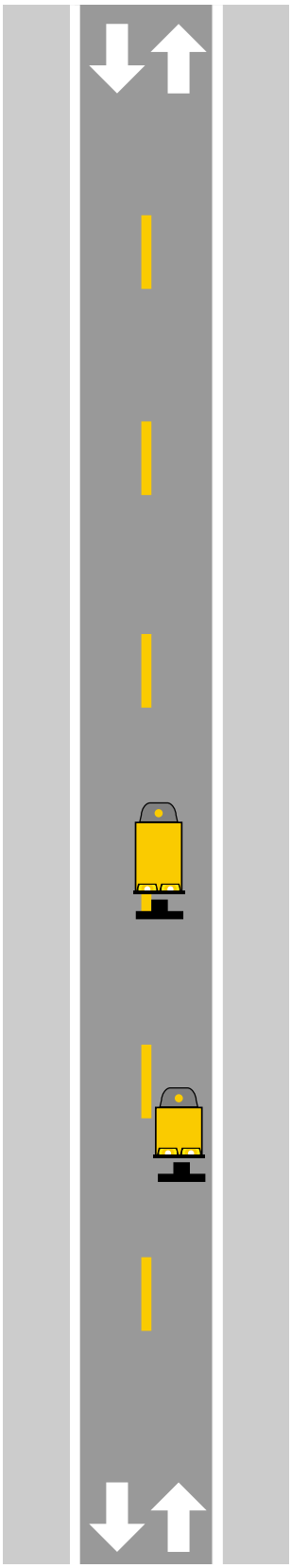
- repeat 30cm X 60cm signs at 50 meter intervals or repeat 30cm X 90cm signs at 100 meter intervals
- reduce spacing of signs around short radius curves

TC-62

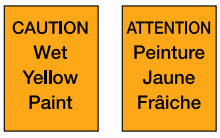
200 m

TC-49

NOT TO SCALE



- Replace TC-115Y(PEI) with TC-115W(PEI) when painting white lines

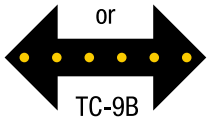


TC-8(PEI) and TC-8(PEI)

TC-115Y(PEI)

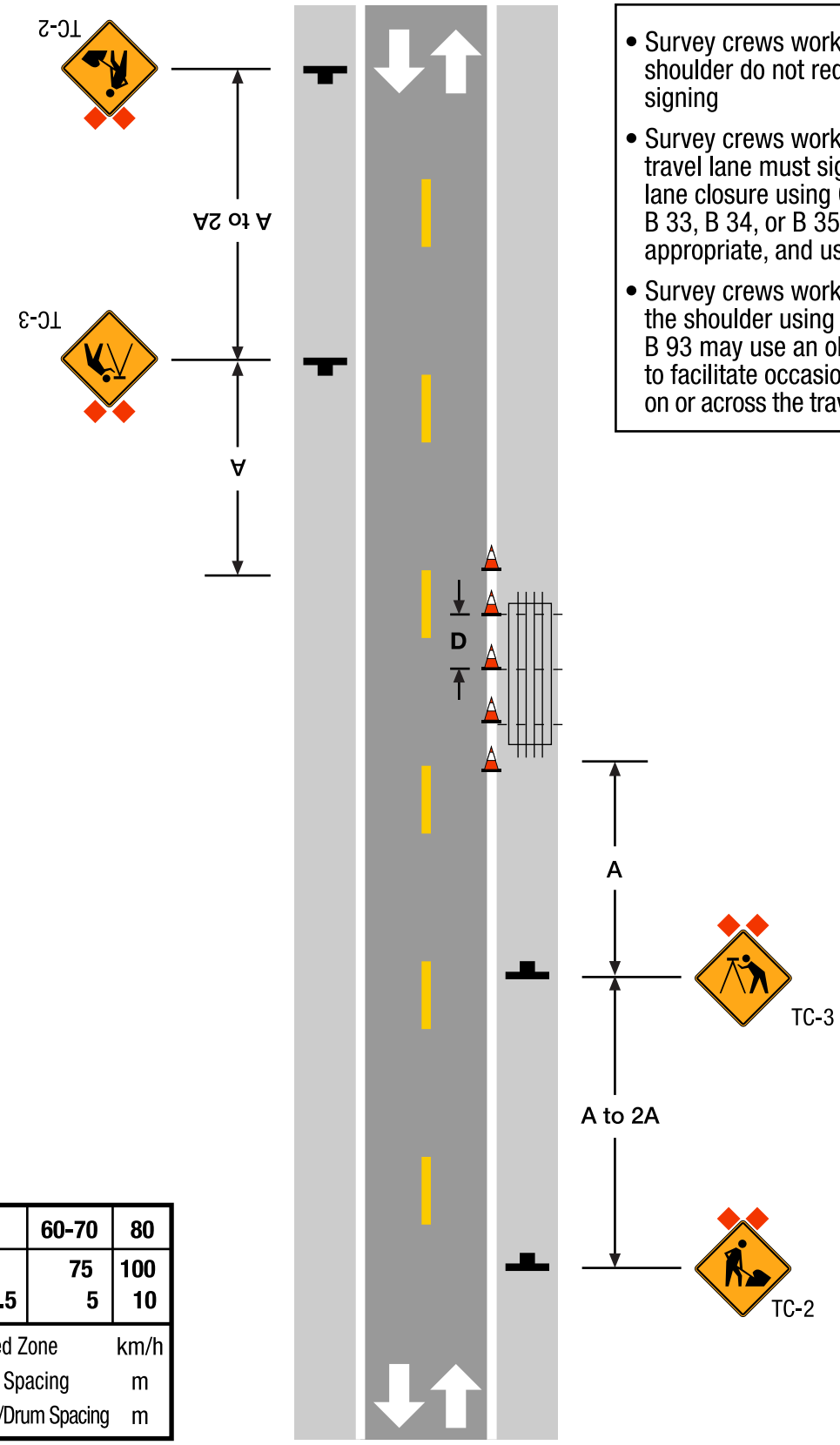
TC-8(PEI) and TC-8(PEI)

or



TC-9B
(PEI)

NOT TO SCALE

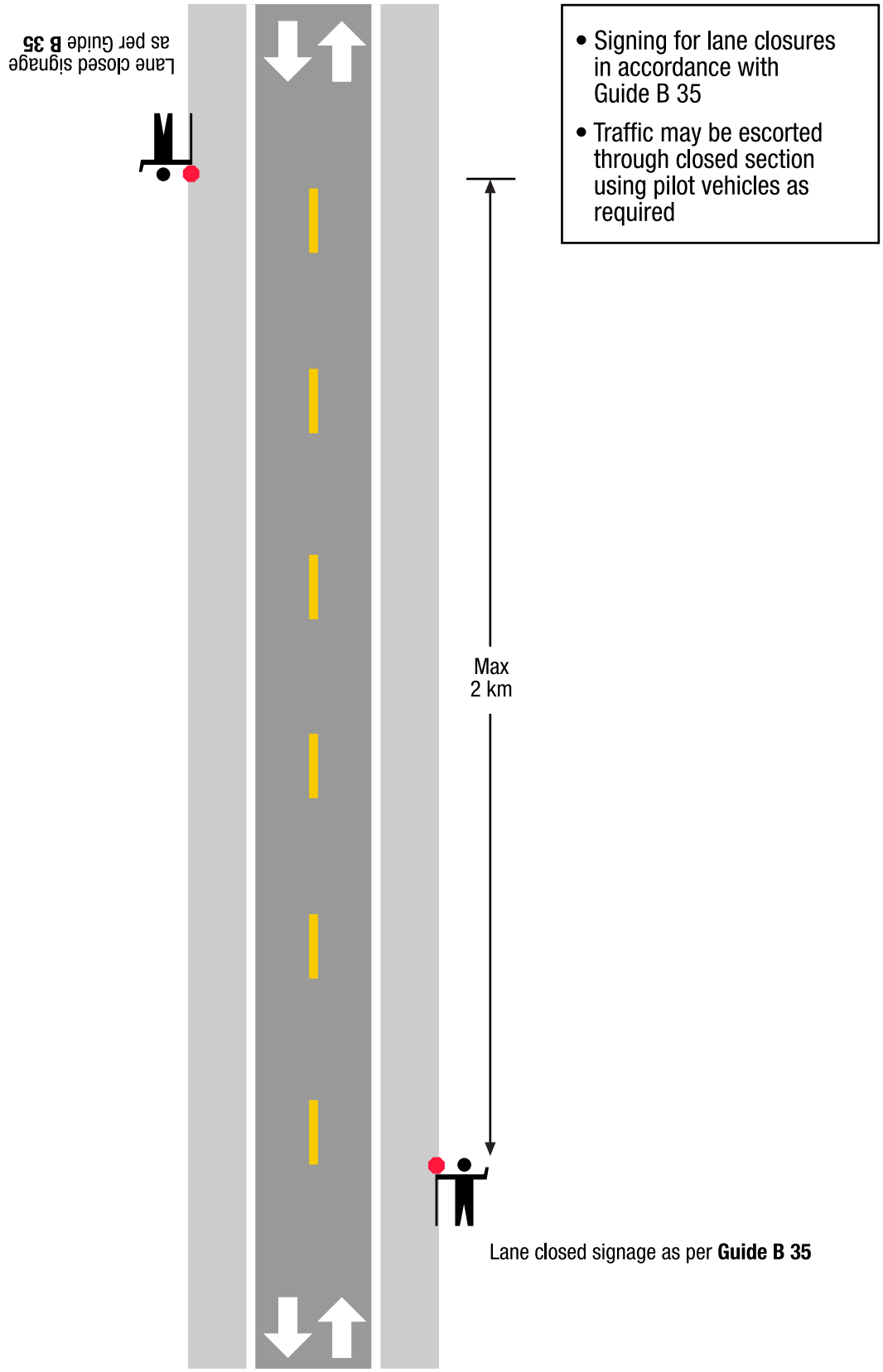


- Survey crews working off shoulder do not require signing
- Survey crews working in a travel lane must sign for a lane closure using Guides B 33, B 34, or B 35 as appropriate, and use TCPs
- Survey crews working on the shoulder using Guide B 93 may use an observer to facilitate occasional trips on or across the travel lanes

V	50	60-70	80
A	50	75	100
D	2.5	5	10

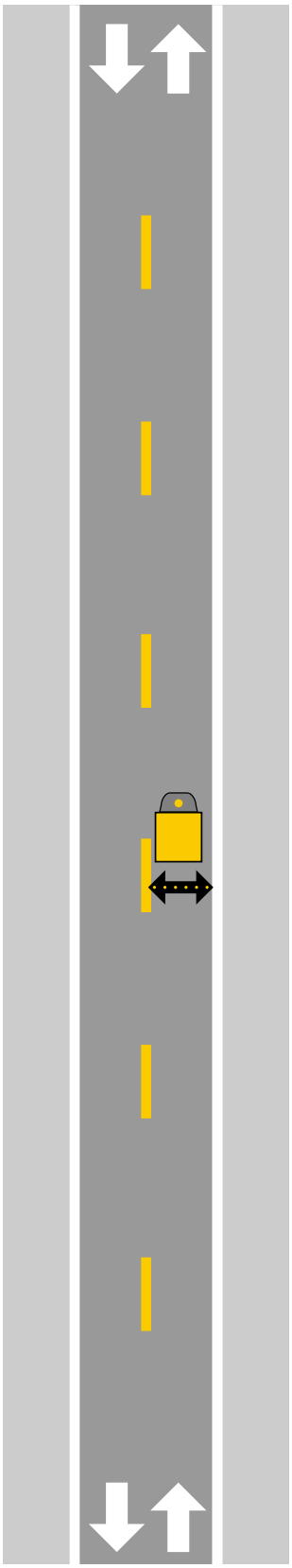
V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

NOT TO SCALE



- Signing for lane closures in accordance with Guide B 35
- Traffic may be escorted through closed section using pilot vehicles as required

NOT TO SCALE

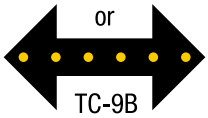


- Low volume highways less than 30 vph during the time work is being carried out

Work Vehicle with

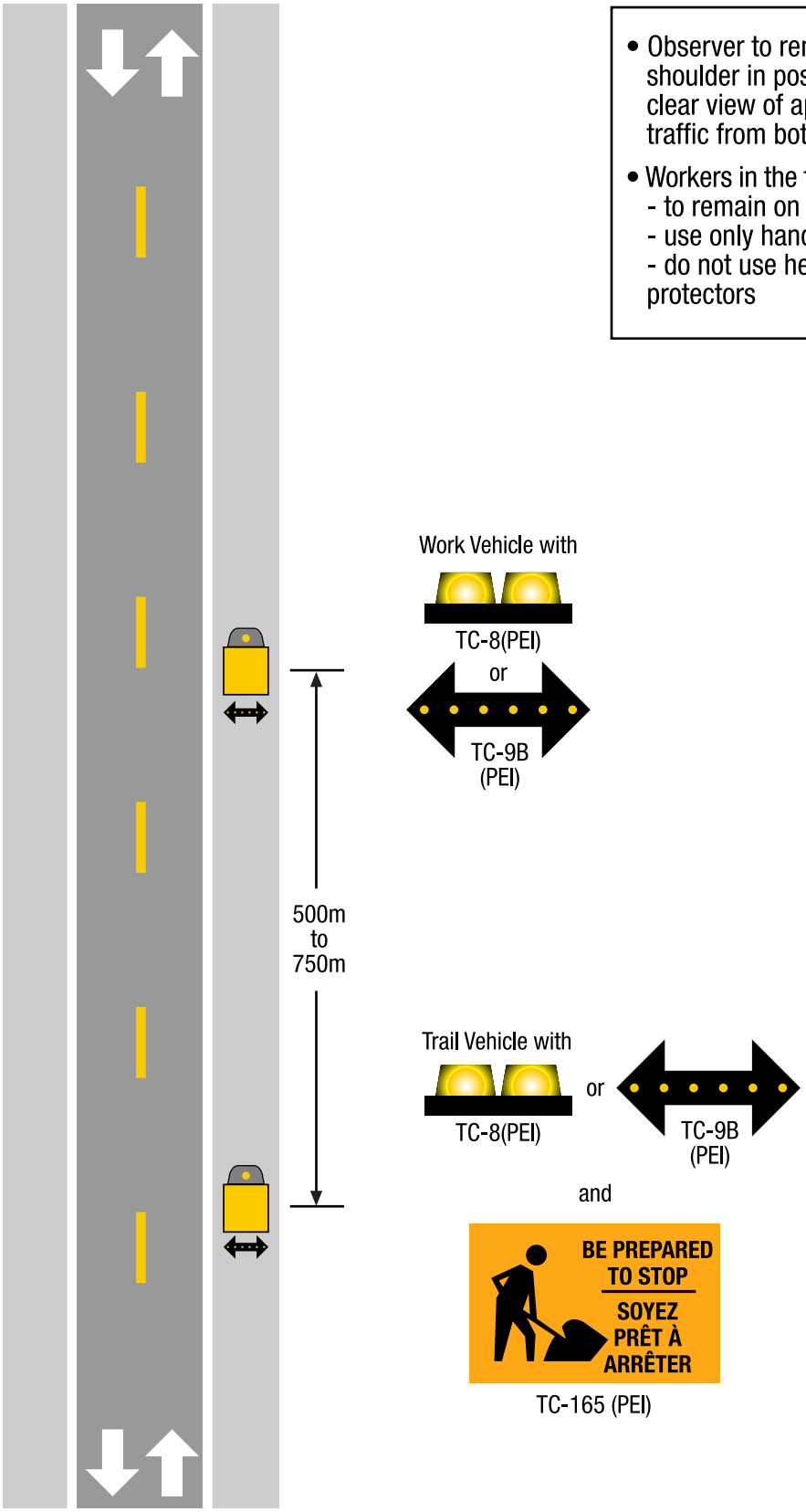
TC-8(PEI)

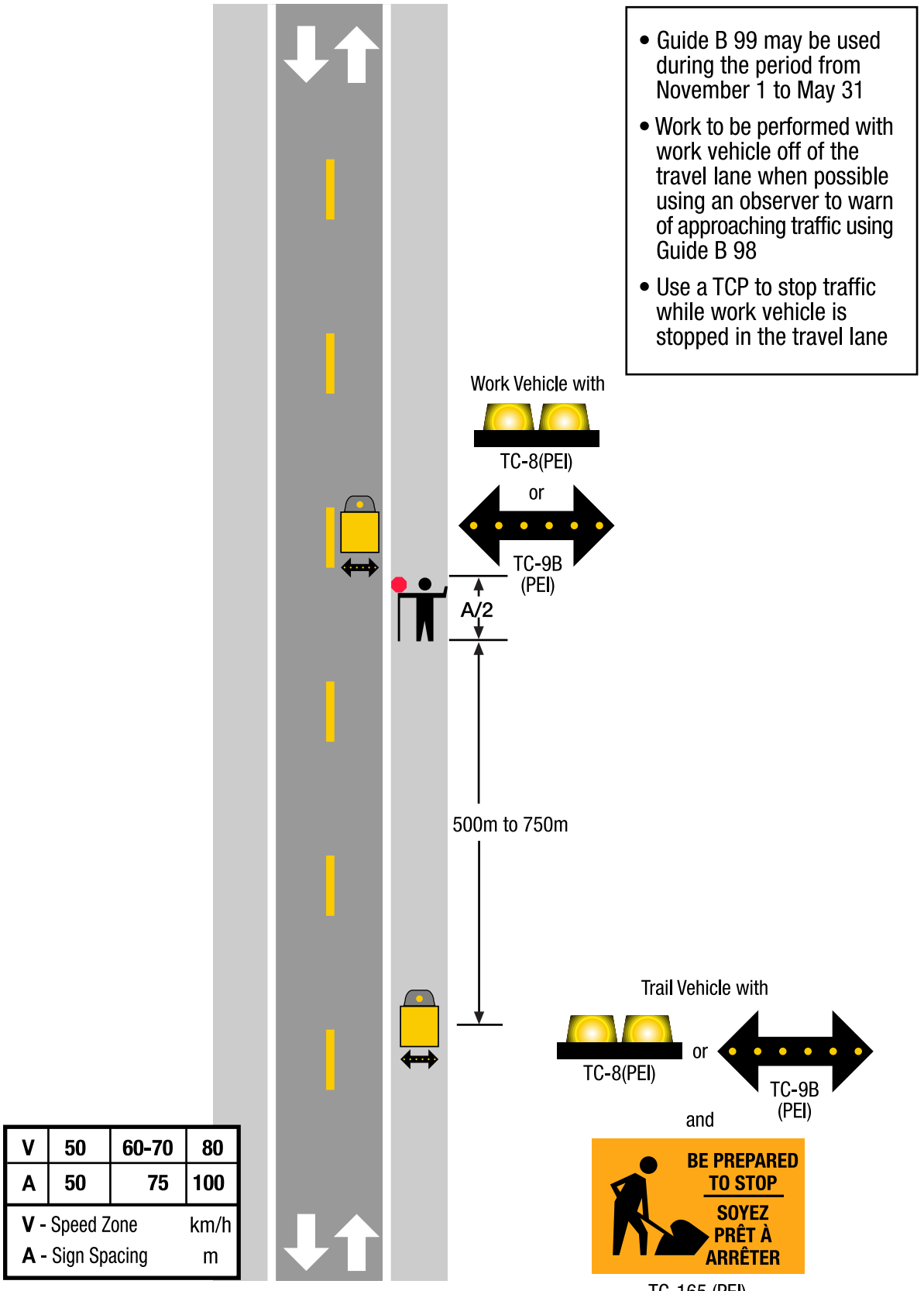
or



TC-9B
(PEI)

NOT TO SCALE


• Observer to remain on shoulder in position with a clear view of approaching traffic from both directions
• Workers in the traffic lanes:
- to remain on their feet
- use only hand tools
- do not use hearing protectors
Work Vehicle with
TC-8(PEI)
or
TC-9B
(PEI)
500m
to
750m
Trail Vehicle with
TC-8(PEI)
or
TC-9B
(PEI)
and
BE PREPARED
TO STOP
SOYEZ
PRÊT À
ARRÊTER
TC-165 (PEI)
NOT TO SCALE


• Guide B 99 may be used during the period from November 1 to May 31
• Work to be performed with work vehicle off of the travel lane when possible using an observer to warn of approaching traffic using Guide B 98
• Use a TCP to stop traffic while work vehicle is stopped in the travel lane
Work Vehicle with
TC-8(PEI)
or
TC-9B (PEI)
A/2
500m to 750m
Trail Vehicle with
TC-8(PEI)
or
TC-9B (PEI)
and
BE PREPARED TO STOP
SOYEZ PRÊT À ARRÊTER
TC-165 (PEI)
V 50 60-70 80
A 50 75 100
V - Speed Zone km/h
A - Sign Spacing m
NOT TO SCALE

Application Guides 'C'
Urban and Residential

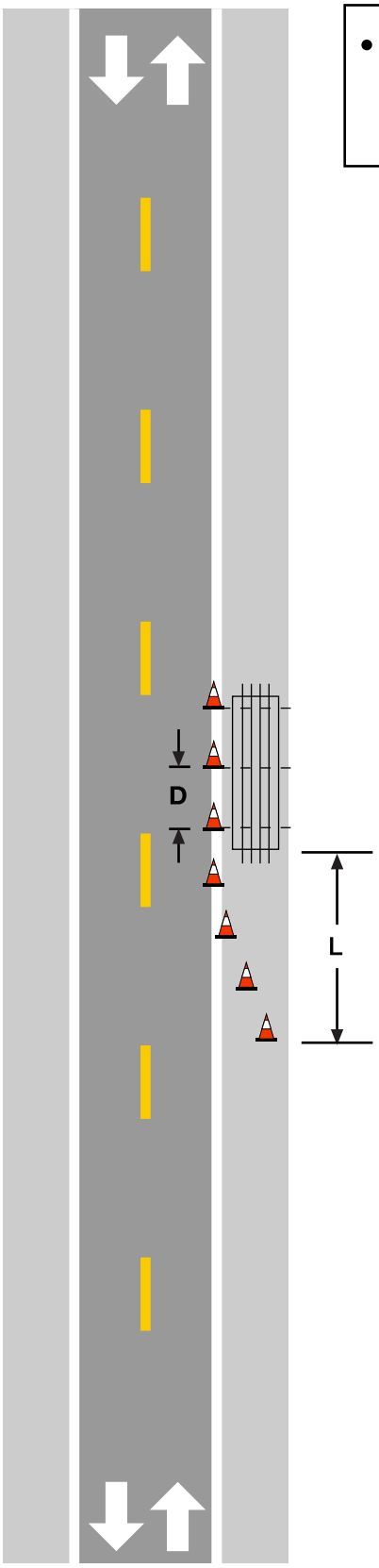
Work Location	**Work Duration**	**Street Type** (Special Condition)	**Guide**
Park Lane / Shoulder	All Durations	Two-Way Two-Lane	C 12
Park Lane / Shoulder	All Durations	Two-Way Two-Lane (Excavation)	C 15
Partial Lane Closed	Very Short Duration	Two-Way Two-Lane (Low Volume)	C 20
Partial Lane Closed	Short Duration	Two-Way Two-Lane (Low Volume)	C 21
Partial Lane Closed	Short Duration	Two-Way Two-Lane	C 22
Lane Closed	Very Short Duration	Two-Way Two-Lane (Low Volume)	C 32
Lane Closed	Very Short Duration	Two-Way Two-Lane	C 33
Lane Closed	Short Duration	Two-Way Two-Lane (Low Volume)	C 34
Lane Closed	Short Duration	Two-Way Two-Lane	C 35
Lane Closed	Long Duration	Two-Way (Traffic Control Signals)	C 51

Signing Illustration	**Work Duration**	**Street Type**	**Guide**
Construction Zone	Long Duration	Two-Way Two-Lane	C 72
Construction and Long Patch	Long Duration	Two-Way Two-Lane	C 73
Temporary Haul Road	All Durations	Two-Way Two-Lane	C 76
Detour	All Durations	Two-Way Two-Lane	C 77

Signing Illustration	**Work Duration**	**Street Type** (Special Condition)	**Guide**
Partial Lane Closed	Short Duration	Intersection (Work Right, Stop Approach)	C 101
Partial Lane Closed	Short Duration	Intersection (Work Centre, Stop Approach)	C 102
Left Turn Lane Closed	Short Duration	Intersection	C 103
Right Lane Shift	Short Duration	Intersection	C 111
Right Lane Closed	Short Duration	Intersection	C 112
Far Right Lane Detour	Short Duration	Intersection	C 114
Within Intersection	Short Duration	Intersection (Altered Centerline)	C 115
Near Right Lane Detour	Short Duration	Intersection	C 119
Right Lane Closed	Short Duration	Intersection (Multi-Lane Approach)	C 121
Left Lane Closed	Short Duration	Intersection (Multi-Lane Approach)	C 122
Two-Way Left Lane Closed	Short Duration	Intersection (Multi-Lane)	C 123
Within Intersection	Short Duration	Intersection (Multi-Lane Approach)	C 135
Within Intersection	Short Duration	Intersection (Crossing Movement Closed)	C 139

Special Operations

Work Type	**Work Duration**	**Highway Type**	**Guide**
Line Painting	Mobile Continuous	Two-Way Two-Lane	C 91
Survey Crew	Short Duration	Two-Way Two-Lane	C 93
Lane Closed	Mobile Continuous	Two-Way Two-Lane	C 96
Observer Workers	Very Short Duration	Two-Way Two-Lane	C 98

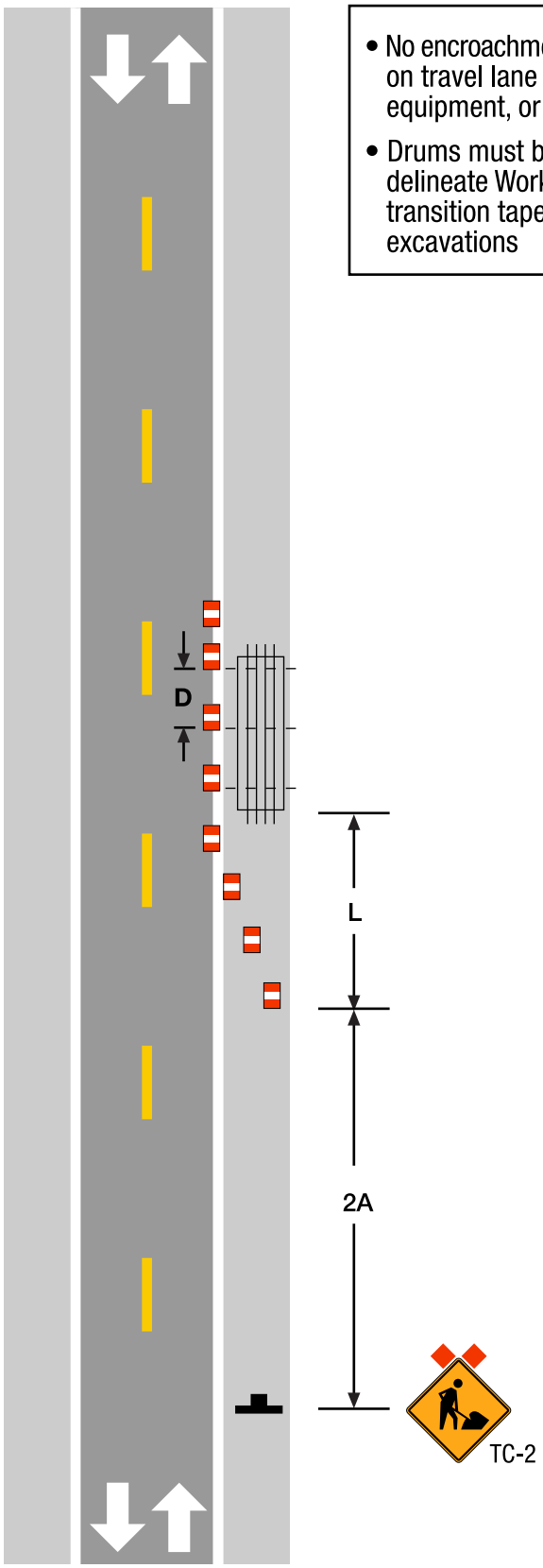


- No encroachment permitted on travel lane by workers, equipment, or vehicles

V	≤50
L	30
D	2.5

V - Speed Zone	km/h
L - Taper Length	m
D - Cone/Drum Spacing	m

NOT TO SCALE

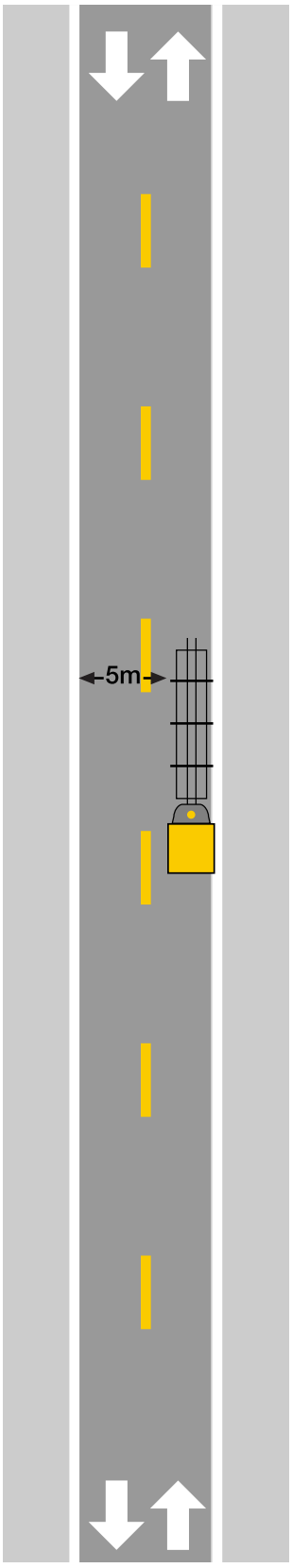


- No encroachment permitted on travel lane by workers, equipment, or vehicles
- Drums must be used to delineate Work Area and transition taper for excavations

V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

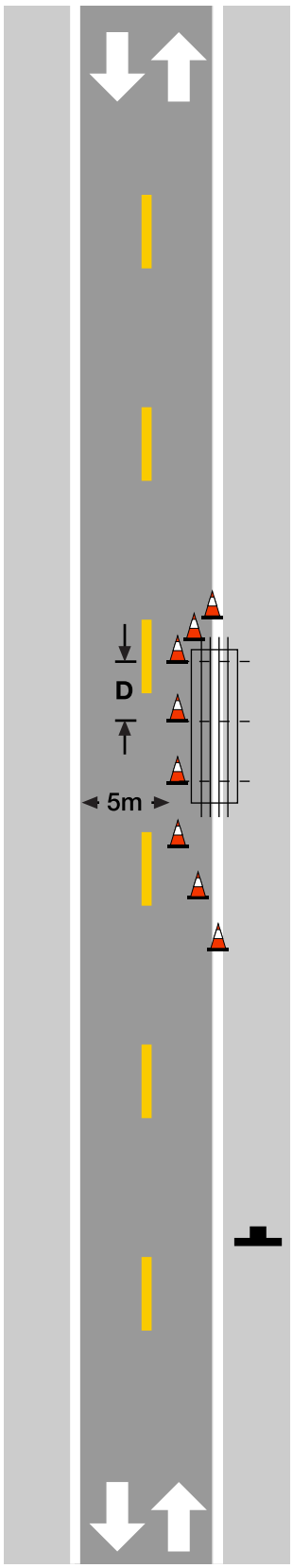
NOT TO SCALE



- Minimum of 5 meters travel width must be maintained
- Work Vehicle should be positioned to protect workers
- If Work Vehicle can not be positioned to protect workers, an observer must be used

Work Vehicle

NOT TO SCALE



- Road Narrows TC-34 should be placed “A” before Road Work TC-2 if sight distance is restricted

TC-34

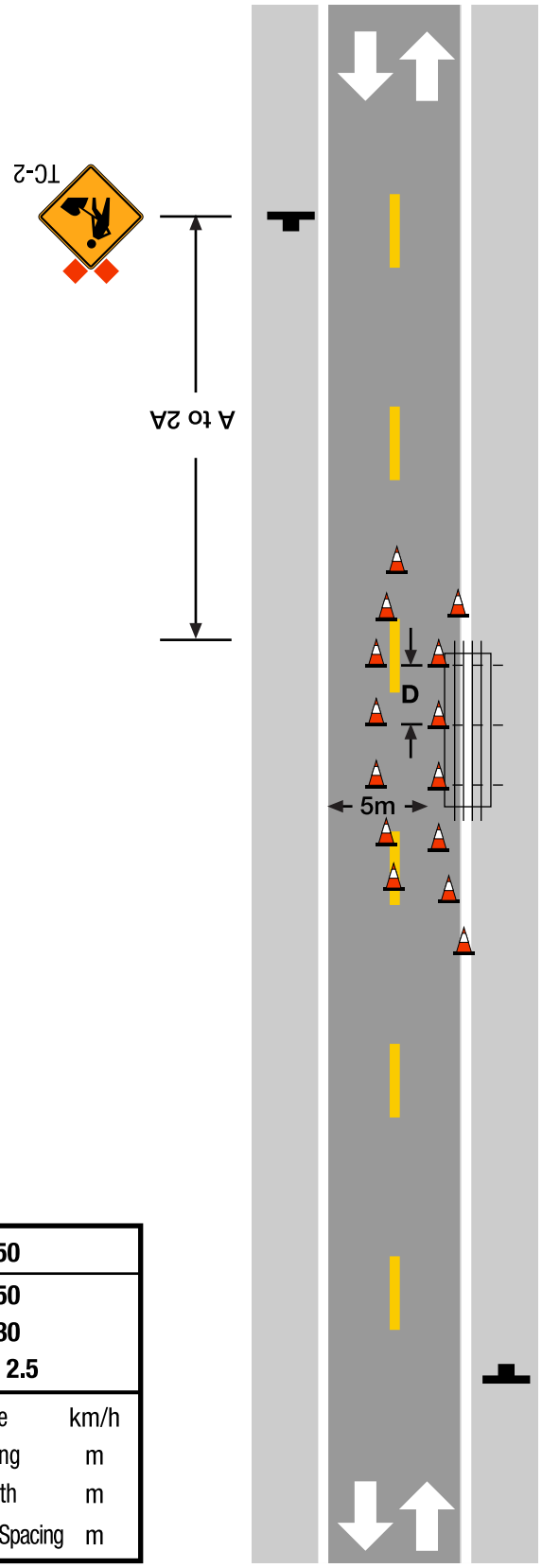
- Minimum of 5 meters travel width must be maintained

TC-2

V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m

NOT TO SCALE

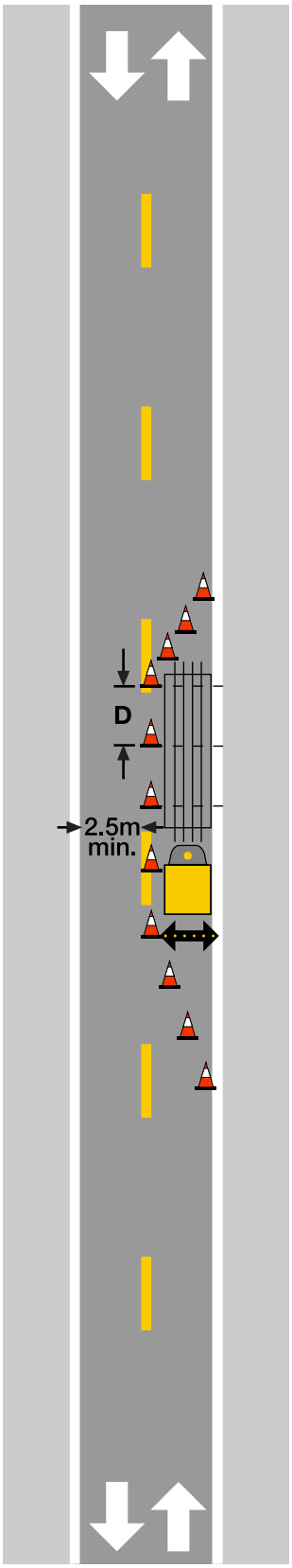


- Road Narrows TC-34 should be placed "A" before Road Work TC-2 if sight distance is restricted
- Cones must be used to delineate an altered centerline
- Keep Right RB-25 may be used with altered centerline
- Minimum of 5 meters travel width must be maintained

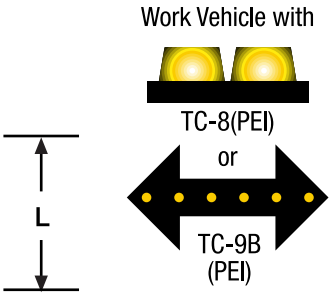
V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

NOT TO SCALE



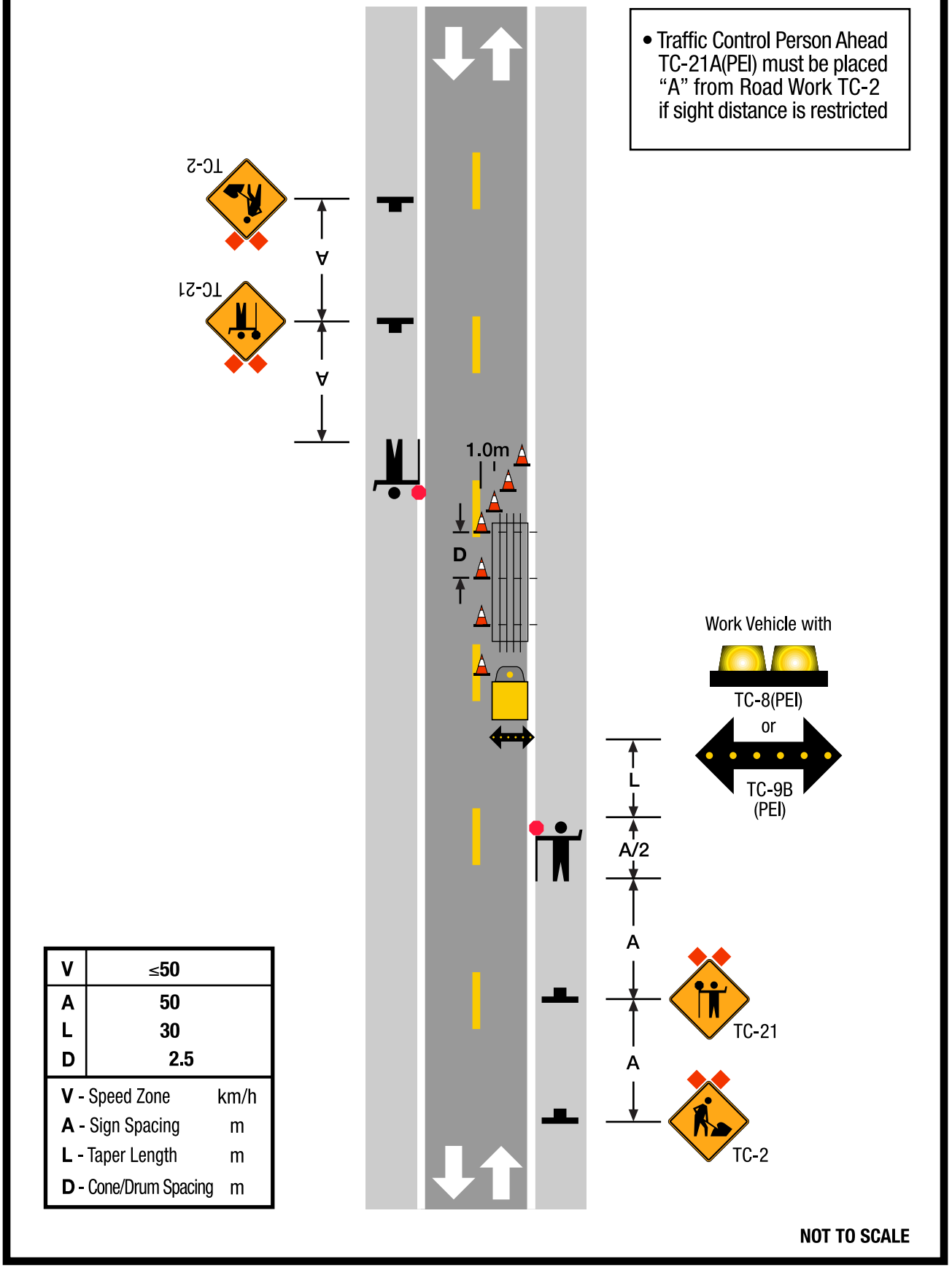
- Low volume roads less than 30 vph during the time work is being carried out
- Drivers must be able to clearly see the entire one-lane section



V	**≤50**
L	**30**
D	**2.5**

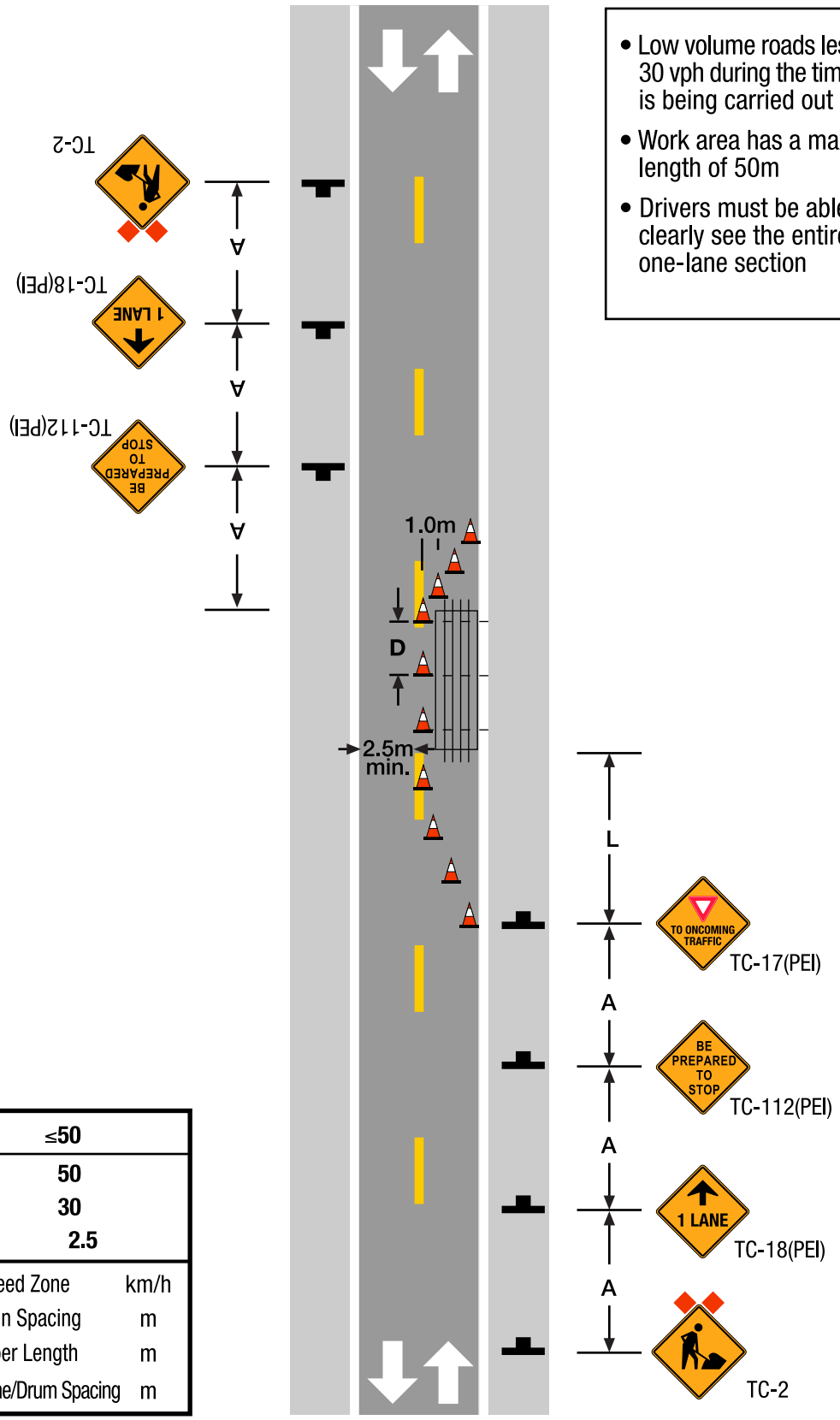
V - Speed Zone	km/h
L - Taper Length	m
D - Cone/Drum Spacing	m

NOT TO SCALE



V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

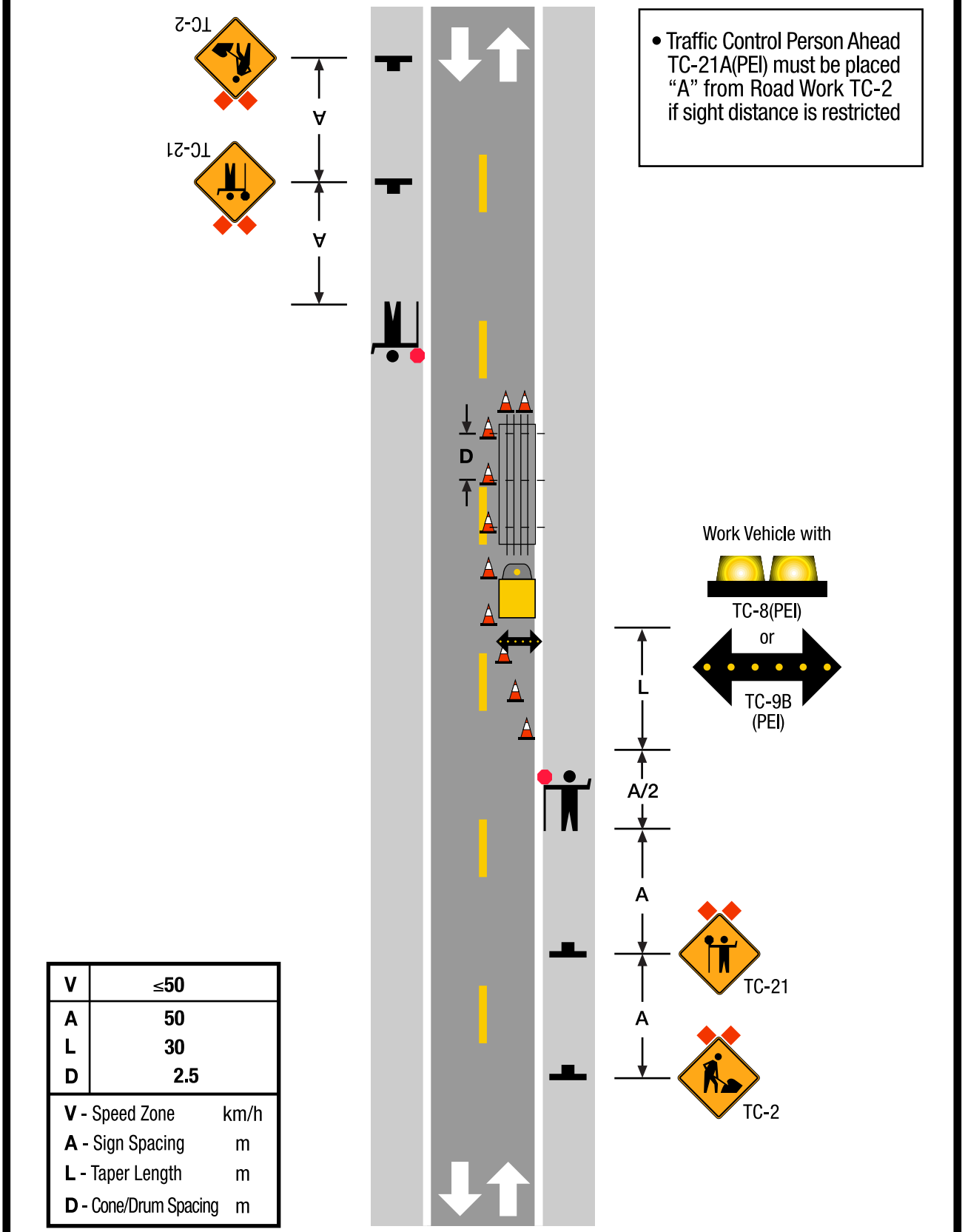


- Low volume roads less than 30 vph during the time work is being carried out
- Work area has a maximum length of 50m
- Drivers must be able to clearly see the entire one-lane section

V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

NOT TO SCALE

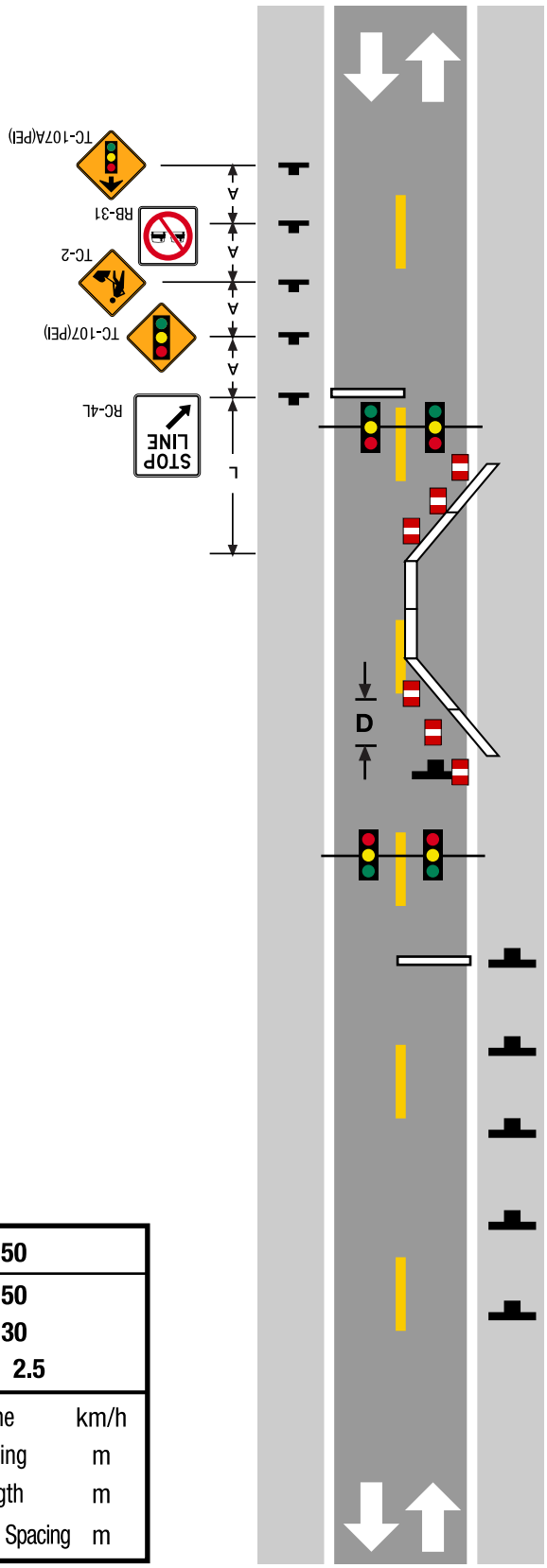


- Traffic Control Person Ahead TC-21A(PEI) must be placed "A" from Road Work TC-2 if sight distance is restricted

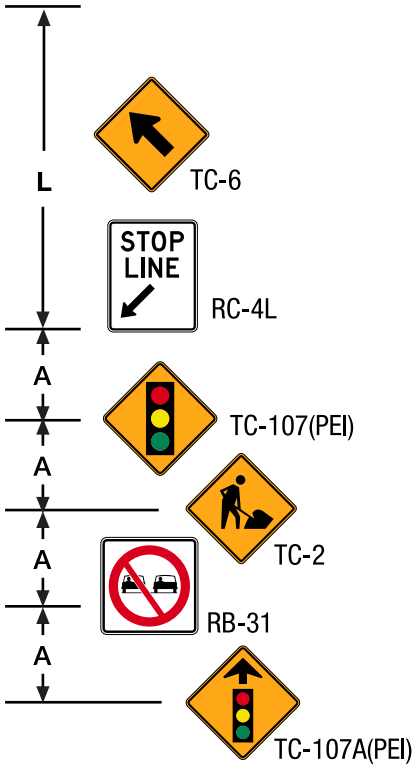
V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

NOT TO SCALE



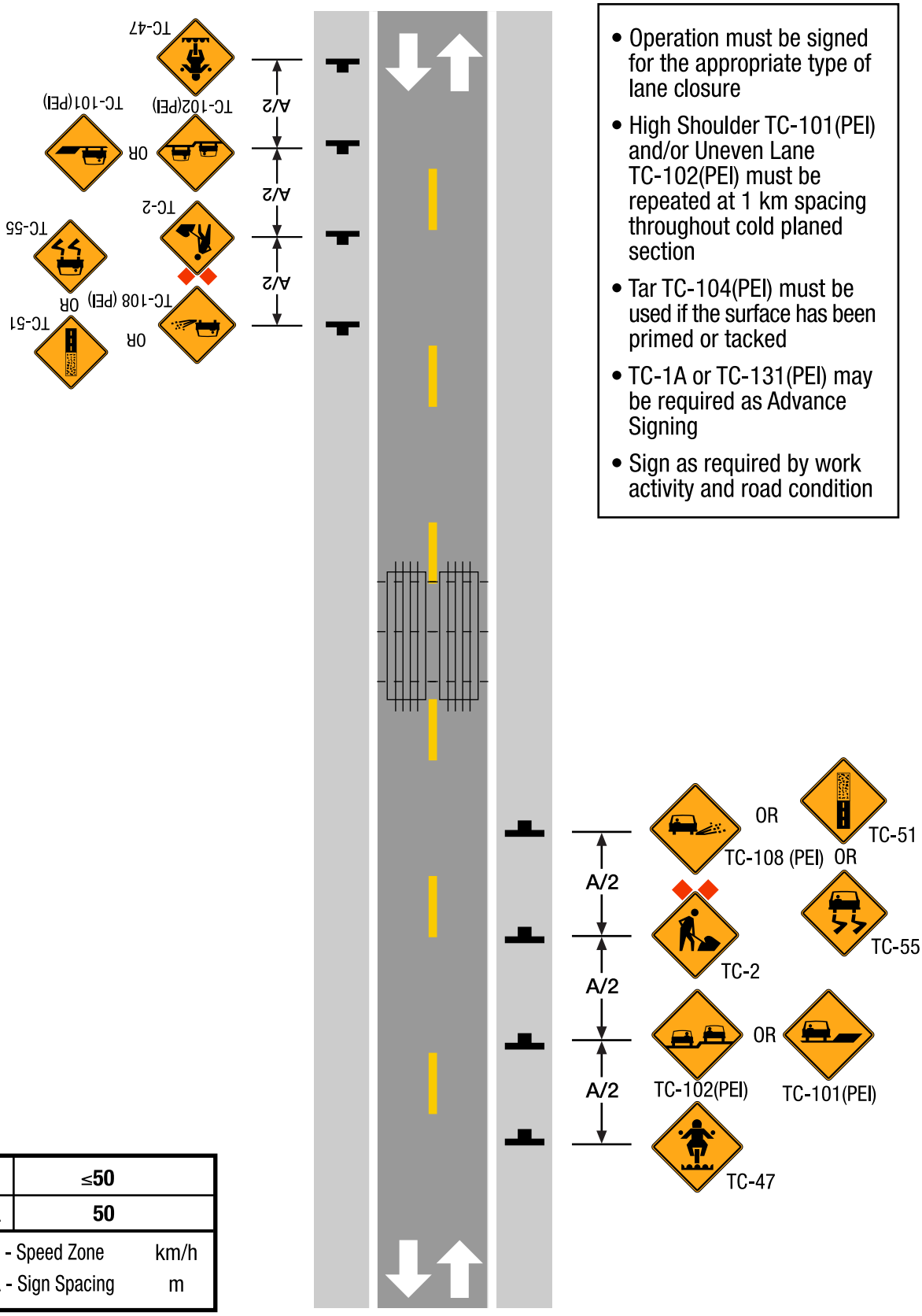
- For a long duration lane closure New Jersey Barriers must be used to protect workers
- Installation of traffic signals requires approval of the Traffic Authority
- If traffic control signals are not operating,replace TC-107(PEI) with TC-21 and TC-107A(PEI) with TC-21A and use TCPs



V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

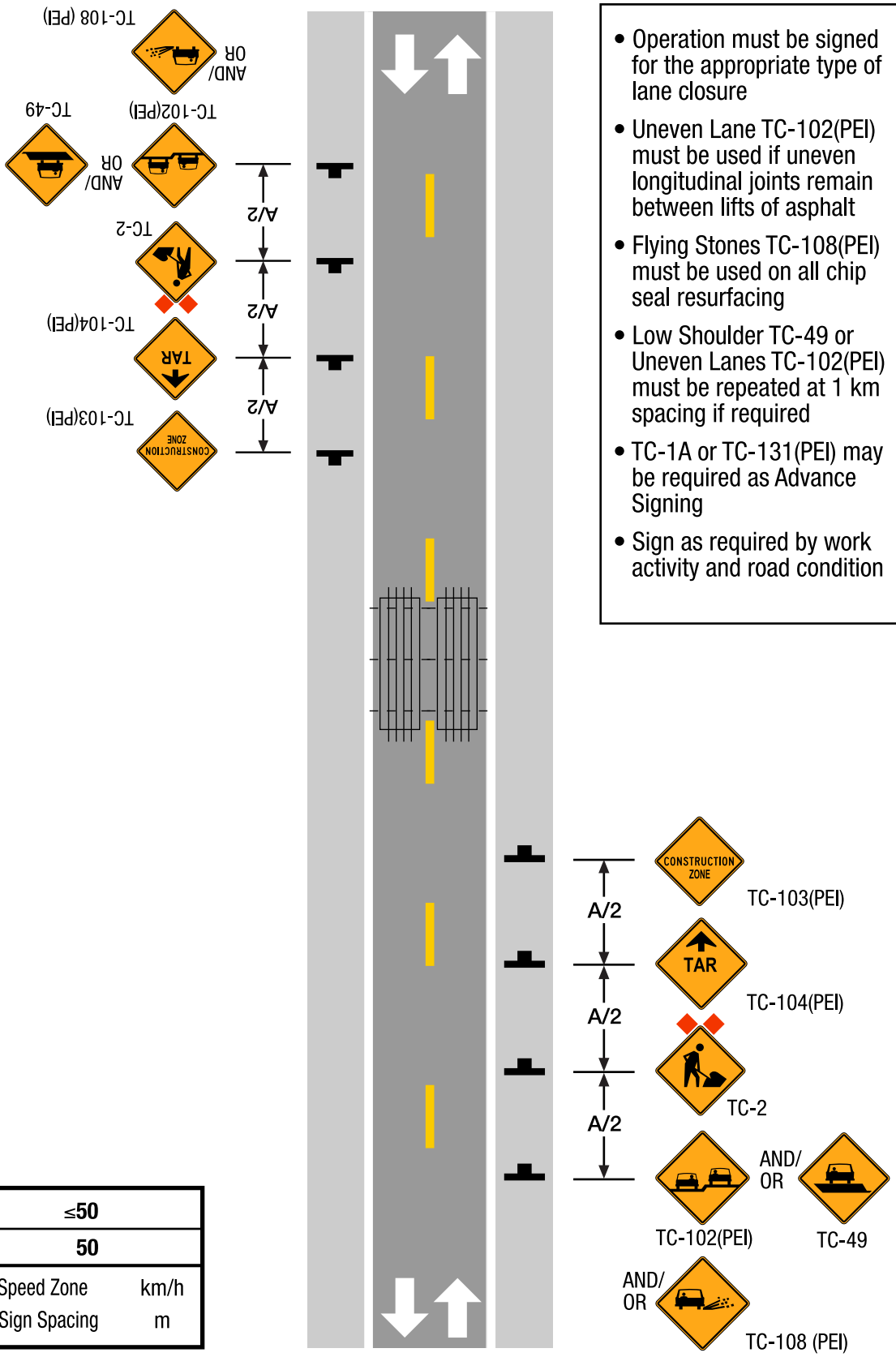
NOT TO SCALE



- Operation must be signed for the appropriate type of lane closure
- High Shoulder TC-101(PEI) and/or Uneven Lane TC-102(PEI) must be repeated at 1 km spacing throughout cold planed section
- Tar TC-104(PEI) must be used if the surface has been primed or tacked
- TC-1A or TC-131(PEI) may be required as Advance Signing
- Sign as required by work activity and road condition

V	**≤50**
A	**50**
V - Speed Zone	km/h
A - Sign Spacing	m

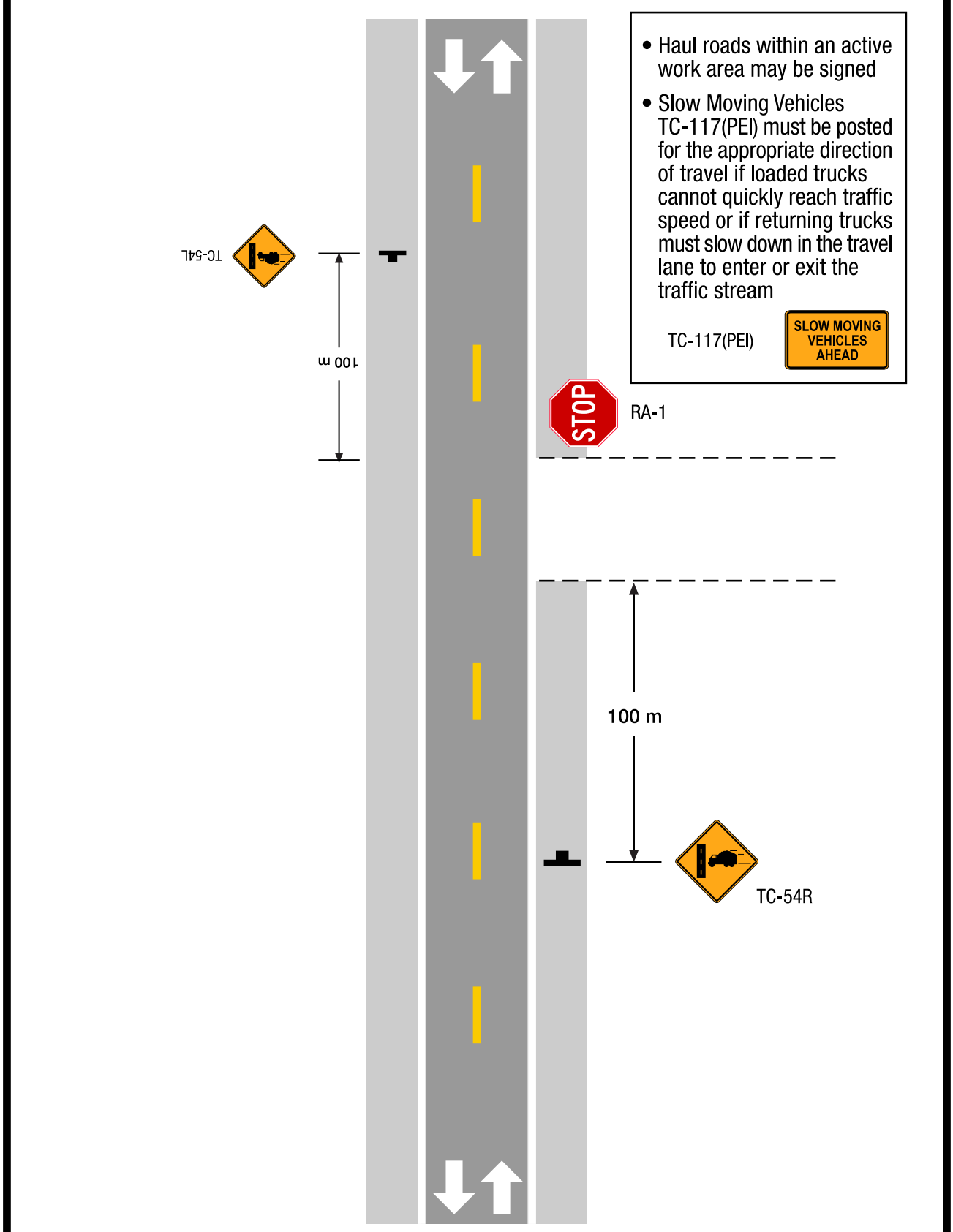
NOT TO SCALE

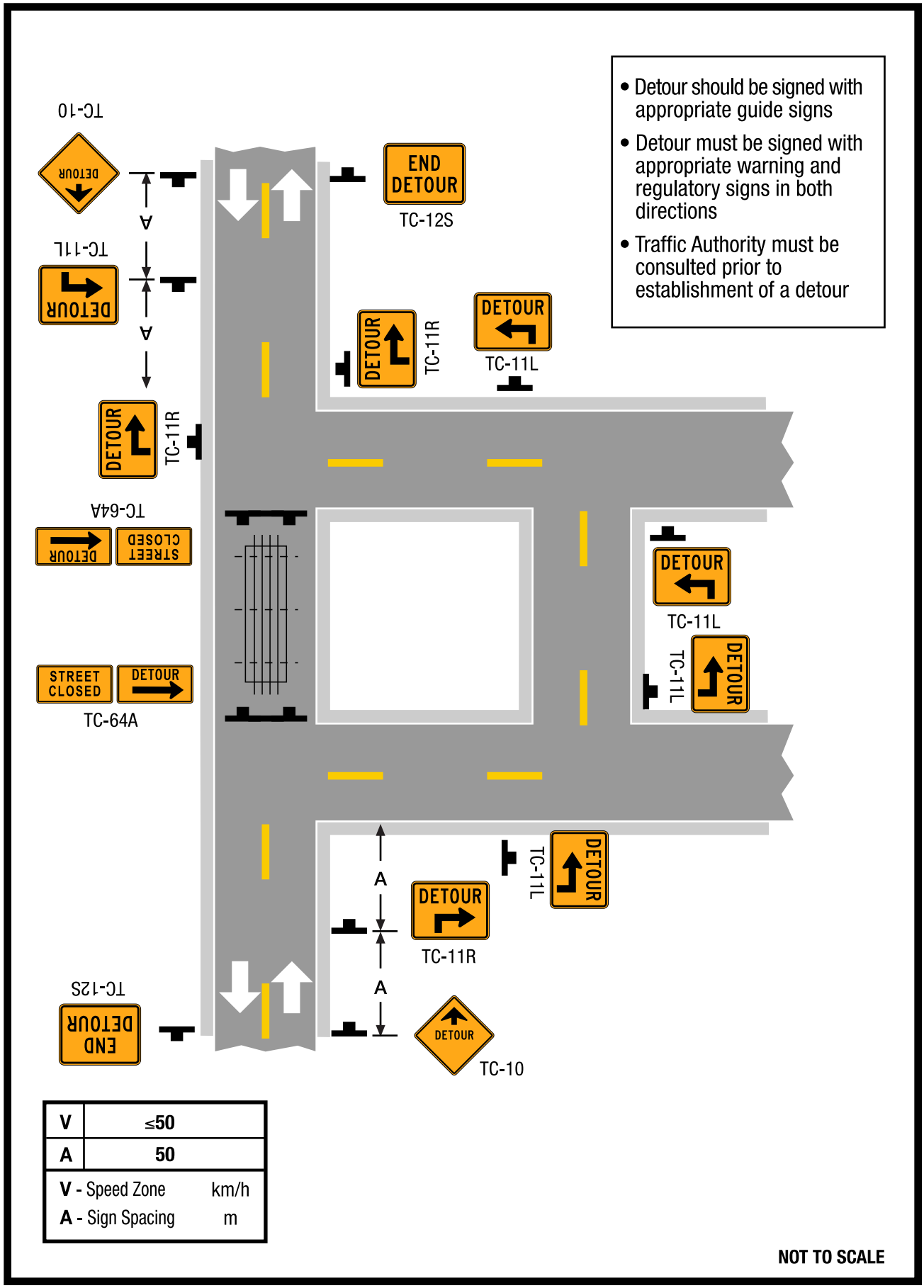


- Operation must be signed for the appropriate type of lane closure
- Uneven Lane TC-102(PEI) must be used if uneven longitudinal joints remain between lifts of asphalt
- Flying Stones TC-108(PEI) must be used on all chip seal resurfacing
- Low Shoulder TC-49 or Uneven Lanes TC-102(PEI) must be repeated at 1 km spacing if required
- TC-1A or TC-131(PEI) may be required as Advance Signing
- Sign as required by work activity and road condition

V	**≤50**
A	**50**
V - Speed Zone	km/h
A - Sign Spacing	m

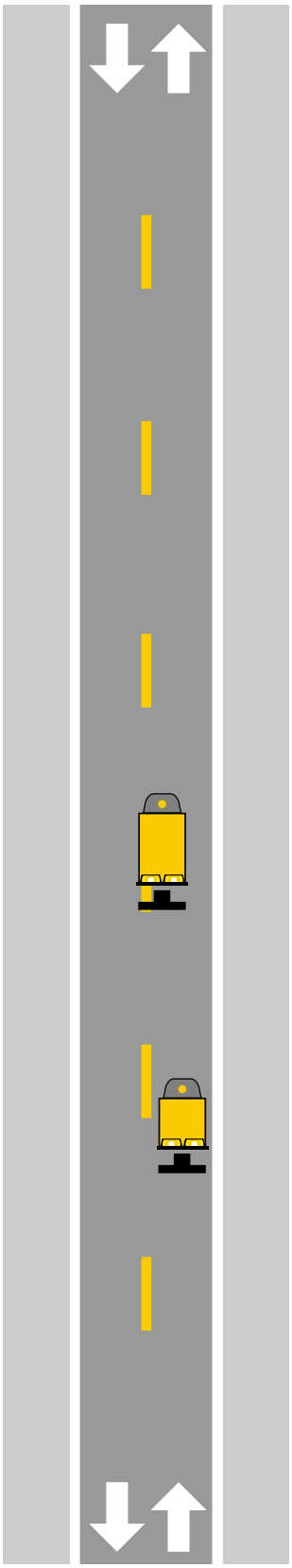
NOT TO SCALE


• Haul roads within an active work area may be signed
• Slow Moving Vehicles TC-117(PEI) must be posted for the appropriate direction of travel if loaded trucks cannot quickly reach traffic speed or if returning trucks must slow down in the travel lane to enter or exit the traffic stream
TC-117(PEI)
SLOW MOVING VEHICLES AHEAD
TC-54L
100 m
STOP
RA-1
100 m
TC-54R
NOT TO SCALE

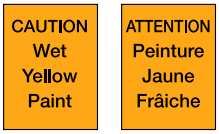


V	**≤50**
A	**50**
V - Speed Zone	km/h
A - Sign Spacing	m

NOT TO SCALE

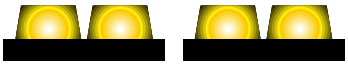


- Replace TC-115Y(PEI) with TC-115W(PEI) when painting white lines



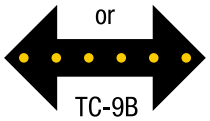
TC-8(PEI) and TC-8(PEI)

TC-115Y(PEI)



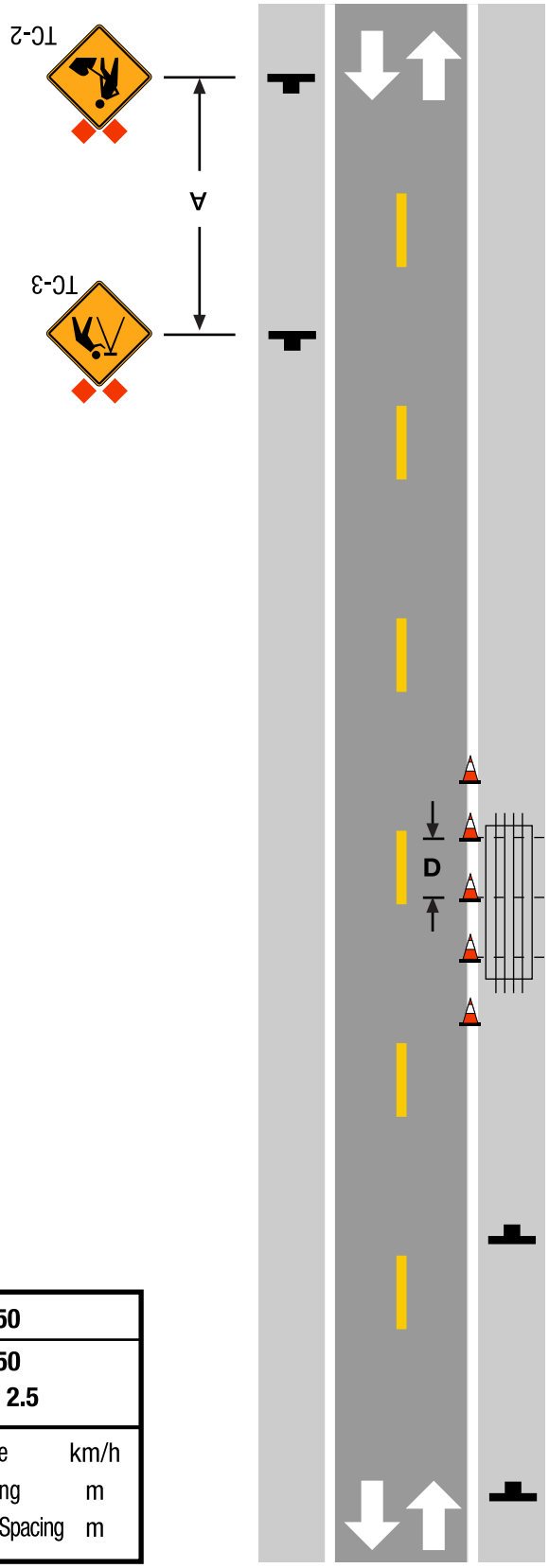
TC-8(PEI) and TC-8(PEI)

or



TC-9B
(PEI)

NOT TO SCALE

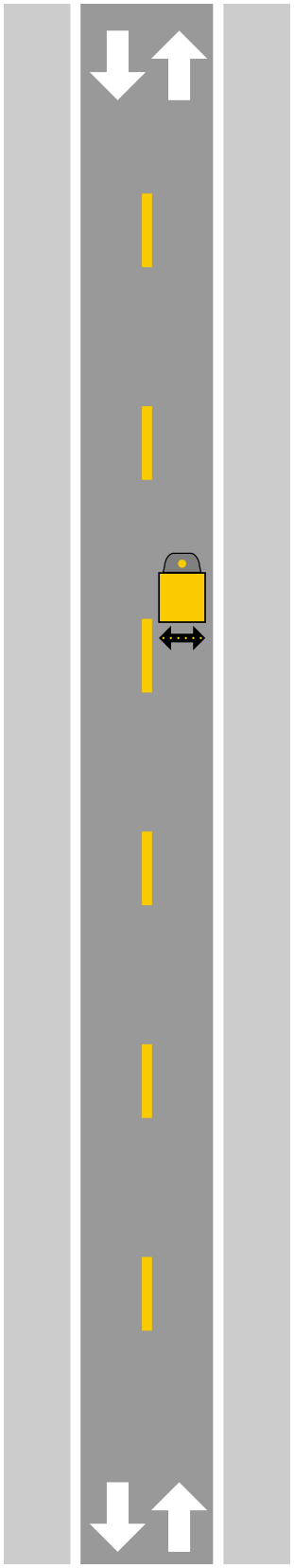


- Survey crews working off the shoulder do not require signing
- Survey crews working in a travel lane must sign for a lane closure
- Survey crews working on the shoulder using Guide C 93 may use an observer to facilitate occasional trips on or across the travel lanes

V	≤50
A	50
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

NOT TO SCALE

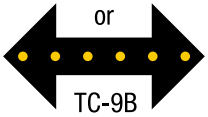


- Vehicles must not stop in travel lane

Work Vehicle with

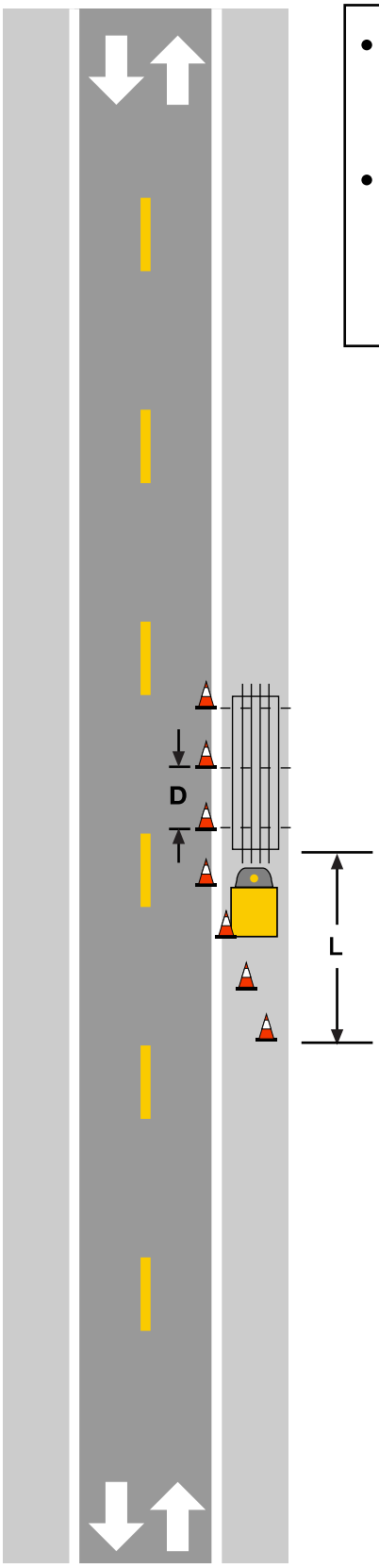
TC-8(PEI)

or



TC-9B
(PEI)

NOT TO SCALE

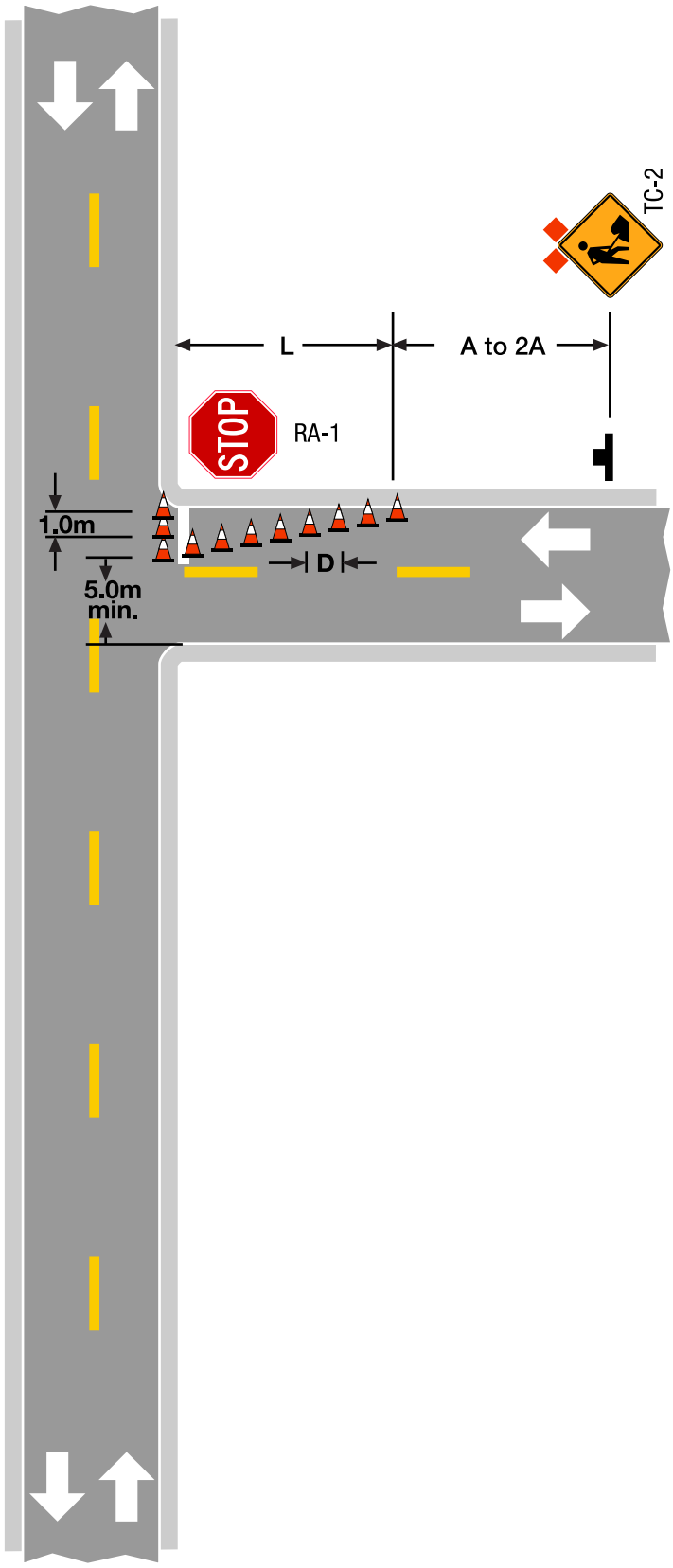


- Observer to remain on shoulder in position with a clear view of approaching traffic from both directions
- Workers in the traffic lanes:
  - to remain on their feet
  - use only hand tools
  - do not use hearing protectors

V	≤50
L	30
D	2.5

V - Speed Zone	km/h
L - Taper Length	m
D - Cone/Drum Spacing	m

NOT TO SCALE



V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m

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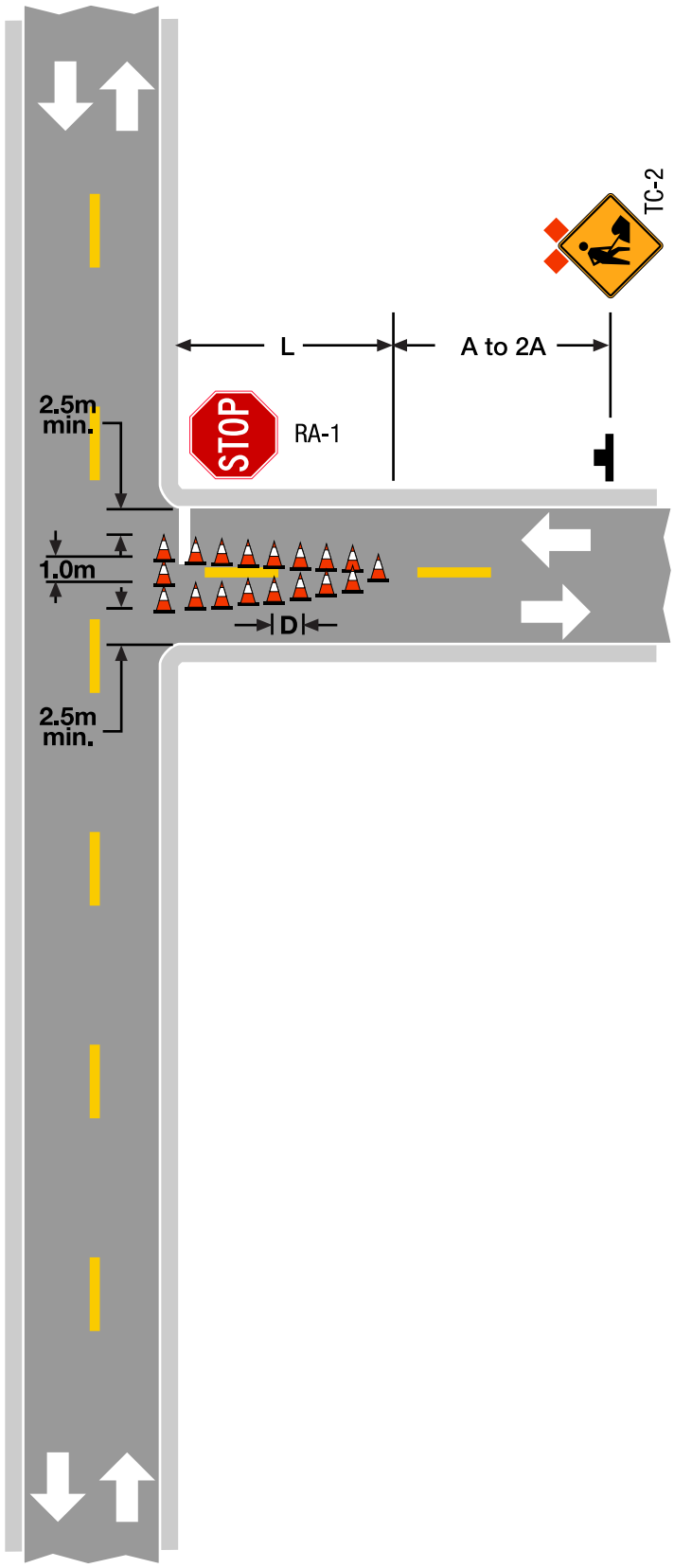

V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m

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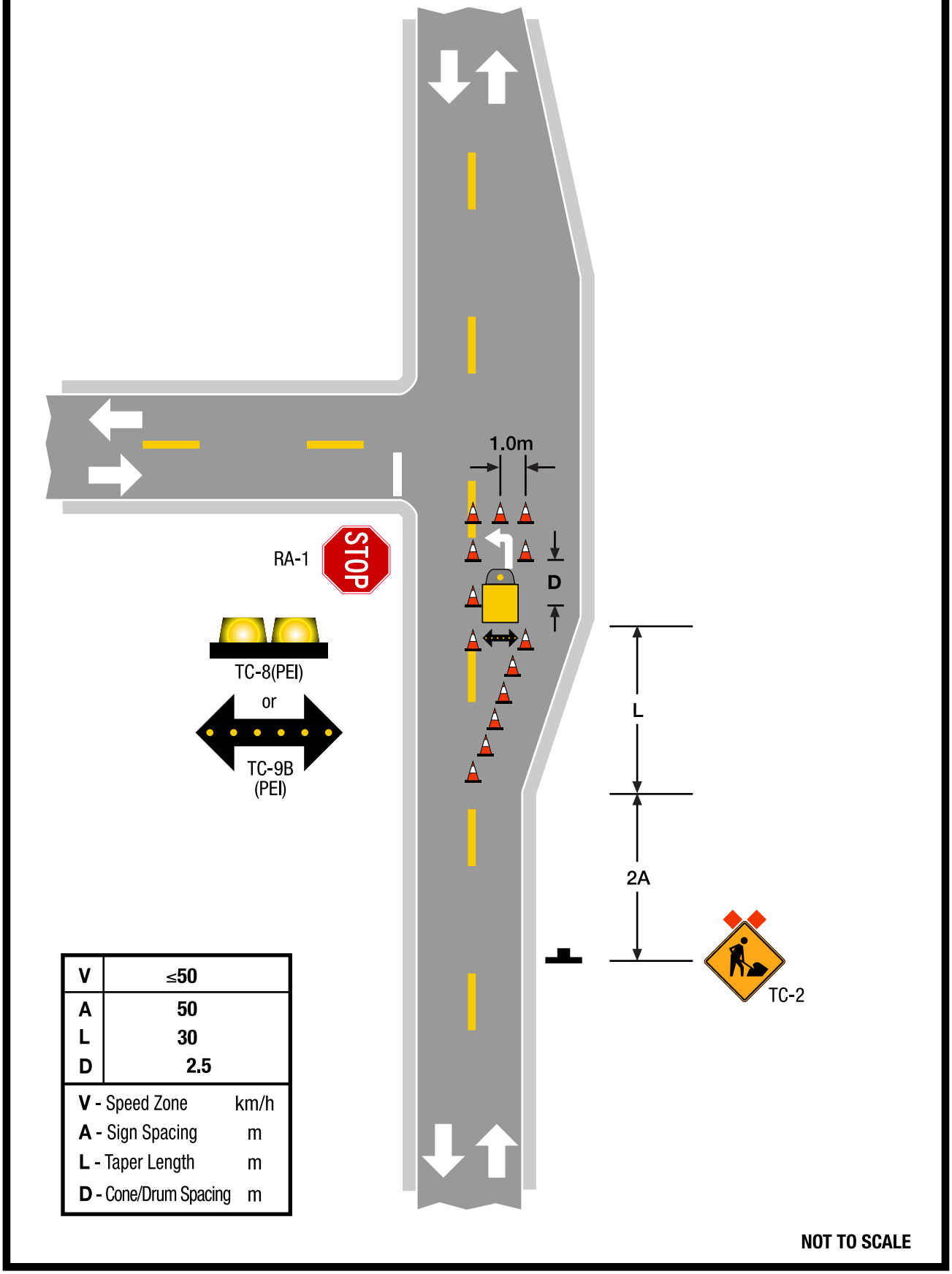

V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

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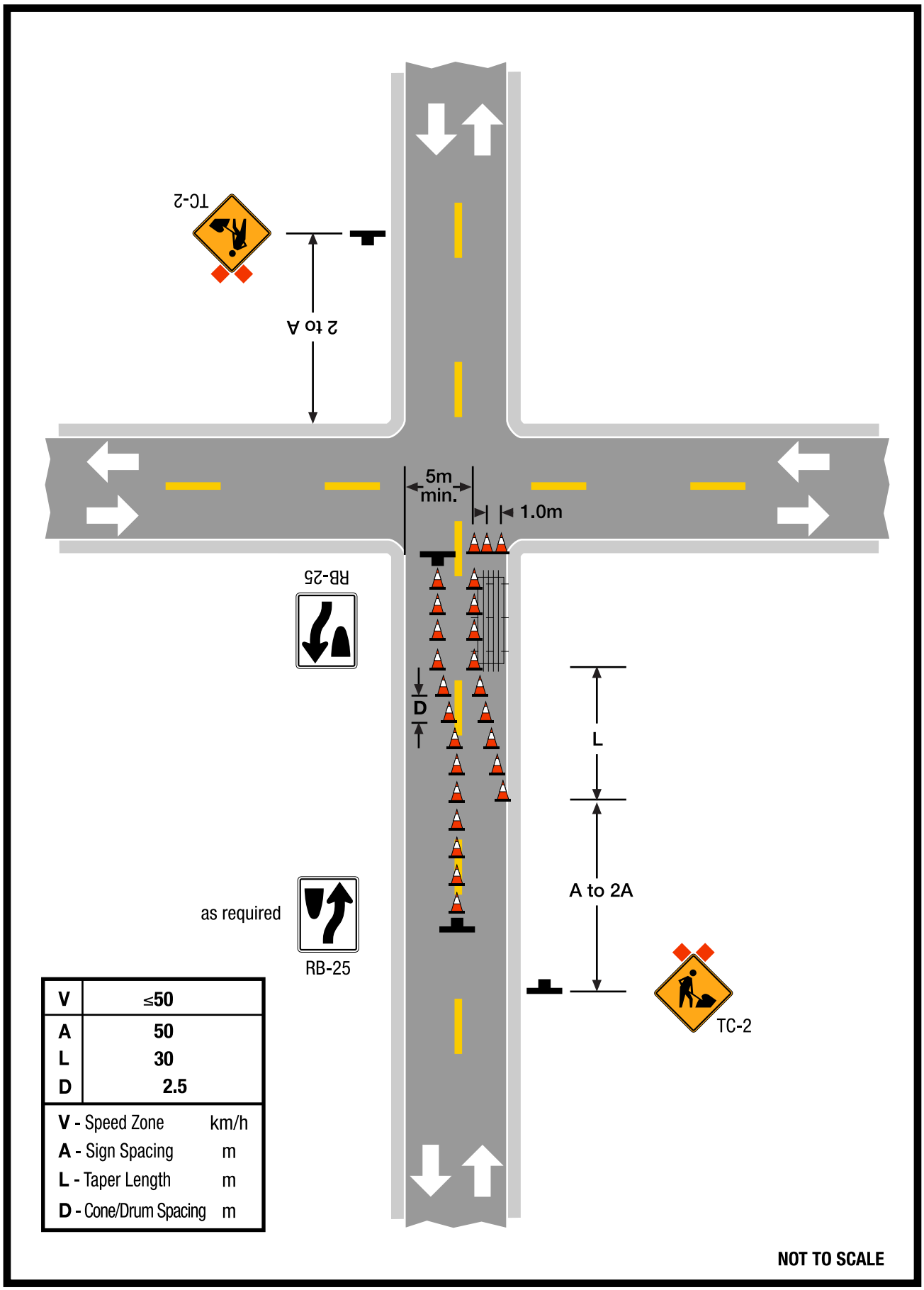

V	≤50
A	50
L	30
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
L - Taper Length m
D - Cone/Drum Spacing m

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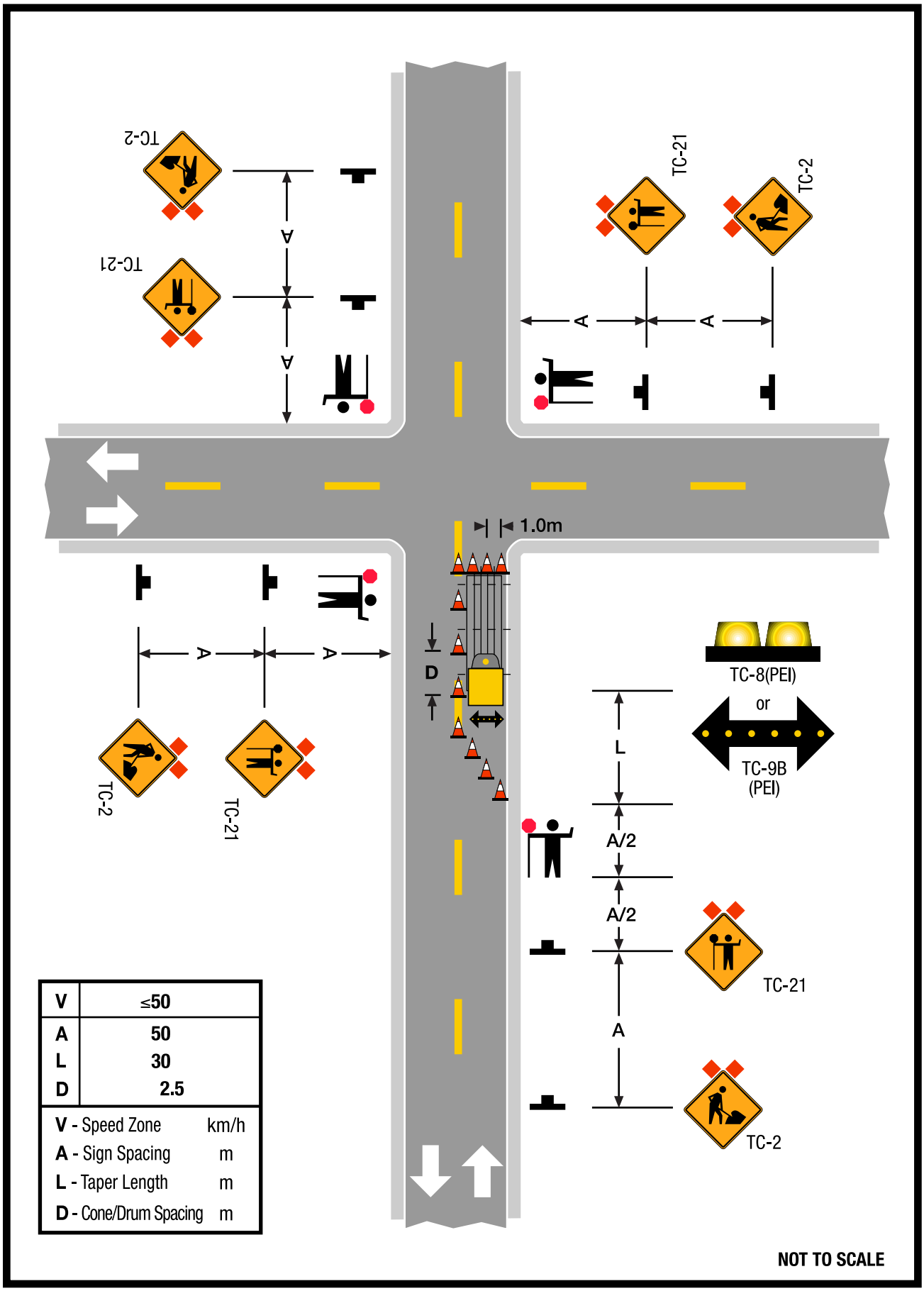
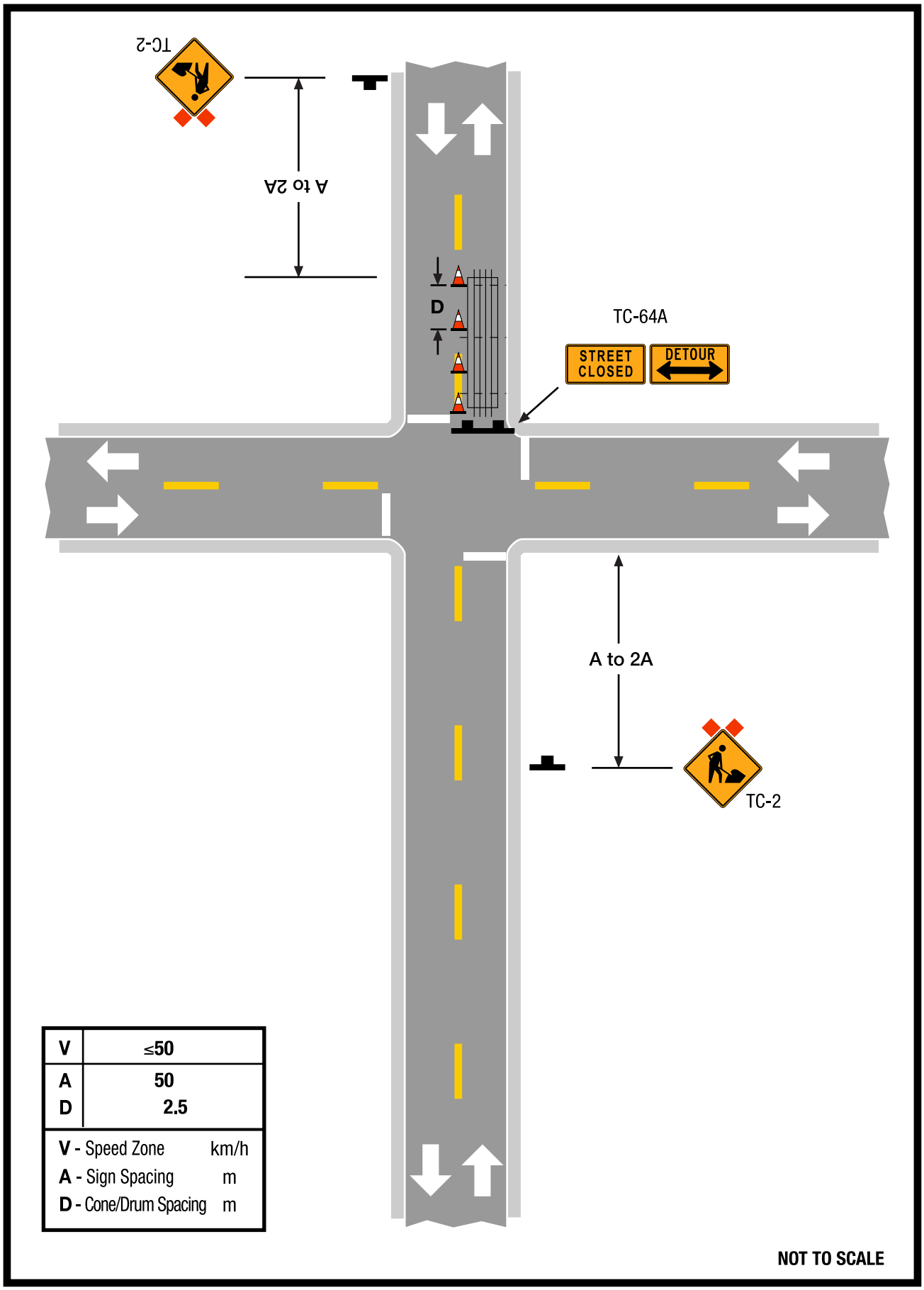


V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m

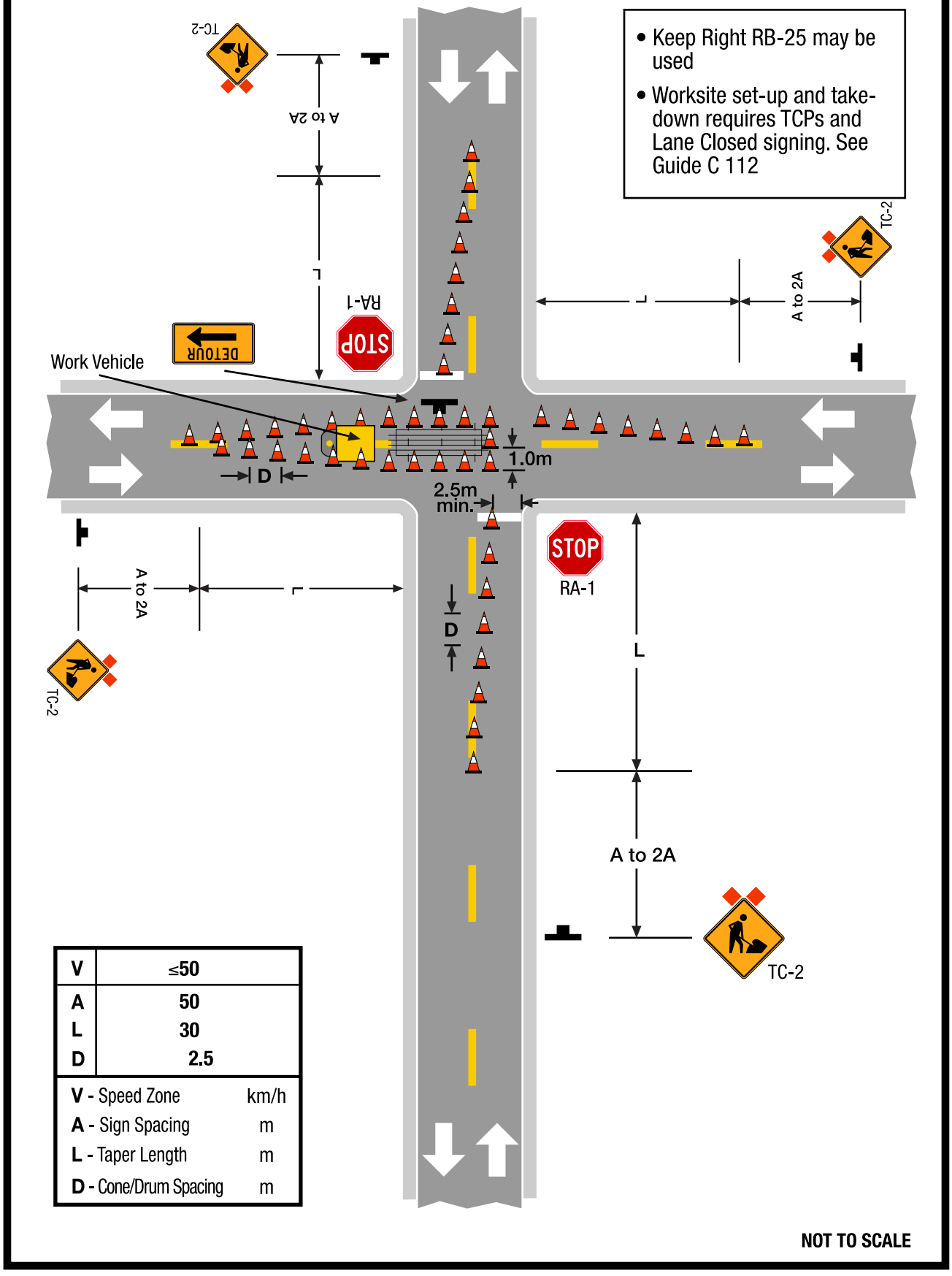
NOT TO SCALE



V	≤50
A	50
D	2.5

V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

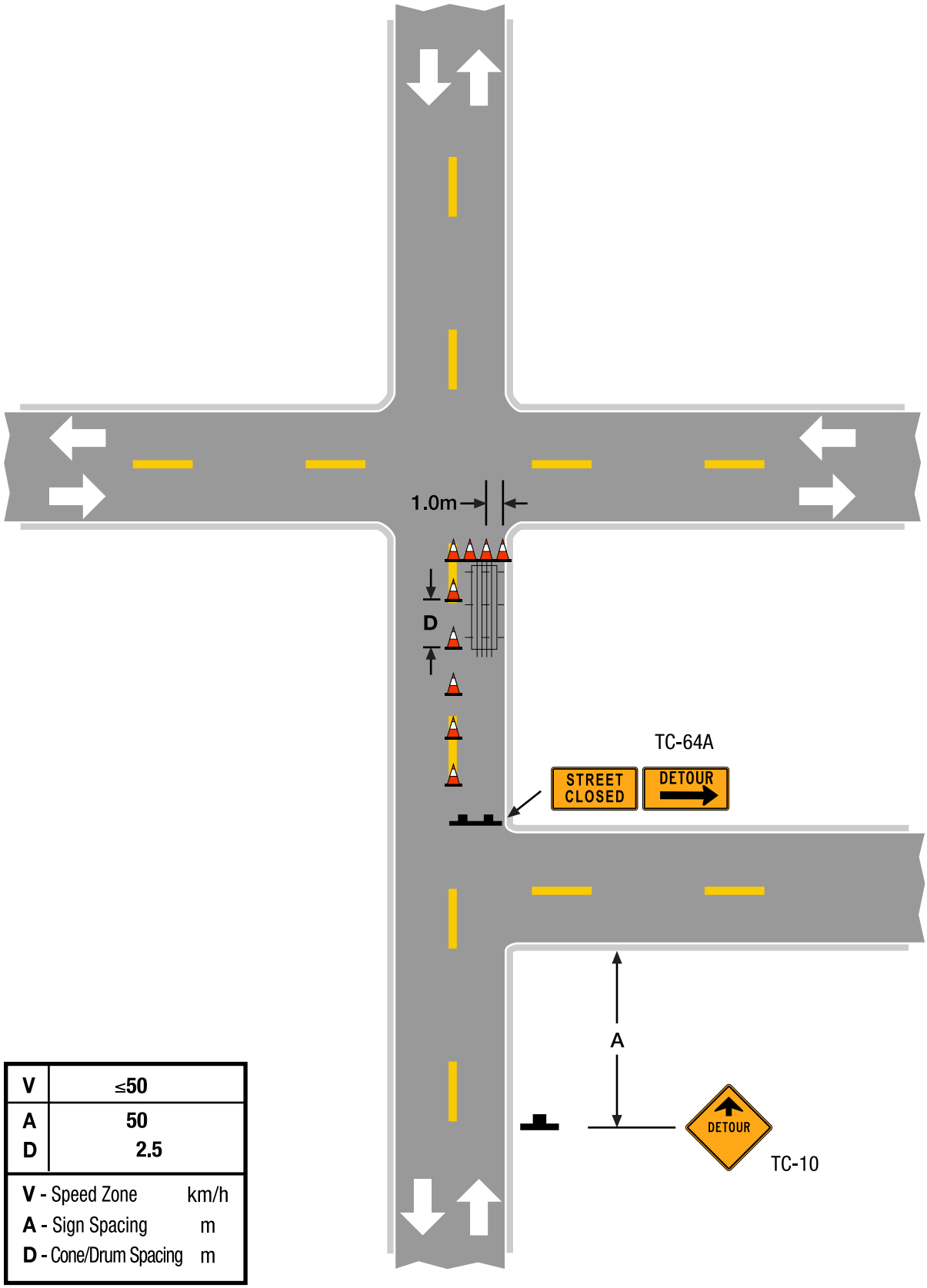
NOT TO SCALE



V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m

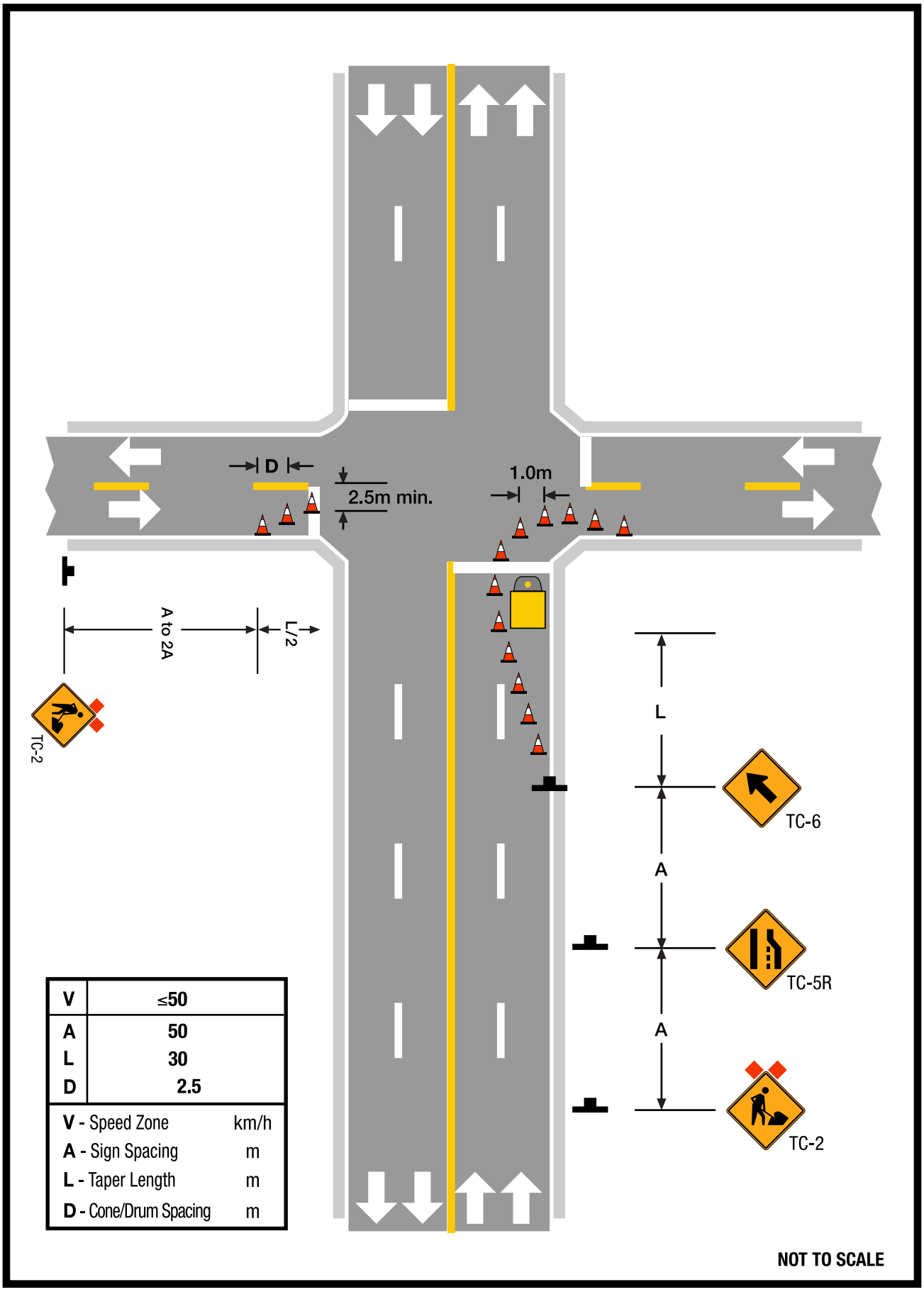
NOT TO SCALE



V	**≤50**
A	**50**
D	**2.5**

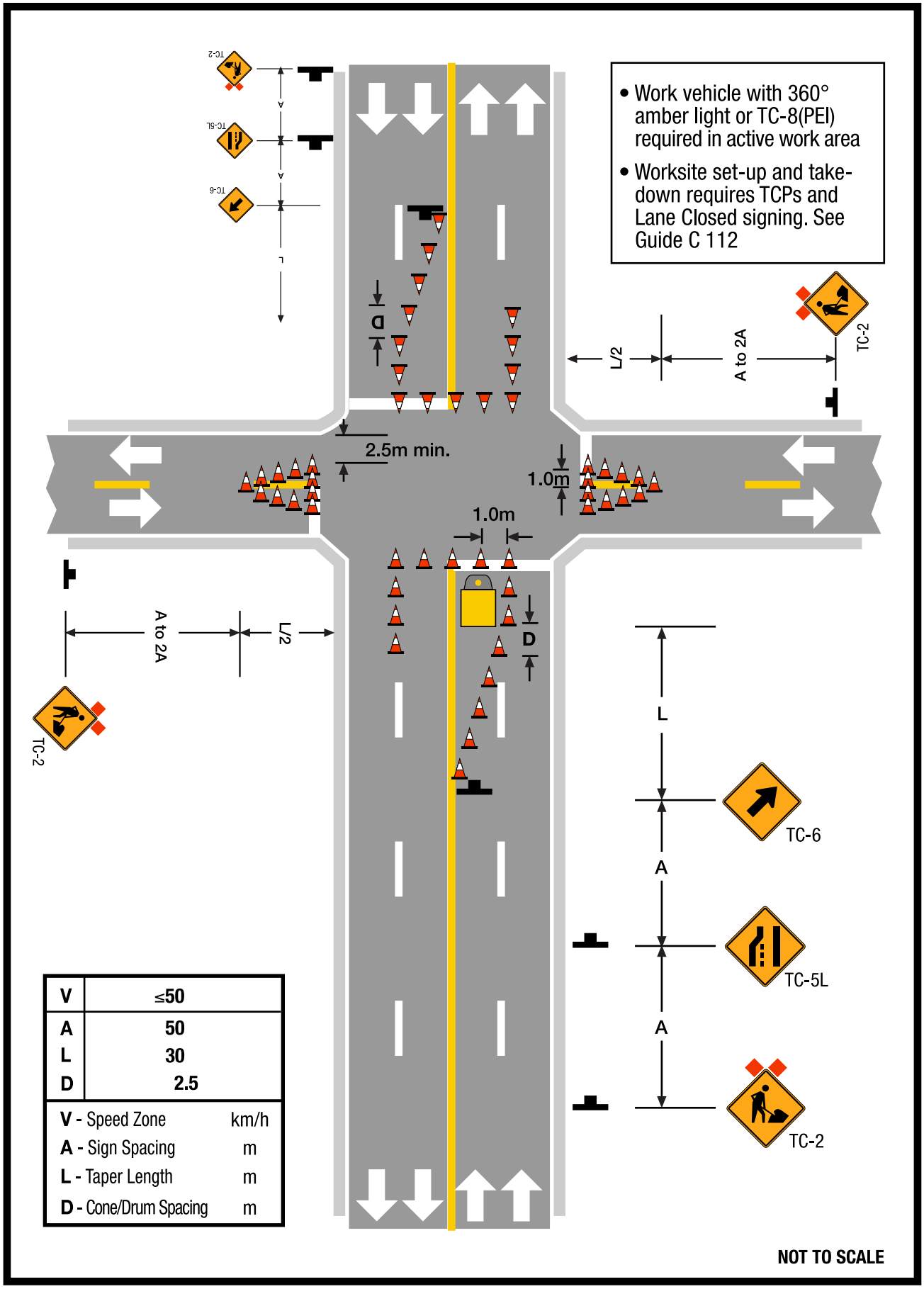
V - Speed Zone km/h
A - Sign Spacing m
D - Cone/Drum Spacing m

NOT TO SCALE



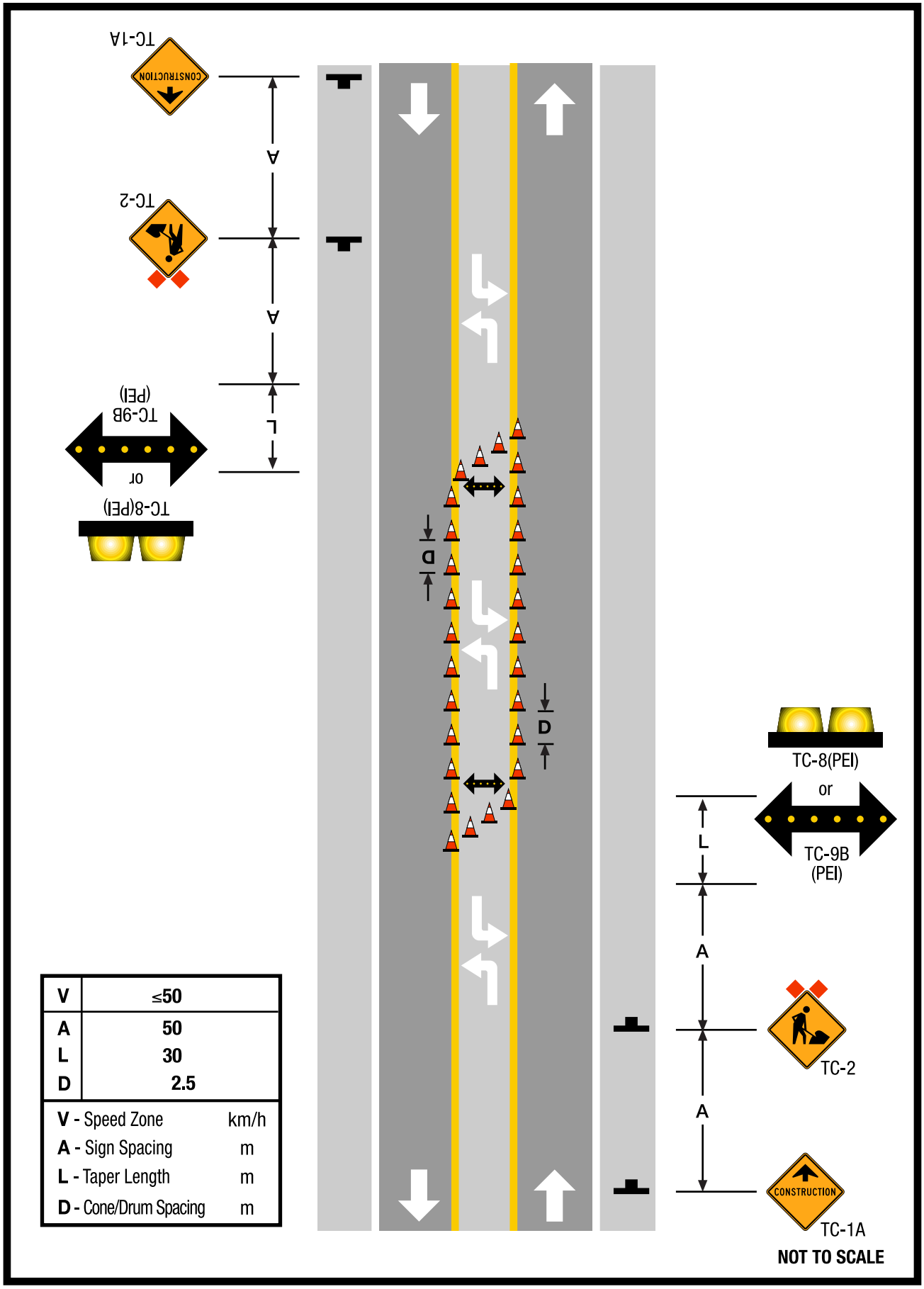
V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m



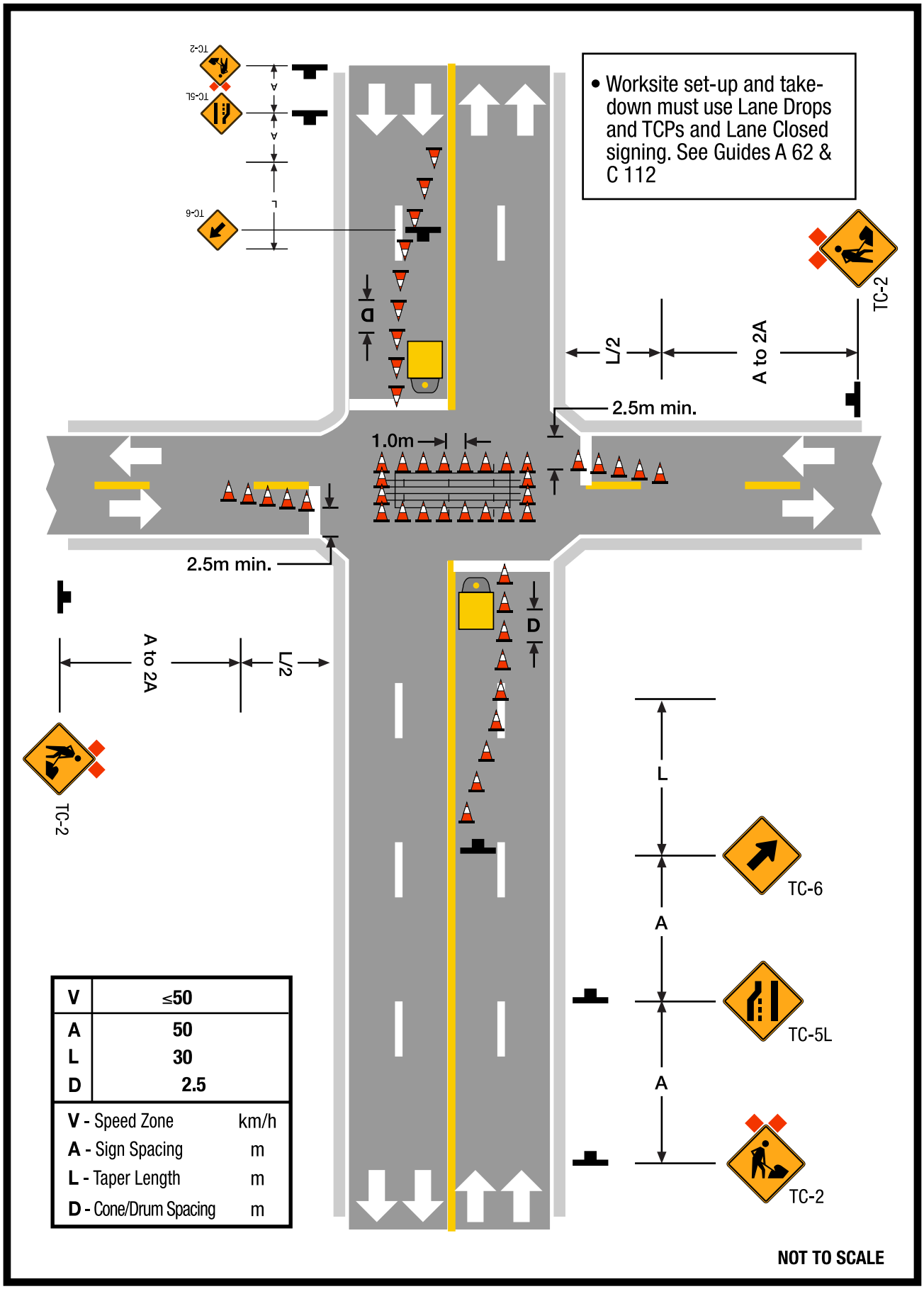
V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m



V	≤50
A	50
L	30
D	2.5

V - Speed Zone	km/h
A - Sign Spacing	m
L - Taper Length	m
D - Cone/Drum Spacing	m



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V - Speed Zone	km/h
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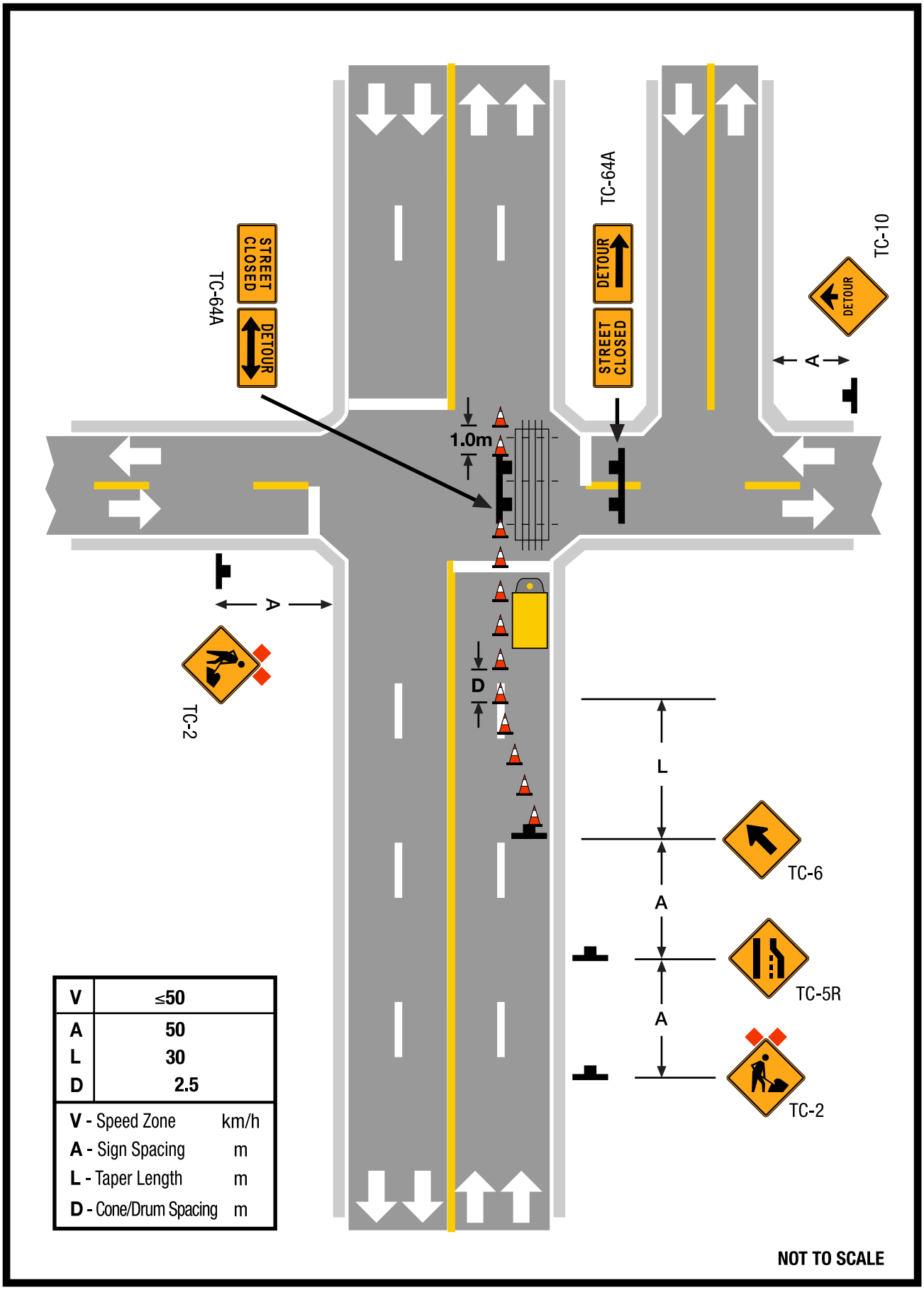

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