Manual of Temporary Traffic Control on City Streets



Winnipeg

Public Works Department
2022

FOREWORD

The Manual of Temporary Traffic Control on City Streets must be complied with, as mandated when work takes place on City streets by both The City of Winnipeg Streets By-Law 1481/77 and The City of Winnipeg Traffic By-Law 1573/77. The 2022 edition contains the following substantial changes as compared to the 2021 edition:

1. The diagram of a standard Designated Construction Zone setup was updated to include zipper merge signs (Section 3.04.03)
2. A section was added to introduce the zipper merge concept and define criteria on when they are to be used. (Section 3.04.04)
3. Zipper merge signs were added to the illustration of common traffic control signs. (Section 5.02.01)
4. The term Lane Closure Application was added to the list of definitions to refer to the recently launched browser and mobile based application where all lane closures are managed. (Section 1.03)

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MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS

1 INTRODUCTION

1.01 Purpose of Manual

This Manual specifies the minimum requirements to maintain safe conditions for motorists, cyclists, pedestrians and workers where construction, maintenance, utility work, or other temporary conditions such as special events are present within a public right-of-way in The City of Winnipeg. Everyone who undertakes work within a street is responsible for the safety of the public and the workers involved. This is best achieved by way of effective traffic control and the application of the guidelines for work zones provided herein.

1.02 Scope

This Manual contains general principles and detailed temporary traffic control methods for many typical circumstances. The responsibilities of any City Department, utility company or private contractor undertaking work within a public right-of-way in The City of Winnipeg are also defined herein.

1.03 Interpretations

For purposes of this Manual, the following words and expressions shall have the meaning indicated below.

1) **"Authorized Construction Agency"** shall mean any City Department, utility company or private contractor, or any other persons that is granted approval from the Traffic Management Branch to install and remove regulatory signs and Designated Construction Zone signage for a particular work zone.

2) **"Construction Agency"** shall mean any City Department, utility company or private contractor, or any other persons responsible for the undertaking of work on any section of a public right-of-way in The City of Winnipeg.

3) **"Designated Construction Zone"** shall mean a construction work zone where fines for speeding are doubled.

4) **"Directional Closure"** shall mean the prohibition of one direction of traffic while the opposing direction of traffic is maintained.

5) **"Full Closure"** shall mean the complete prohibition of all directions of traffic on a roadway.

6) **"Information and Warning Signs"** shall mean all signs or devices that convey warning or essential information to the right-of-way user as specified in this Manual and shall include such devices as signs, barricades, traffic cones, and any other device of a similar nature that is specified and approved herein for use within a public right-of-way in The City of Winnipeg for this purpose.

7) **"Lane Closure"** shall mean a closure of an individual lane or lanes for the purposes of work while maintaining traffic flow in the direction of travel.

8) "**Lane Closure Application**", or lane closure app, shall mean the City of Winnipeg lane closure application found at www.laneclosures.winnipeg.ca or the associated mobile application.

9) **“Long Term Work Zone/Closure”** shall refer to a lane, directional or full closure with a duration of more than 2 hours.

10) **“Manual”** shall mean the Manual of Temporary Traffic Control on City Streets.

11) **“Mobile & Very Short Duration Work Zone/Closure”** shall refer to a lane, directional or full closure that moves continuously or intermittently, stopping at a fixed location for up to 30 minutes.

12) **“Regional Street”** shall mean those streets listed in Schedule “E” of the most recent City of Winnipeg Streets By-law No. 1481/77. Note that a list of the Regional Streets is included in the Appendix to this Manual.

13) **“Regulatory Signs”** shall mean those signs that require motorists to take certain action, and, which are enforceable.

14) **“Road Closure”** shall mean the complete closure of a roadway.

15) **“Short Term Work Zone/Closure”** shall refer to a lane, directional or full closure with a duration greater than 30 minutes and up to 2 hours.

16) **“Street”** shall mean any place or way, including any structure forming part thereof, which or any part of which has been dedicated as a roadway, lane, avenue, road or highway pursuant to *The Real Property Act*. In addition to the roadway, it includes all shoulders, curbs, boulevards and sidewalks located within those boundaries.

17) **“Survey Crew Work Zone”** shall refer to a lane closure that moves continuously or intermittently as part of road surveying work.

18) **“Weekday Peak Periods”** shall mean between the hours of 07:00 to 09:00 and 15:00 to 18:00, Monday to Friday.

19) **“Work Area”** shall mean the road surface where repairs are being made, or the road surface immediately adjacent to the repairs being made. This “work area” includes additional room in the lane closure required for material storage, work vehicles, equipment, etc. Work area can also represent closure areas for special events and film productions.

20) **“Work Zone”** shall mean a section of the roadway between the first advance warning sign and the point beyond the activity area where traffic is no longer affected.

1.04 Revisions

This Manual will be revised from time to time as the need arises. The most current version of this Manual and related information can be found at: winnipeg.ca/publicworks/trafficcontrol/manualtemptrafficcontrol.stm

Any suggestions for revision or improvement should be forwarded to the Traffic Network Engineer, Traffic Management Branch of The City of Winnipeg at 101-1155 Pacific Avenue, R3E 3P1.

1.05 Specifications for Traffic Control Devices

Many of the temporary traffic control devices and guidelines that apply to construction and maintenance activities in Winnipeg are included in the fifth edition of the Manual of Uniform Traffic Control Devices for Canada (MUTCDC), published by the Transportation Association of Canada, 2323 St. Laurent Boulevard, Ottawa, Ontario, K1G 4J8. Signs and other traffic control devices that are legal for use on streets in The City of Winnipeg for temporary traffic control are authorized for use through their inclusion in Manitoba Regulation 264/88, 300/89, 145/2014, and 13/2019. ***It is illegal to use signs within the City's public right-of-ways that are not approved in these Manitoba Regulations.***

Full-scale drawings of all traffic signs described in this Manual are available from The City of Winnipeg Public Works Department, Engineering Division, at 1155 Pacific Avenue.

The design, including colour and dimensions, of all traffic control signs and other devices utilized must conform to the specifications set out in Section 5.02. It should be noted that these dimensions are minimums and in some cases larger signs may be required. As of January 1, 2012, all retroreflective sheeting on temporary traffic control signs, barricades and devices must use a minimum Type VIII retroreflective sheeting, with the exception of reboundable devices specifically channelization barrels, tall cones and traffic cones which shall use a minimum Type IV retroreflective sheeting (ASTM D4956).

Under no circumstances are hand painted lettering, diagrams, or symbols permitted.

1.06 Information Seminars

The Public Works Department conducts information seminars annually in the spring to review the requirements outlined in this Manual. For more information contact the Traffic Managements Branch at PWDLaneClosures@winnipeg.ca.

1.07 Enforcement

The Highway Traffic Act of the Province of Manitoba assigns to The City of Winnipeg the authority to regulate traffic movement on public streets under its jurisdiction. In turn, The City of Winnipeg's Traffic By-law No. 1573/77 and Streets By-law No. 1481/77 mandates the use of this *Manual of Temporary Traffic Control on City Streets* (Manual) and the devices contained herein for use in work areas on City streets.

Requirements identified in this Manual are subject to enforcement by City of Winnipeg Operations Constables. Violations of these requirements may be subject to the issuance of stop work orders and/or fines as indicated in The City of Winnipeg Streets By-Law 1481/77 (Schedule "H"). These infractions are enforced under the Municipal By-Law Enforcement Act and the Provincial Offence Act.

The Operations Constable can be contacted by email at PWDEnforcement@winnipeg.ca.

2 RESPONSIBILITIES AND CONTACTS

2.01 Construction Agency (utility company, contractor, or City crew)

The Construction Agency is responsible for the following tasks associated with with closing a traffic lane, sidewalk, or bike facility.

Before the Closure:

At least two (2) weeks prior:

- Applying for Designated Construction Zone setup in the Lane Closure App in accordance with Section 3.04 of this Manual.
- Applying for a temporary posted speed limit reduction in the Lane Closure app when appropriate.
- Submit a request in the Lane Closure App for Long term lane closures on Regional Streets that involve full or directional closures, or median crossovers.

At least three (3) business days prior:

- Submit a request in the Lane Closure App for long term lane, bike facility, or sidewalk closure requests on the public right of way.
- Securing the necessary Use of Street permit for the project.
- Contacting neighbouring properties by written notice if access is affected. Access is to be interpreted as parking lots, doors and entrances, and loading zones. Notices shall provide the following information:
    - Limits of the work;
    - Description of the work;
    - Timeline of the construction;
    - Contact information of the Project Manager or person(s) in charge of the work.

During the Closure:

- Submit a request in the Lane Closure App for short term lane closure requests outside of weekday peak periods on Regional Streets. Notice for these short term non-peak period closures must be given before the start of the closure.
- Submit a request in the Lane Closure App for short term lane closure requests on non-Regional Streets. Notice for these short term closures must be given before the start of the closure.
- Placing, maintaining and removing the appropriate temporary traffic control devices as specified by this Manual, by the Traffic Management Branch and/or in the Permit issued by the City.
- Using steel plates or an alternative to cover excavations and reopen closed lanes during weekday peak periods when deemed feasible by the Construction Agency.
- Providing for the safety of the worker.
- Providing for the safety and convenience of motorists, cyclists and pedestrians.
- Update the approved lane closure request to report any changes to the location, limits or duration of any lane closures.

After the Closure:

- Mark the closure as complete using the Lane Closure App.
- Ensuring that all temporary traffic control devices are removed from the street, or otherwise hidden from view, whenever they are no longer appropriate. Reimbursing the City for all costs incurred arising from placement of traffic control devices, placement of temporary transit stops, and lost parking meter revenue by The City of Winnipeg in connection with works undertaken by the Construction Agency.

The general process that a Construction Agency should follow for a lane closure is outlined in the folllowing flowchart titled *General Process for Lane and Sidewalk Closures.* This list is intended as a general guideline and does not cover all situations. All communication regarding lane closures should be through the Lane Closure App. The application provides a message board for each closure and allows documents and files to be attached to the closure request.

A list of Regional Streets is appended to the end of this Manual. For the most current list of Regional Streets, please refer to Schedule “E” of The City of Winnipeg Streets By-law No. 1481/77.

Despite the responsibilities of a Construction Agency above, a City Department, utility company, private contractor or any other person acting in a supervisory role for works undertaken on a City Street has a duty to ensure that the provisions prescribed by this Manual are being followed.

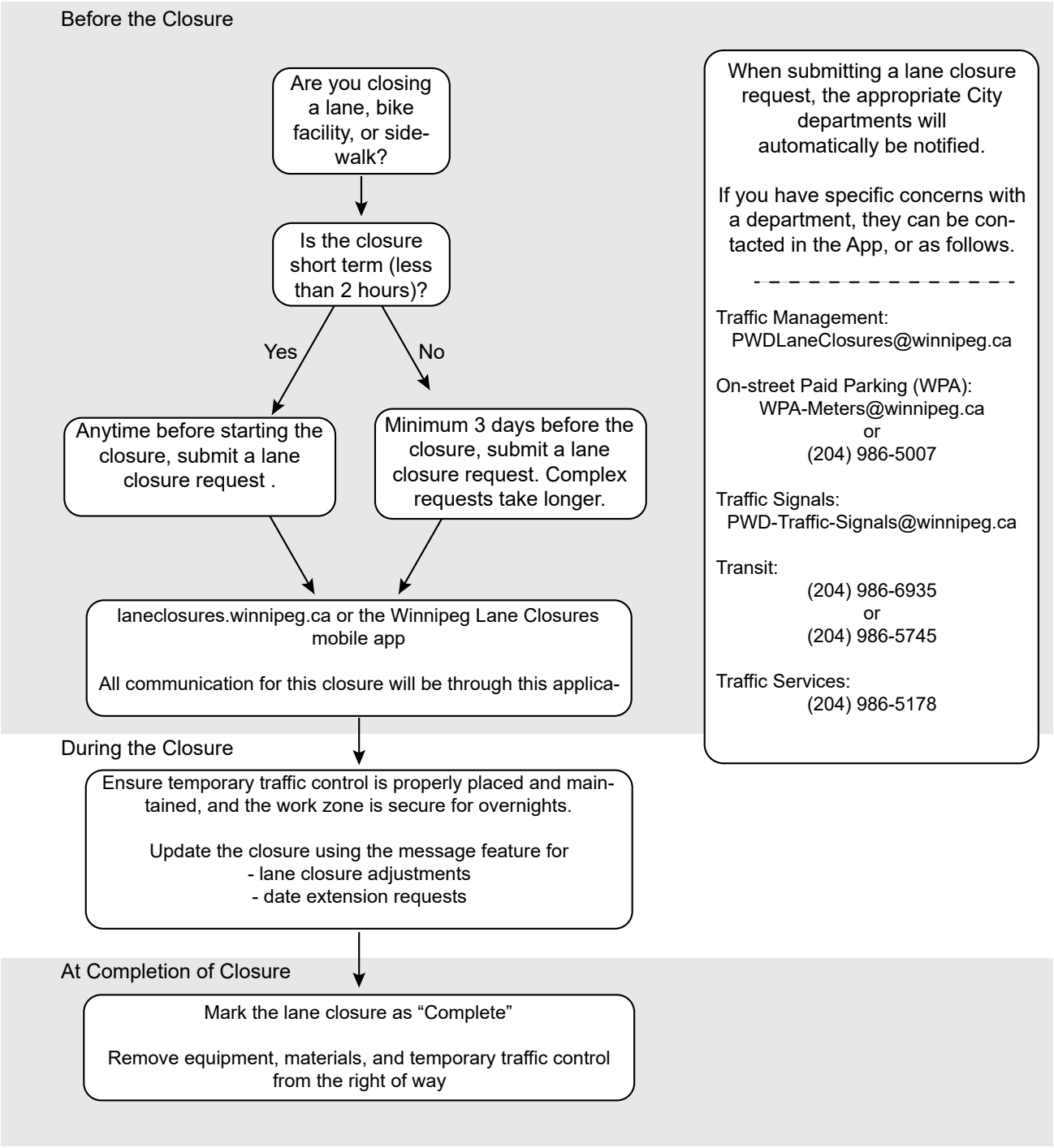
2.01.01 Authorized Construction Agency

A Construction Agency can request designation as an Authorized Construction Agency from the Traffic Management Branch. As an Authorized Construction Agency, they can perform many of the tasks previously required to be completed by the Traffic Services Branch, including installing regulatory signage and Designated Construction Zones. Section 2.04 lists responsibilities of the Traffic Services Branch that can be adopted by Authorized Construction Agencies

The Traffic Management Branch will review a temporary traffic control plan including all temporary traffic control submitted by a Construction Agency, and upon review, the Branch may authorize the Construction Agency to set up and maintain the approved temporary traffic control plan. The Authorized Construction Agency permissions relate only to the project in which they are granted. Installing Designated Construction Zones, removing parking, and modifying existing traffic control signs requires additional documentation and record keeping processes.

2.01.02 Flow Chart for Lane and Sidewalk Closure Process

Note: This chart is a general guideline, is not all inclusive and does not apply to emergency situations. Further details are described in this Manual. Most services require at least **3 business days' notice**. Complex projects including full/directional closures require at least **2 weeks' notice**.



2.02 Public Works Department Traffic Management Branch

The Traffic Management Branch can be contacted online through the Lane Closure Application (laneclosures.winnipeg.ca), or via email at PWDLaneClosures@winnipeg.ca for general questions. The Traffic Management Branch is responsible for:

- Approving the time frame for all long term lane closures.
- Reviewing proposed temporary traffic control plans and approving in consultation with the Traffic Services Branch.
- Determining advance information sign requirements.
- Authorizing turn restrictions.
- Authorizing temporary posted speed limit reductions.
- Authorizing optional Designated Construction Zones.
- Authorizing traffic on shoulders for long term closures.
- Notifying Traffic Services Branch, Customer Services Branch, Winnipeg Transit and/or Traffic Signals Branch of authorizations as required.
- Initiating media releases when required.
- Maintaining the City's lane closures website and map.

2.02.01 Lane, Sidewalk, and Bike Facility Closures

All requests for closures of traffic lanes, bike facilities, or sidewalks must be submitted via the Lane Closure Application found at laneclosures.winnipeg.ca. The Traffic Management Branch reviews the request submission before approving the closure request. This is to ensure that there are no conflicting projects and to provide public notice via the Streets/Sidewalk Closures website and/or media release. This assists in minimizing the impact to safe and efficient movement of traffic. Generally a minimum of 3 business days' notice is required prior to the start of the lane closure, however for more complex projects including full and directional closures, 2 weeks' notice is required. For short term closures outside of peak hours, work can commence immediately after request submission.

To request a closure, the construction agency worker must create a user account on the application. Once the account is created, the user can access all of their current, pending, and completed lane closures.

The closure request form collects the following information:

- Description of activity
- Lane closure location and extents
- Number of lanes closed including sidewalks and/or bike lanes
- Description of temporary traffic control
- Any planned changes to the extent or configuration of the lane closures during the work
- Proposed start and end dates
- Other information depending on user selections when filling out the form

Based on the details in the request, the impacted City users will be notified of the closure at time of approval and can access the closure details. These users include Winnipeg Transit, the Winnipeg Parking Authority, the Traffic Services Branch, the Use of Streets permit desk, among others. The lane closure requestor does not need to reach out to these groups seperately unless they have specific questions related to their closure.

2.02.02 Regional Street Lane Closures on Weekends, Public Holidays or at Night

Many Regional Streets operate at or above capacity in at least one direction during either or both of the weekday peak periods, 07:00-09:00 and 15:00-18:00, Monday to Friday. Any lane closures during these periods in the direction(s) of peak travel can significantly increase congestion and delay, negatively impacting the public. Congestion and delay on Regional Streets is of particular concern in the vicinity of river crossings and on streets with limited access where alternative routes are not readily available.

The following motion was approved by Council on September 27, 2012:

> *"That where it is deemed necessary by the Director of Public Works or their designate [Traffic Management Branch], contractors [Construction Agencies] doing work on Regional Streets for private customers be required to do all things necessary to expedite completion of the work, including pavement restoration, through the use of 24 hour and weekend work activities and steel plating of excavations during the a.m. and/or p.m. peak rush hour periods."*

Under certain circumstances, as required by the above motion, it may be necessary to undertake non-emergency work during weekends, night time hours (between 18:00 and 06:00), or on a public holiday. Such a requirement would normally occur only where the work would cause significant disruption to vehicular or pedestrian traffic during normal working hours as identified by the Traffic Management Branch.

Non-Regional Streets are less likely to require restrictions on work during peak hours, however, the Traffic Management branch reserves to right to implement peak hour restrictions as needed.

2.02.03 Authorizing Regulatory Signs and Optional Designated Construction Zones

The following requests require approval by the Traffic Management Branch:

- Requests for temporary turn restrictions, yield or stop signs.
- Temporary posted speed limit reductions.
- Optional Designated Construction Zones.

Specific details on the requirements for temporary posted speed limit reductions and optional Designated Construction Zones can be found in Sections 3.04 and 3.05.01 respectively.

2.03 Public Works Permits

The Public Works Department is responsible for issuing the following permits:

- Use of Street Permits – PWD-UOS-Permits@winnipeg.ca
  - All activities that impede or temporarily occupy the right-of-way.
- Crossing Permits on Regional Streets – PWD-UOS-Permits@winnipeg.ca
  - At any time an applicant requires to drive or tow a vehicle across a curb, boulevard or sidewalk other than at a private approach.
- Street Excavation Cut Permits – (204) 986-3184
  - For any excavation in or under a road, sidewalk or boulevard.

Questions regarding other permits should be directed to 311.

2.04 Public Works Traffic Services Branch

The Traffic Services Branch is responsible for:

- Providing guidance in selecting the appropriate temporary traffic control and work zone schemes.
- Attending a preconstruction meeting for City of Winnipeg Capital Projects to advise as to traffic control requirements and provide input during construction as required.

The following responsibilities can also be performed by an Authorized Construction Agency permitted by the Traffic Management Branch.

- Placing and maintaining all regulatory signs and traffic control devices authorized by the Traffic Management Branch, with the exception of the 'KEEP RIGHT/KEEP LEFT' sign (RB-25 / RB-25L) which may be installed by the Construction Agency. Common examples include parking restrictions, stopping restrictions, turn restrictions and diamond lane removal.
- Placing, maintaining and removing regulatory, guidance and information signs for traffic control purposes in the following situations:

  a. Full or directional closures on a Regional Street.
  b. Traffic routed across a median on a divided street.
  c. Traffic reversals where the direction of travel in a lane is reversed, at Traffic Management's discretion.
  d. Full closure of a non-regional street where the requirements for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure is significant.

- Where a Designated Construction Zone has been approved, Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs, and removing upon completion. In the above instances, the Construction Agency is still responsible for all other temporary traffic control within the Designated Construction Zone, including but not limited to barricades, barrels and tall cones. Please refer to Section 3.04 for Designated Construction Zone requirements.

For general regulatory sign installation requests, at least **3 business days' notice** is required, however for more extensive installation requests including full or directional closures, median crossings and Designated Construction Zones with or without temporary posted speed limit reductions, at least **2 weeks' notice** is requested. Please provide billing address along with contact information when making requests.

2.05 Winnipeg Parking Authority, Winnipeg Transit and the Public Works Traffic Signals Branch

When the work zone affects on-street paid parking or requires temporary removal of the paystation(s), the Winnipeg Parking Authority (WPA) will be alerted to the lane closure approval. WPA can temporarily remove paystations for construction, and later restore normal operations when notified. Removal of on-street paid parking and/or temporary removal/reinstallation of paystation(s) will be invoiced based on the WPA fees and charges schedule.

When the work zone affects a transit stop or transit route, Winnipeg Transit will receive a notification of the lane closure at the time of approval.

If the lane closure affects a traffic signal or pedestrian corridor, Traffic Signals Branch will be alerted to the approved lane closure. Where turning is restricted, as authorized by Traffic Management, the corresponding turn signal head, if present, needs to be covered or disabled by the Traffic Signals Branch. Any turn restriction signs would still be placed by Traffic Services Branch or an Authorized Construction Agency. Advanced warning flashers must be covered by the Traffic Signals Branch when located within the limits of a reduced speed zone.

When a lane closure request is approved, Winnipeg Transit and Winnipeg Parking Authority are automatically alerted when their services are to be impacted. They will be able to access lane closure details on the lane closure application and reach out to the construction agency with any concerns.

2.06 Emergency Work

In emergency situations that threaten public safety or are a public hazard, the Construction Agency responsible for the work performed is authorized to eliminate the public hazard immediately. By submitting a Lane Closure Request and selecting the “Emergency work” option, the following agencies will immediately be notified:

- Traffic Management Branch
- Transportation Management Centre (TMC)
- Police Service Dispatch
- Fire Paramedic Service Dispatch
- Winnipeg Transit if the work affects a transit route – (204) 986-5745
- Traffic Signals Branch if a traffic signal requires repair – (204) 451-4482

In all other respects, the intent and requirements of the Manual shall apply.

3 APPLICATION

3.01 Component Areas of a Construction Zone

A construction zone encompasses the entire length of the construction project limits and may include one or multiple work zones. In general, to provide motorists, cyclists and pedestrians with sufficient information to safely and effectively pass through or around a work zone, there are four distinct areas in a work zone, as shown in the following illustration:

- Advance Warning Area
- Transition Area
- Activity Area
- Termination Area

Advance Warning Area

The advance warning area alerts motorists of road work ahead and provides time and distance to adjust to changes in road conditions prior to reaching them. This may vary from a single traffic control device to a series of traffic control devices.

Transition Area

In the transition area, the motorist is directed from their normal path to a new path around the work space. Work material, vehicles, and equipment should not be stored or parked in this area. The transition area must be obvious and the intended path must be clearly delineated so that road users will not mistakenly follow the wrong path.

Activity Area

The activity area is the portion of roadway closed to traffic and is reserved for the exclusive use of workers, equipment and material storage. The activity area may be a fixed location or may move as the work progresses. The activity area includes longitudinal buffer space, the work area, the traffic space, and the lateral buffer space:

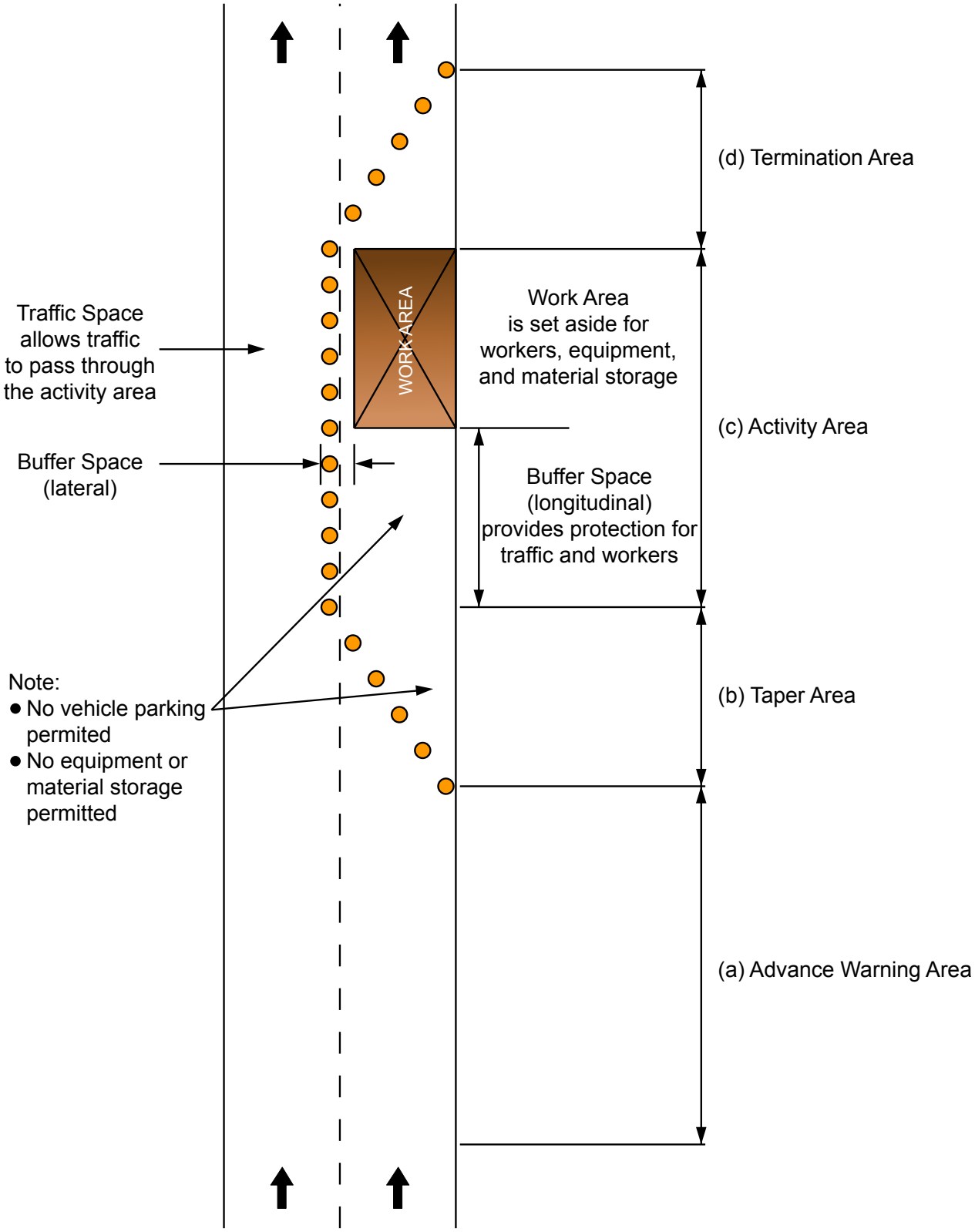
a. Longitudinal buffer space provides protection for traffic and workers between the end of the taper area and the work area.
b. Work area is reserved for workers, equipment and material storage.
c. Traffic space allows traffic to pass through the activity area.
d. Lateral buffer provides for a separation between the work space and the adjacent traffic space.

As indicated in the MUTCDC Fifth Edition Part D – Temporary Conditions, Section D4.2.2; it may not be possible to provide longitudinal buffer space in urban areas due to space restrictions. However, should the situation allow, a longitudinal buffer space is recommended.

Termination Area

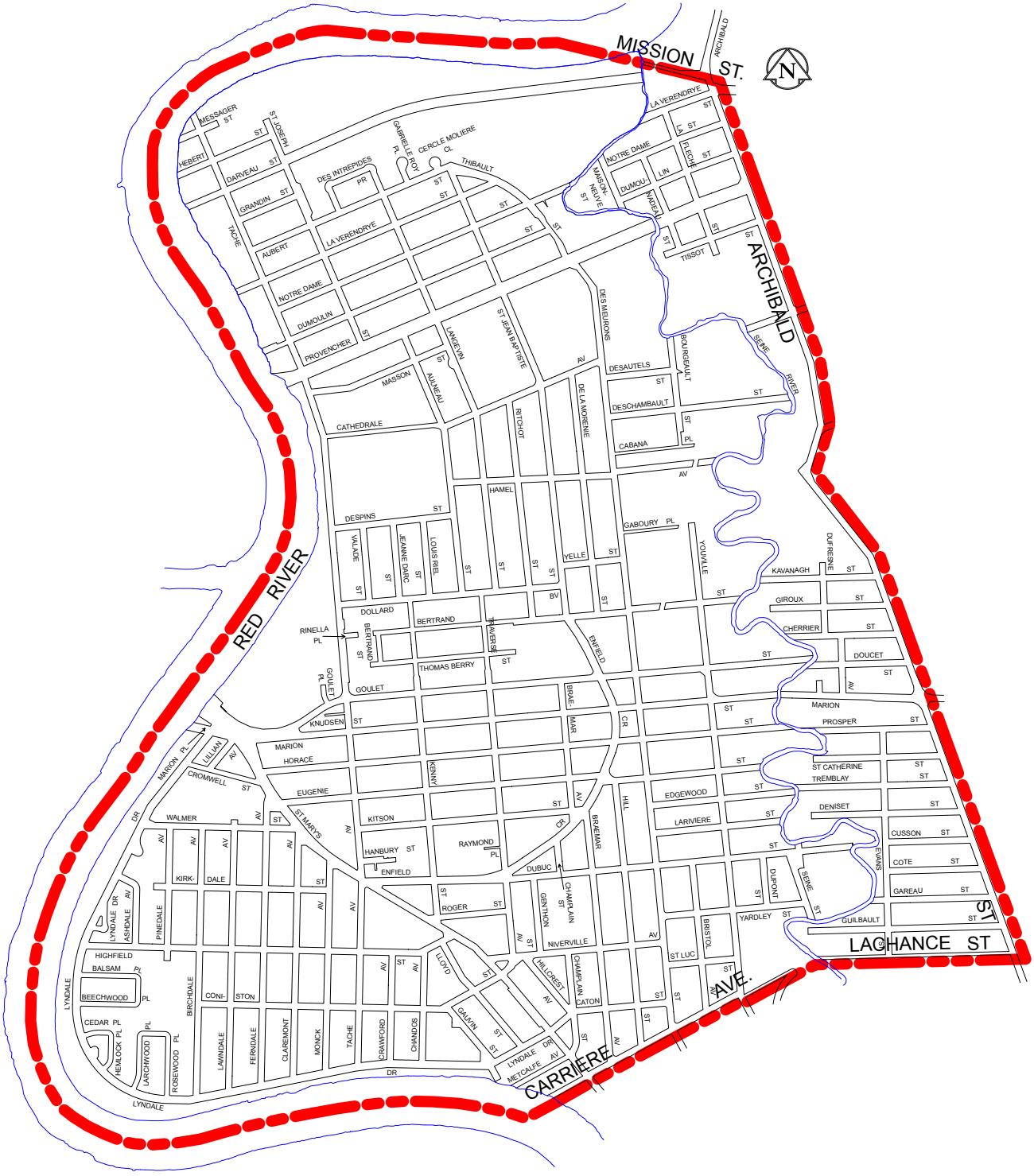
The termination area allows motorists to transition back to the normal travel path and travel speed. The termination area extends from the end of the work area, to the point where traffic is able to resume normal driving. A downstream taper is provided to allow vehicles to move back into the closed lane(s). The termination area is optional in most situations but is required in a two-lane shift scenario (Figures 2, 5, 6, and 8) only.

COMPONENT AREAS OF A TEMPORARY WORK ZONE



3.02 Bilingual Signing Area

All traffic control signs in the original Old St. Boniface ward, defined in the map below, must be in both English and French, according to the City of Winnipeg Transportation Division's technical guideline A-26. The majority of signs presently used are symbolic, however, those signs that have a written message must be in both languages. This includes all temporary traffic control signs. Those signs that have a written message have been added to this Manual in Section 5.02.01.



Bilingual Portion of St Boniface

3.03 Duration of Work

This manual provides for three work duration categories:

- Long term;
- Short term; and
- Mobile / Very short term.

Each has their own temporary traffic control requirements, as outlined below.

3.03.01 Long Term Work Zones
(Closure for more than 2 hours)

Use of long term sign set ups, as shown in Figures 1 through 31 in Section 5.04, are required if the closure exceeds 2 hours.

Due to the height of the signs and the directionality, chevrons are useful for some situations and may still be used in place of channelization barrels (see Figure 1b). Channelization barrels, as shown in Section 5.02.02, are preferred over the use of chevrons. Similarly, tall cones are preferred over the use of construction markers in long term sign setups. Note that traffic cones are not permitted in long term sign setups.

3.03.02 Short Term Work Zones
(Closure greater than 30 minutes and up to 2 hours)

Closures that are in place for a period greater than 30 minutes but less than 2 hours may use a modified signing approach, as shown in Section 5.04 Figures 32a to 38, if the closure meets the following guidelines:

- The closure shall not exceed 2 hours duration.
- No more than two lanes are closed at any one time and there must be at least one other traffic lane available for that direction of travel.
- The closure must be supplemented with advance warning signs TC-2 (Roadwork) and TC-5 (Temporary Lane Closed Ahead) or WD-17 (Double Arrow) when used on streets with 70, 80 or 90 km/h posted speed limits. Use of a flashing or sequential arrow traffic control device is recommended on these higher speed limit streets.
- Where visibility of the work zone is limited by a horizontal curve, the closure must be set up 100 m in advance of the horizontal curve and a line of traffic cones shall be extended around the horizontal curve to the work area.
- Where visibility of the work zone is limited by a vertical curve, the beginning of the short term sign setup must occur on the level section of highway prior to the start of the vertical curve and be carried through to the work area.
- The closure may not be used at night during hours of darkness without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is required for any work at night. Closures that do not meet the above noted guidelines must be signed as a long term work zone.

3.03.03 Mobile and Very Short Duration Work Zones

(Work zones that move continuously or intermittently, stopping at a fixed location for up to 30 minutes)

For mobile and very short duration work zones, the time required to setup and remove extensive sign setups can exceed the time required to perform the work. Therefore, flashing beacons, arrow boards, variable message signs, and buffer vehicles are to be used to provide adequate traffic control, minimize exposure of workers to traffic and ensure that work is completed in a timely manner. Setups described in Section 5.04 Figure 39, can be used for mobile and very short duration work zones if the work zone meets the following guidelines:

- The closure shall not exceed 30 minutes duration.
- Mobile and very short duration work zones are not permitted on Regional Streets during weekday peak periods.
- Only one lane is closed at any one time and there must be at least one other lane available for that direction of travel.
- A buffer vehicle equipped with a flashing or sequential arrow traffic control device must be used where visibility of the work zone is limited by horizontal or vertical curves (examples: bridges, overpasses or underpasses). The buffer vehicle should be located at the most visible location available.
- On streets with a posted speed limit of 70, 80 or 90 km/h, a flashing or sequential arrow traffic control device is required.
- A flashing or sequential arrow traffic control device is required at night.

Truck or trailer mounted impact attenuators (also known as crash cushions) are recommended at the beginning of a mobile or very short duration closure on a roadway with a posted speed limit of 70 km/h or higher.

3.03.04 Survey Crew Work Zones

Survey crew work zones can stretch over long distances and the nature of the work often requires a crew to take measurements at several points along the cross section of a right of way. Additional temporary traffic control measures are to be used in comparison to mobile and very short duration work zones. The setup described in Section 5.04 Figure 40, can be used for survey crew work zones if the work zone meets the following guidelines:

- Survey crew work zones are not permitted on Regional Streets during weekday peak periods.
- Only one lane is closed at any one time and there must be at least one other lane available for that direction of travel.
- A buffer vehicle equipped with flashing or sequential arrow traffic control device must be used.
- Survey crew must be visible from the survey crew signage.
- The closure may not be used at night during hours of darkness without written consent from the Traffic Management Branch PWDLaneClosures@winnipeg.ca.
- A DCZ with a reduced speed of 60 km/h or lower must be used if the posted speed limit is greater than 60 km/h.

Closures that do not meet the above noted guidelines must be signed using mobile, short term, or long term setups.

3.04 Designated Construction Zones

In December 2013, the Government of Manitoba passed Highway Traffic Act (HTA) amendments intended to double the set fines for speeding in a Designated Construction Zone (DCZ). The amendments authorize double fines for speeding:

- Whether or not there are workers/equipment present; and
- Whether or not there is a reduction in the maximum speed within the DCZ.

The amendments require construction agencies to establish DCZs in some circumstances and allow for optional use of DCZs in other circumstances. Wherever DCZs are established they must be identified using the signage prescribed in the Provincial Designated Construction Zones Regulation 145/2014.

The DCZ requirements were implemented on May 16, 2014. Traffic authorities, or Construction Agencies working on their behalf, are responsible to establish DCZs and to identify them in accordance with the regulation. Note that posted speed limits remain unchanged when a DCZ is established unless authorized as described in the following sections.

3.04.01 Roadwork Conditions that Require a Designated Construction Zone

A Construction Agency must set up a work zone as a DCZ if the work being undertaken on a road meets **ALL** of the following conditions:

1. Work is on the roadway portion of a street, i.e. the area of a street where vehicles travel, this does not include the shoulder, sidewalk or ditch/median;
2. Work is 4 hours or more in duration;
3. Work is on a paved roadway; and
4. Work is on a roadway where the maximum posted speed is 80 km/h or more.

If one or more of the above conditions does not apply to the work being undertaken, then the Construction Agency is not required to establish a DCZ. For example, a Construction Agency is not required to establish a DCZ if the work is taking place on a gravel road; or on a road where the regular maximum speed is 50 km/h; or when the work is on the shoulder/sidewalk.

The Traffic Services Branch or a Construction Agency authorizeed by the Traffic Management Branch are the only agencies permitted to set up and remove DCZ signs. The Construction Agency is responsible for the signage within the DCZ. To request a DCZ, the Construction Agency must submit the DCZ request form found on the sidebar at winnipeg.ca/publicworks/trafficcontrol/laneclosures at least 2 weeks ahead of the closure. The request form collects the following information:

- Closure location including cross streets
- Current posted speed and proposed speed reduction
- Closure start and end dates
- Contact information
- Other closure details including specifying lanes to be closed and hazards

3.04.02 Optional Designated Construction Zone

When roadwork conditions do not meet the criteria for a required DCZ, the Construction Agency may request an optional DCZ. To request an optional DCZ, the Construction Agency must submit the *Designated Construction Zone Request Form*, found on the sidebar at winnipeg.ca/publicworks/trafficcontrol/laneclosures, for approval by the Traffic Management Branch. To be considered as an optional DCZ, the work being undertaken must be road construction, reconstruction, widening, improvement, repair, or other similar work in relation to the road.

3.04.03 Designated Construction Zone Sign Setup

The following diagram shows the basic DCZ sign setup with an associated reduction in maximum speed. This set up also applies where the maximum speed is not reduced but flagpersons and appropriate associated signs (as detailed in Section 3.06) are used to slow traffic.

The City of Winnipeg Traffic Management Branch may reduce the maximum speed in all or part(s) of a DCZ if it meets the requirements set out in Section 3.05.01 of this Manual. In these cases, The City of Winnipeg Traffic Services Branch or a Construction Agency authorized by the Traffic Management Branch is responsible for erecting/placing all associated DCZ signs in accordance with the regulation, as well as any speed limit signs. Please refer to Section 3.05 to request an optional DCZ and/or posted speed limit reduction.

DCZ and reduced speed signs are to be installed on both sides of the road on a one-way roadway and on the right side and median of divided roadways. Where medians are not wide enough for sign installation, signs can be placed only on the right side of the roadway.

The Traffic Services Branch or Authorized Construction Agency is responsible to erect/place signs identifying the beginning and end of a DCZ in accordance with the regulation, as follows:

a. 'Designated Construction Zone' Sign:

On the roadway under construction, the beginning of a DCZ must be identified with the 'Designated Construction Zone' (MC-1D) sign (minimum size 900 mm x 900 mm). This sign is used in place of the 'Roadwork' (TC-2) sign indicated elsewhere in this manual. It is recommended to install 'Designated Construction Zone' signs along the turning lanes on side streets entering a DCZ.



If the DCZ is located in the City's Bilingual Signing Area, as outlined in Section 3.02, the bilingual version of the 'Designated Construction Zone' (MC-1DB) sign must be used (minimum size 900 mm x 900 mm).



b. 'Construction Ends' Sign:

On the roadway under construction, the end of a DCZ must be marked with the 'Construction Ends' (TC-4) sign. If the DCZ is located in the City's Bilingual Signing Area the bilingual version of the 'Construction Ends' (TC-4F) sign must be used (minimum size of 600mm along each side).





c. 'Speed Fines Double' Sign:

At least one 'Speed Fines Double' (MR-179 / MR-179F) sign (minimum size 600 mm x 600 mm) must be placed within a DCZ and be no more than 150 m after the 'Designated Construction Zone' sign which marks the beginning of the DCZ. The 'Speed Fines Double' sign is not required on cross streets or driveways entering the DCZ.





DESIGNATED CONSTRUCTION ZONE WITH REDUCED SPEED AND ZIPPER MERGE SIGNS

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

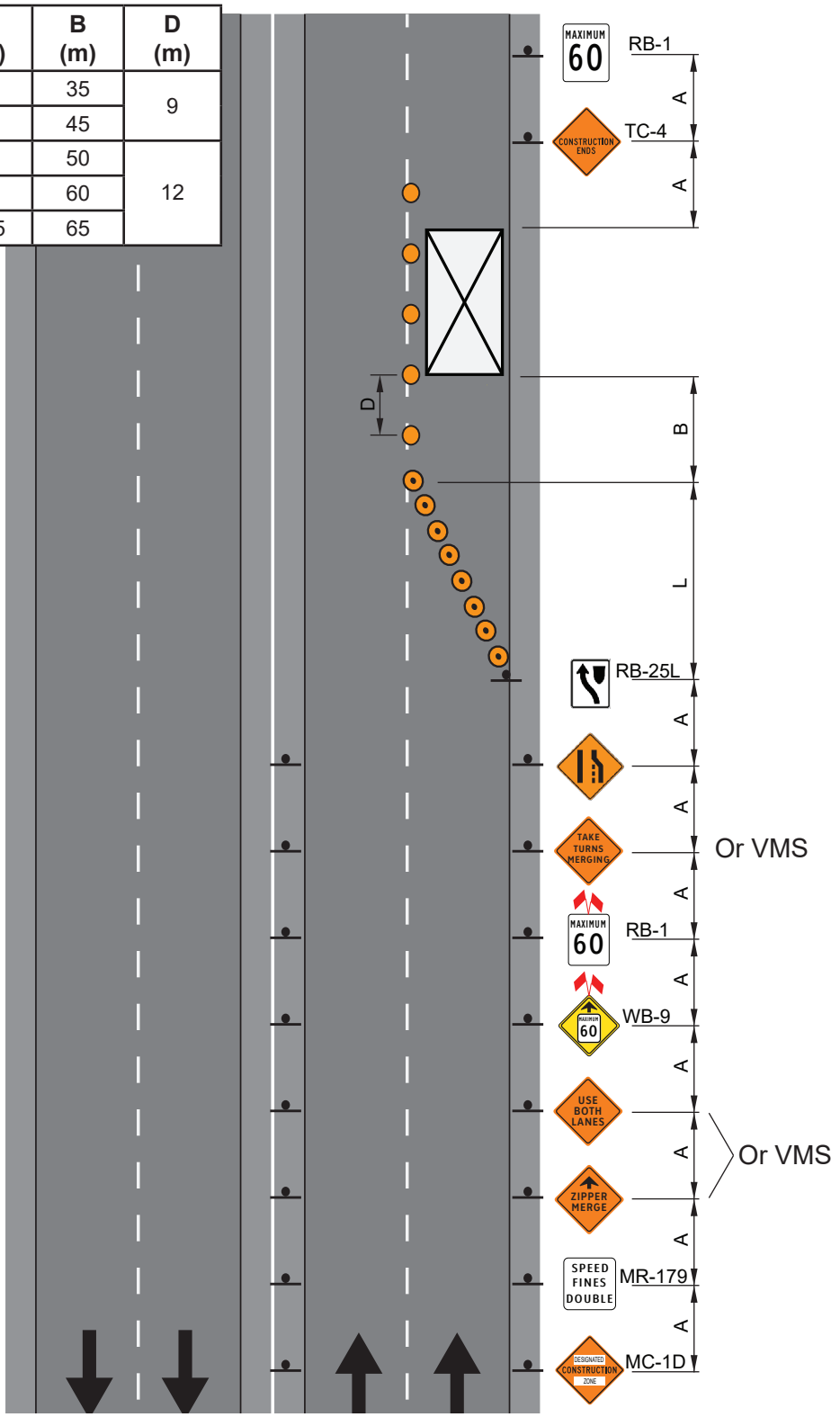
B = Length of longitudinal buffer

D = Spacing between delineation devices

The start of the DCZ and reduced speed signage may be located further ahead of the work zone due to visibility concerns and spatial constraints of intersections and vertical/horizontal curves.

In reduced speed zones, maximum speed signs must be repeated at minimum 1km intervals, and following intersections.

Activity area and advanced warning signs are to be specific to work taking place.



3.04.04 Zipper Merge Signage

The zipper merge strategy, also known as a late merge, is effective when there are high traffic volumes and low speeds. This strategy directs drivers to remain in the closed lane until they reach a designated merge point. Upon reaching the merge point, they will merge with drivers in the open lane in an alternating pattern. The benefits of a late merge strategy include a reduction in travel time as the merging is in a consistent pattern, and shorter queue lengths upstream of the closure as the queue is equally shared by two lanes.

Zipper merge signs are required in a work zone when all of the following criteria are met:

- The normal posted speed is 80 km/h or greater
- The duration of work is two (2) days or longer
- The work zone reduces two (2) lanes to one (1)

Locations that do not meet the above criteria may still benefit from zipper merge signs, and the signage may be included in the work zone at the discretion of the Traffic Management Branch. Zipper merge signs must be bilingual in the area designated in Section 3.02.

Appropriate signage placement is shown in the figure above. The use of variable message signs (VMS) instead of static signs is preferred due to increased visibility, and a shorter work zone.

The “Zipper merge ahead” and “Use both lanes” signs can be replaced by a single VMS.



The “Take turns merging” sign can also be replaced by a single VMS.



3.05 Speed Control and Reduced Speed Limits

Prohibited Use of ‘MAXIMUM 60 WHEN PASSING WORKERS’ Sign

In the past, Construction Agencies commonly used the ‘MAXIMUM 60 WHEN PASSING WORKERS’ sign to inform drivers to reduce their speed as per Section 3.02.B2 of the 2011 Manual of Temporary Traffic Control. This sign, and any similar sign that links a speed reduction to the presence or absence of workers/equipment, is now ***prohibited*** from use on all highways throughout Manitoba, including all City of Winnipeg streets.



With the prohibition of the 'MAXIMUM 60 WHEN PASSING WORKERS' sign there are currently three options in The City of Winnipeg available to explicitly control speeds in construction zones:

- Full Time Reduced Speed Limits with or without DCZs
- Daily Shift Reduced Speed Limits with DCZs
- Flagpersons equipped with 'SLOW' paddles

Any posted reduction in speed limit in a construction zone, both full time and daily shift, must be approved and authorized by the Traffic Management Branch. The Traffic Management Branch may issue a work order to the Traffic Services Branch or provide written permission to a Construction Agency to install any speed reductions.

Note: For work zones without a posted speed limit reduction but where photo enforcement of the posted speed limit is desired, a 'Construction Ends' (TC-4) sign must be placed at the end of the work zone as per Section 11(1)(b) of Manitoba Regulation 220/2002.

If a construction agency desires a posted reduction in speed, the *Designated Construction Zone Request Form* must be submitted to the Traffic Management Branch at least **2 weeks** prior to the requested implementation date. If approved, the Traffic Management Branch will provide written authorization for a reduced speed limit as per the March 19, 2008 Council approval delegating authority to the Director of Public Works to set speed limits in construction zones.

If advanced warning flashers are located within the limits of the speed reduction, the advanced warning flashers must be covered by the Traffic Services Branch.

Temporary rumble strips can be installed as part of a reduced speed zone to increase driver alertness. Temporary rumble strips are further explained in Section 5.02.08.

3.05.01 Reduced Speed Signage

Reduced Maximum Speed signs (RB-1) are to be installed after each intersection. The Maximum Speed Ahead sign (WB-9), all Maximum Speed signs for the reduced speed limit, and the first Maximum Speed sign of the original speed limit after the reduced speed zone require warning flags above each sign.

3.05.02 Full Time Reduced Speed Limits

Full time reduced speed limits, i.e. speed limits reduced to 50 or 60 km/h posted 24 hours a day, are generally limited to construction projects with full time lane closures on streets with speed limits of 60, 70, 80 or 90 km/h. Factors considered in determining if a full time reduced speed limit is warranted include:

- Restrictive road geometry resulting from detours, diversions, crossovers or narrow lanes;
- Proximity and exposure of workers to open traffic lanes;
- Proximity of hazards such as pavement edge drop-offs to open traffic lanes;
- Length of construction zone.

3.05.03 Daily Shift Reduced Speed Limits

Daily shift reduced speed limits can be used in conjunction with DCZs when full time reduced speed limits are not warranted. The posted reduction in speed limit is set up and removed daily by the Traffic Services Branch or an Authorized Construction Agency prior to work commencing and after work has been completed for the day. These projects generally do not have full time lane closures or any hazards in the work zone when workers are not present.

3.05.04 Flagging

In circumstances where a full time or a daily shift reduced speed limit is not warranted, and there is a desire to control speed through the construction zone, the Construction Agency can employ flagpersons equipped with 'SLOW' paddles on the approaches to the work area. Further details on flagging are presented in Section 3.06.

3.06 Flagperson Practices

Flagpersons are used when it is necessary to stop and direct approaching motorists or to stop them momentarily. Flagpersons can also be used to signal motorists to reduce speed through a work zone. In all circumstances, the flagperson must be able to communicate effectively. To be effective, the flagperson must be kept aware of the changing conditions in the work zone so that he/she is able to communicate with the motorist respecting:

a. The road conditions ahead;
b. The path to follow;
c. When the potential for interaction between workers and traffic exists; and
d. When the approach sight distance to the work area is limited.

'FLAGPERSON AHEAD' signs (MC-64) as illustrated in Section 5.02 shall be placed between 90 m and 120 m in advance of the flagperson (see Figure 19) who must be equipped with flagperson's tools as described in Section 5.02.07. In the majority of work zones, the flagperson shall be stationed 60 m in advance of the work area or start of taper. Flagpersons must always be visible to the motorists for a distance of at least 150 m.

When flagpersons are not present, the 'FLAGPERSON AHEAD' sign(s) must be removed or hidden from the motorists' view.

All flagpersons must have completed a Flagperson Training Course and carry with them a training certificate at all times. Training material, including the Flagperson Training Workbook, is available from Manitoba Infrastructure. A list of training providers can be found on the Safe Work Manitoba website (www.safemanitoba.com). Furthermore, all flagpersons must adhere to the regulations of the Workplace Safety and Health M.R. 217/2006 and The Highway Traffic Act.

3.07 Work Zone Considerations

3.07.01 Pedestrian and Bicycle Travel

Reasonable efforts must be made to refrain from closing bicycle facilities and sidewalks. Different streets provide different levels of accomodation for cyclists. Closing a segment of the City's bike network is frequently more harmful than closing a street or lane to motorized traffic due to the lack of safe and accessible alternate routes. It is important to indicate on lane closure requests when bicycle facilities are being closed.

The temporary traffic control chosen for the closure of an active transportation facility should match the level of safety provided by the facility that is being closed. For example, when closing a protected bike lane, it is expected that the adjacent travel lane be closed and used as a bike detour around the workzone. This is particularly important for one-way streets with bi-directional bike lanes such as McDermot Avenue or Garry Street. Cyclists using the counter-flow direction of the bike lane are put in a dangerous situation when the they come to a bike lane closure that forces them onto the sidewalk or into oncoming traffic. When applicable, on-street parking should be removed to facilitate safe travel for vehicles and cyclists.

When there is no active work being completed on a sidewalk, the sidewalk should be restored to a point where it is safe and traversable using a sturdy, non-slip material. Small excavations in the pedestrian travel path can often be temporarily restored using packed granular that allows pedestrians to mount curbs and access crosswalks.

New signs have been developed for sidewalk closures to be placed at the location of the closure and at a adjacent crossings to indicate the need to cross the street. When travel lanes are too narrow for vehicles and bicycles to safely share the road, single file signs can be installed to direct drivers and cyclists to operate in a single file through a work zone. Share the lane and take the lane strategies are illustrated in Figures 22a and 22b. Signs for bicycle lane and sidewalk closures are shown in Section 5.02.01.

3.07.02 Transit Stops and Transit Users

Winnipeg Transit has the authority to determine the level of accomodation at bus stops in work zones. Bus stops may be closed, relocated out of, or maintained in a work zone. Figure 19 illustrates a typical temporary transit stop when loading and unloading from the second lane or median.

When bus stops are to be maintained from the second lane due to work in the curb lane, precautions must be taken to ensure the safety of transit users and the accessibility of the stops. Barricades or pedestrian chanellization devices must be used to separate the bus stop area from the active work areas, and temporary platforms must extend from the curb to the edge of the lane where transit will be loading and unloading. Prefabricated temporary bus platforms are available and provide simple products that snap together to form platforms of any size.

When a work zone requires traffic to cross over a median and transit loading and unloading to take place on the median, a separated pedestrian path with curb ramps must be provided for accessibility. The area of the median used for loading must have non-slip surface.

3.07.03 Lateral and Vertical Position of Traffic Control Devices

Traffic control devices must be well within the normal field of vision of the motorist to be effective. This is particularly necessary at night when motorists are not able to see the whole roadway environment and must depend upon the reflected light from traffic signs and other devices to provide necessary information. Appropriate lateral and vertical placement of temporary signs helps to ensure that the necessary information is available.

In general, motorists in urban areas travel with their headlights on low beam. Signs and other devices that are placed too low or high, or too far left or right, are not fully reflected. As a result, these types of traffic control devices located on the roadway, boulevard or shoulder should be:

- Between 0.3 m and 2.5 m from the edge of the travel lane;
- Installed so that the bottom of the sign is no less than 1.5 m above the roadway, or 1.0 m above the roadway for 900 mm x 900 m or larger signs; and
- Cleaned regularly.

Signs on the boulevard should be placed in a location that does not obstruct the pedestrian or cyclist travel path.

3.07.04 Warning Flags

As illustrated in Section 5.04, warning flags shall be installed on the first warning or temporary traffic control sign in a taper within a long term sign setup and on any portable sign used in a short term sign setup. Use of warning flags increases the visibility of the temporary traffic control devices that define obstructions on the roadway, thereby assisting motorists in selecting the proper traffic lane. Flags shall be:

- Red or orange in colour;
- Shall be no less than 0.16 square metres; and
- Shall be placed so that the top of the flag is a minimum of 0.5 m above the top of the sign.

3.07.05 Traffic Lane Clearances

A traffic lane on a major thoroughfare is normally about 3.5 m wide and in no case less than 3.0 m. When traffic lanes are open, these lane widths should remain clear of traffic control devices, construction materials and equipment. Placement of large objects close to the edge of a traffic lane effectively reduces the lane width. Material and equipment placed close to either side of a traffic lane should be avoided where possible, particularly on high speed (70, 80 or 90 km/h) routes.

3.07.06 Construction Equipment

The location of equipment, material, construction vehicles, and personnel shelters within the work zone must not interfere with the ability of motorists, cyclists and pedestrians to see workers or traffic control devices. The movement of vehicles and equipment into and out of the work zone shall be undertaken with the least possible interference to traffic movements on the street. In many instances, a flagperson will be required for this purpose. **Parking of personal vehicles within the work zone is generally not permitted.**

4 MAINTENANCE

4.01 General

It is the responsibility of the Construction Agency to inspect and undertake the necessary maintenance or replacement of traffic control signs as well as all other devices, and to ensure that they are legible and in their proper place at all times. All signs and devices must be regularly reviewed to ensure that legibility and colour (daytime or nighttime) is approximately equivalent to new devices. For this purpose, reflectorized signs or devices will be deemed to be acceptable if they are clearly visible and legible when illuminated with normal vehicle lights on low beam from a distance of 100 metres. Additionally, their general daytime condition should be such that they command respect. Damaged, defaced or dirty signs lose their authority as traffic control devices, and are a discredit to the Construction Agency responsible for them.

Signs with conflicting messages must be removed from view. Obstructions such as shrubbery, construction materials or parked vehicles, must not obscure the visibility of temporary traffic control devices. **When devices are not required they must either be removed or hidden from the motorists' view.**

4.01.01 Work Area Enclosures

It is the responsibility of the Construction Agency to safely enclose the work area when required, in accordance with the Workplace Safety and Health Regulation 217/2006.

The work area must have a sign prominently identifying the name and emergency telephone number of the Construction Agency.

Construction
Agency Name:

Emergency
Phone Number:

4.02 Removal of Traffic Control Devices

Under Section 77(9) of The Highway Traffic Act, traffic control devices at a construction site must be removed when it is no longer necessary for the devices to remain in place. In some cases, a detour or street closure will be in effect only during certain hours of the day, in which case the affected section of street should be restored to normal use at other times. It is essential that all the devices which are not applicable when the street is restored to normal use be either removed or otherwise hidden from the motorists' view.

5 TEMPORARY TRAFFIC CONTROL DEVICES AND ILLUSTRATIONS

5.01 General

The following sections detail the approved signs and devices required to implement the requirements of this Manual. Figures 1 through 41 in Section 5.04 show typical traffic control details for many circumstances. Adjustments to traffic control may be required to suit site specific conditions.

To be effective during hours of darkness, all signs, barricades, delineators, cones and other similar devices must be reflective. To optimize this reflectivity, these devices must be regularly cleaned and well maintained. As of January 1, 2012 all retroreflective sheeting on temporary traffic signs, barricades and devices must use a minimum Type VIII retroreflective sheeting, with the exception of reboundable devices specifically channelization barrels, tall cones and traffic cones which shall use a minimum Type IV retroreflective sheeting (ASTM D4956).

Under no circumstances are signs with hand painted lettering, diagrams, or symbols permitted. Similarly, yellow or orange caution tape is not an approved traffic control device in this manual. The use of caution tape or non-approved signs is an illegal violation of the City's Streets By-Law 1481/77 and Traffic By-Law 1573/77, and is subject to prescribed fines.

Construction Agencies are REQUIRED to provide contact information on the back of temporary traffic control devices to allow recovered property to be returned. Temporary traffic control devices without contact information may be removed by a City of Winnipeg Streets Constable.

5.02 Traffic Control Devices

This section describes the most commonly used traffic control devices for road work operations and other temporary conditions.

5.02.01 Warning, Regulatory and Information Signs



TC-2
ROADWORK



TC-3
SURVEY CREW



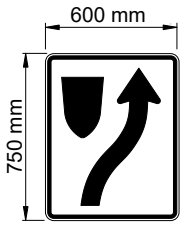
MC-64
TRAFFIC CONTROL PERSON AHEAD
(MINIMUM 900mm X 900mm)



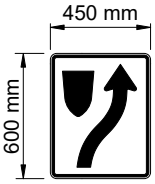
TC-5R
TEMPORARY LANE CLOSED AHEAD
(RIGHT VERSION)



TC-13R
ROAD DIVERSION
(RIGHT VERSION)



RB-25
KEEP RIGHT



RB-25
KEEP RIGHT
REDUCED SIZE



TC-15R
ROAD REALIGNMENT
(RIGHT VERSION)



TC-16R
LANE REALIGNMENT
(RIGHT VERSION)



MC-61
DOUBLE ARROW



MC-61
DOUBLE ARROW
REDUCED WIDTH



MC-60
DOUBLE ARROW
WITH RIGHT TURN LANE



TC-24
TWO WAY
TRAFFIC AHEAD



TC-54R
TRUCK ENTRANCE
(RIGHT VERSION)



TC-62
CONSTRUCTION
MARKER

NOTE:

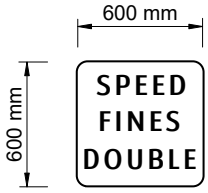
- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless otherwise specified.
- Reduced size signs are only permitted when the sign is placed on a lane line marking and traffic is allowed to operate on the adjoining traffic lanes.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.



MC-1 D
DESIGNATED
CONSTRUCTION ZONE
(MIN. 900mm X 900mm)



MC-1 DB
DESIGNATED
CONSTRUCTION ZONE
(MIN. 900mm X 900mm)



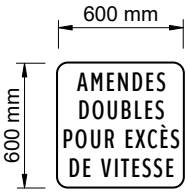
MR-179
SPEED FINES
DOUBLE



TC-4
CONSTRUCTION ENDS



TC-4DB
CONSTRUCTION ENDS



MR-179F
SPEED FINES
DOUBLE



ZIPPER MERGE SIGN #1
ZIPPER MERGE AHEAD



ZIPPER MERGE SIGN #2
USE BOTH LANES



ZIPPER MERGE SIGN #3
TAKE TURNS MERGING



TC-51
BUMP



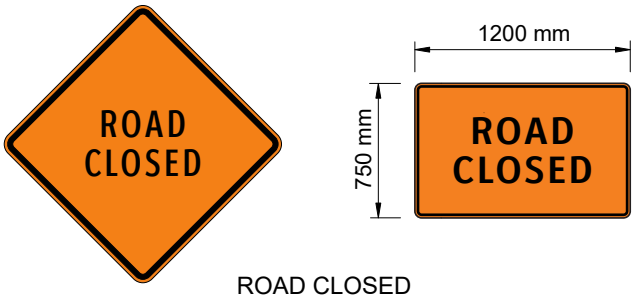
TC-49
PAVEMENT DROP-OFF



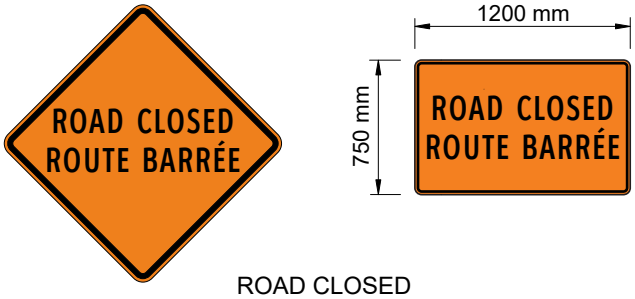
WD-A69
LOOSE GRAVEL

NOTE:

- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless specified otherwise.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.



ROAD CLOSED



ROAD CLOSED
(BILINGUAL)



NO EXIT TAB



WB-2
YIELD AHEAD



TC-17
YIELD TO
ONCOMING TRAFFIC



TC-17F
YIELD TO
ONCOMING TRAFFIC

NOTE:

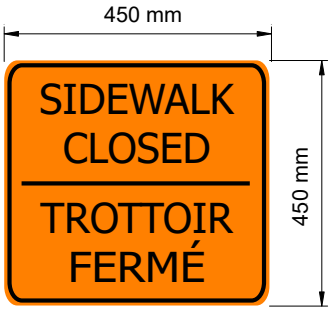
- Tabs shall be 300mm x 600mm reflectorized orange or white.
- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless specified otherwise.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.



TC-73
SHARE THE ROAD



TC-72
SINGLE FILE



SIDEWALK CLOSED



TC-73S
SHARE THE ROAD



TC-72S
SINGLE FILE



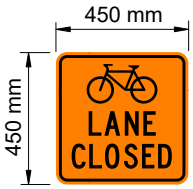
SIDEWALK CLOSED AHEAD,
CROSS HERE



TC-73SF
SHARE THE ROAD



TC-72SF
SINGLE FILE



TC-68
BIKE LANE
CLOSED



TC-68F
BIKE LANE
CLOSED



TC-70
BIKE DETOUR



TC-70R2F
(RIGHT VERSION)



TC-70R1F
(RIGHT VERSION)



TC-71
BIKE DETOUR
ENDS

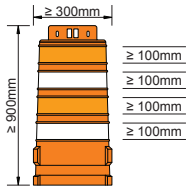
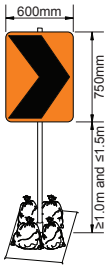
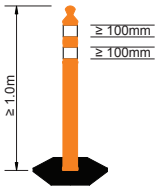
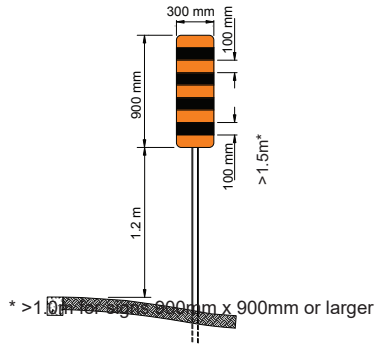


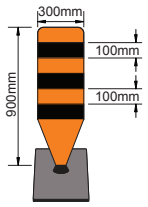
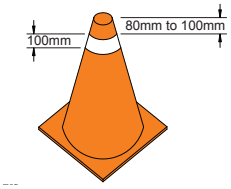
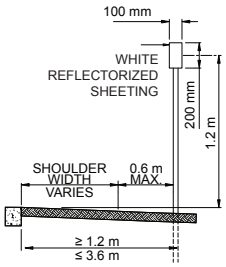
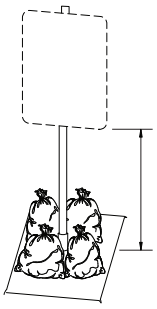
TC-71F
BIKE DETOUR
ENDS

NOTE:

- Tabs shall be 300mm x 600mm reflectorized orange or white.
- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless specified otherwise.
- Bike Lane signs are to be 450mm x 450mm reflectorized orange.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.

5.02.02 Barrels, Cones, Markers and Panels

Device & Uses	Illustration	Description
All devices in the table, with the exception of road edge delineators, shall be fluorescent orange with stripe colours and widths as indicated in the drawings. All devices shall have a minimum Type VIII high intensity retroreflective sheeting except channelization barrels, tall cones and traffic cones which shall have a minimum Type IV high intensity retroreflective sheeting, in orange and/or white as required.		
Channelization Barrel TC-63 • Tapers • Along work areas		Barrels may be used in tapers and along work areas in place of construction markers, where channelization devices will remain in place for prolonged periods of time.
Chevron TC-31 • Tapers		The Chevron sign may be used in place of channelization barrels in tapers, however channelization barrels are preferred.
Tall Cone • Along work areas • Lane delineation		Tall Cones may be used to delineate traffic space alongside the work area in place of construction markers and traffic cones only. Tall cones are not to be used in tapers. The base should weigh a minimum of 5kgs.
Construction Marker TC-62 • Along work areas • Lane delineation		Construction markers may be used as a delineation device for high-speed/ high-volume work zones in place of tall cones and barrels (barrels are preferred). Construction markers are not to be used to channelize traffic through tapers.

Construction Panel • Along work areas • Lane delineation		Construction panels may be used as a delineation device for high-speed/ high-volume work zones in place of tall cones and barrels (barrels are preferred). Construction panels are not to be used to channelize traffic through tapers.
Traffic Cone TC-61 • Lane delineation		Traffic Cones ≥ 700 mm in height may be used as a delineation device for short term lane closures. The use of smaller traffic cones (not less than 450 mm in height) may be used for a special event (i.e. parade, marathon) where delineation of traffic is required. These cones may only be used during daylight hours.
Road Edge Delineator		Road edge delineators may be used to identify the edge of the usable roadway for motorists. Where diversions or detours are undertaken on streets where artificial street lighting is not available or with low levels of street lighting, delineators must be used.
Portable Sign Support To advise of temporary roadway conditions for short term projects and maintenance operations.		Portable sign supports may use weighted bases or folding frames, provided that the signs are held securely and maintained in proper position. Use of folding frames should be avoided on sidewalks where their larger footprint can pose a tripping hazard. Portable signs with round bases (i.e. tire rims) are illegal and are not permitted for use on City streets.

5.02.03 Flashing or Sequential Arrow Traffic Control Devices (Arrow Boards)

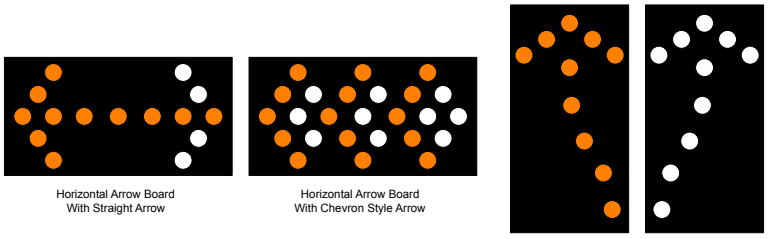
Construction Agencies are encouraged to use arrow boards to increase the visibility of a work zone. Arrow boards are specifically required for short term work at night, mobile and very short duration work zones at night and on streets with a speed limit of 70, 80 or 90 km/h, and survey crew work zones. However, arrow boards are also recommended for short term work on streets with a speed limit of 70, 80 or 90 km/h and as a supplement in any circumstance that requires higher than normal visibility (nighttime, high speed, high traffic volumes).

Requirements for the arrow board devices are as follows:

1. Arrow boards shall be mounted on a vehicle or on a trailer so that they are clearly visible from the rear. The bottom edge of the device shall be a minimum of 1.5 m from ground level.
2. The arrow board message should be distinguishable by an approaching motorist at a distance of at least 500 m on a sunny day.
3. The visibility of the arrow board to approaching motorists must not be obscured by any other devices or objects on the vehicle upon which the arrow board is mounted.
4. Arrow boards should be dimmer for nighttime applications compared to daytime applications so they do not impair the vision of approaching motorists.
5. The device may operate in one of the following modes: i) Left Arrow, ii) Right Arrow, iii) Both Arrows Heads (no shaft), or iv) Horizontal Warning Bar (light stick). The on/off is the preferred mode of operation; however, sequential arrow (Bar/Arrow head and Bar/Off) is also acceptable. The standard warning mode is for all lights on the bar (or shaft) to flash on and off.

Note: the use of a horizontal warning bar (light stick) is not an acceptable form of temporary traffic control on a Regional Street, unless used in a parking lane where the speed is 60 km/h or less.

Figures in the Short Term, Mobile and Very Short Duration, and Survey Crew Work Zone sections illustrate the use of an arrow board.



5.02.04 Variable Message Signs

Variable message signs (VMS) are generally used to warn motorists in advance of and during a project when significant traffic impacts are expected. VMS are often used for full closures, detours and significant lane closures on high volume routes. The use of VMS and the message displayed is to be specified by the Traffic Management Branch in consultation with the Traffic Services Branch. When VMS are unavailable, static information signs may be posted by the Traffic Services Branch as an alternative.

5.02.05 Barricades

Barricades may be used in situations where it is necessary to close a road, street, lane or shoulder at, or in advance of, the work area; barricades are then placed at the start of, and end of the work zone. The enclosure of the work zone using barricades must ensure that motorists, cyclists and pedestrians are adequately advised of the boundaries of the work zone. When barricades are removed to allow access/egress from the work zone for vehicles or equipment, the barricades shall be replaced immediately after such access/egress has occurred. The use of barricades to form a wall alongside the work area (parallel with traffic flow) is strictly prohibited except in the case of curb repair work.

Barricades should be used in long work zones with intermittent hazards. When a travel lane is closed for an extended distance for work such as concrete joint repairs, it is recommended to locate a barricade perpendicular to traffic at a spacing of every third delineation device or 27m in low speed environments. This serves as a reminder to motorists that the lane is closed when hazards are not visible.

For long term pedestrian deviations in work zones, pedestrian channelization devices are preferred.

The placement of barricades shall generally be in the manner indicated in the “Illustrations of Typical Situations” in Section 5.04.

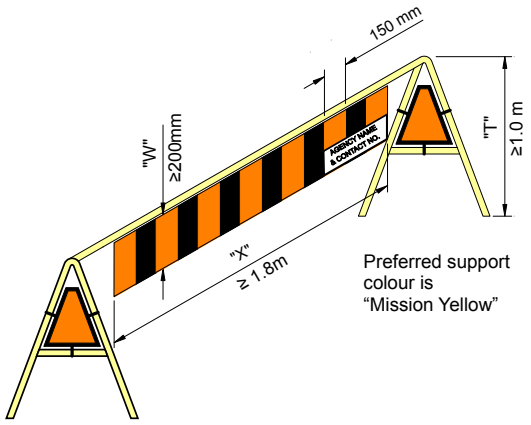
Device Requirements

All panels must have a minimum type VIII (high intensity) retroreflective sheeting and the barricade panel identified with (“W” x “X”) shall be vertically striped. The barricade frame may constructed from metal, wood, or plastic material.

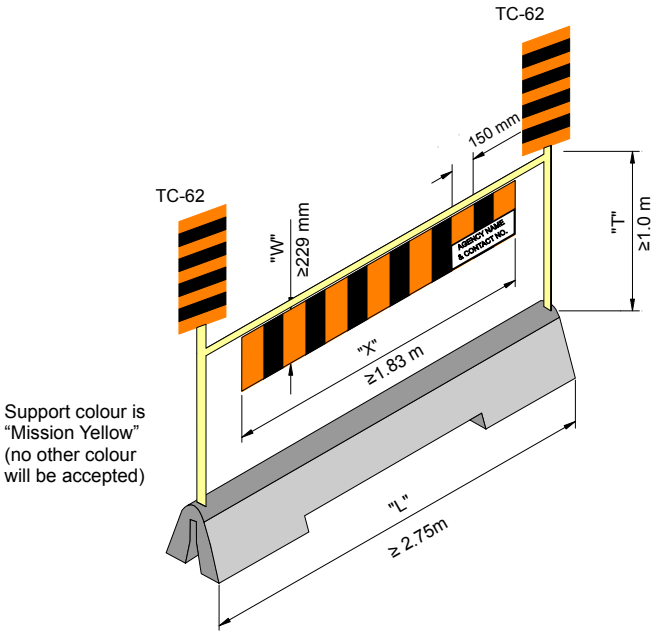
The Agency’s name and telephone number **MUST** be clearly displayed on the barricade panel in the bottom right corner (maximum size 450 mm wide and 120 mm high).

Barricades must conform to the following specifications:

6. Reflectorized Light Barricade



7. Reflectorized Concrete Barricade



8. Sidewalk Manhole Barricade

The sidewalk manhole barricade is used to provide safety and protection when work is to be performed around manholes. The Construction Agency is responsible for ensuring that the use of the barricades is in accordance with the Manitoba Workplace Safety and Health Regulation and conforms to the necessary safety standards and specifications for sidewalk manhole barricades.

9. Road Closure Barricades for Non-Regional Streets

When closing a road at a midblock location, barricades must be setup at each of the adjacent intersections, on the intersection leg closest to the closure. At these soft closures where traffic is still permitted to bypass the barricades to access properties ahead of the work zone, a rectangular 'ROAD CLOSED' sign with a 'NO EXIT' tab should be attached to the center-most barricade. The 'ROAD CLOSED' sign is to be black on orange. At the edge of the work zone, the 'NO EXIT' tab is not required. This setup is shown in Section 5.04 Figure 28.

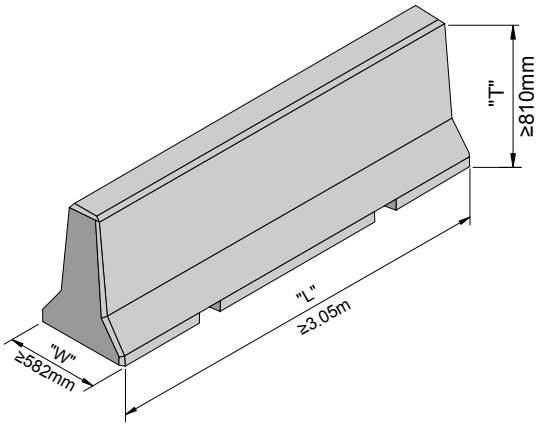
The 'ROAD CLOSED' and 'NO EXIT' signs work similarly to previously used 'LOCAL TRAFFIC ONLY' signs, which are no longer permitted under this manual.



5.02.06 Barriers

Temporary barriers such as concrete barriers (commonly referred to as jersey barriers), steel barriers, or ballast-filled barriers are used to prevent vehicles from encroaching into the work area. The placement of barriers must be parallel to the flow of traffic continuously without gaps. Leaving barrier ends exposed creates a hazard for errant motorists and must be avoided or protected. Barriers may either be tapered such that barrier ends are located outside the roadway clear zone or be adequately protected with an appropriate form of end treatment described below minimizing any potential hazard. The lateral displacement during collisions is typically greatest with ballast-filled barriers and least with concrete barriers.

Barriers must conform to the following specifications:



Reflectorized Impact Recovery System Devices (End Treatments)

Placement and selection of end treatments are to be designed and sealed by a qualified Professional Engineer registered with Engineers Geoscientists Manitoba using AASHTO Roadside Design Guide, 4th Edition. Devices must conform to NCHRP (National Cooperative Highway Research Program) Test Level 3 or MASH (Manual for Assessing Safety Hardware) and must be non-gating and redirective. Any deviation from this standard must be accompanied by a written justification by a Professional Engineer. Drawings sealed by a Professional Engineer detailing the placement and selection of end treatments should be sent to PWDLaneClosures@winnipeg.ca at least **two weeks prior** to the proposed installation date.

Examples of two crash cushion style end treatments are shown below.





5.02.07 Pedestiran Traffic Control Devices

When pedestrians are not removed from a work area, a temporary pedestrian path must be maintained where possible. The temporary pedestrian path must be accessible and separated from vehicle traffic.

Temporary Curb Ramps

Temporary curb ramps maintain accessibility for people with mobility issues by allowing pedestrians to safely traverse a curb. Temporary curb ramps must be stable, with a hard non-slip surface and a slope of 12:1 (8%) or less. Prefabricated or asphalt curb ramps should be used. Placement or construction of curb ramps must not block runoff drainage. See examples of pre-fabricated curb ramps below.



1. https://starttraffic.com/curb-buddy-sidewalk-curb-ramp-ada
2. https://www.handiramp.com/product/curb-cut-ramps/

Pedestrian Channelization Devices

Pedestrian channelization devices (PCDs) provide a clear delineated path for pedestrians through a work area. It is important that PCDs are sturdy, have smooth edges, and have continuous top and bottom surfaces. Pedestrian channelization devices should not be used to delineate vehicle traffic, and channelization barrels or tall cones must still be used between a live traffic lane and the pedestrian path. Examples of PCDs are shown below.



1. https://www.pexco.com/traffic/products/barricade-products/temporary-pedestrian-access-route-tpar-barricade/
2. https://www.traffixdevices.com/products/barricades/ada-wall
3. https://starttraffic.com/pedestrian-channelizing-wonderwall-barrier

Covered Walkways

Covered walkways can be used in or adjacent to work areas to protect pedestrians from overhead hazards. They can be used over existing sidewalks or along temporary pedestrian paths in the roadway. Covered walkways must provide the following features in addition to those described in the 2010 National Building Codes and the 2016 Manitoba Workplace Safety and Health Act and Regulation (Sections 20.2 to 20.4);

- Clear width of 1830mm
- Continuous, solid, slip-resistant walking surface with a wayfinding curb at ground level

5.02.08 Flagperson's Tools, Road Markings and Snow Fencing

Flagperson's Tools

A flagperson must be equipped with applicable tools as outlined in Part 20 of the Workplace Safety and Health Regulation 217/2006.

The dimensions of the flagperson's STOP/SLOW paddle are not to be less than 450 mm x 450 mm with 10 cm lettering as per the MUTCDC Fifth Edition.



MC-44A



MC-44A B

Temporary Road Markings

Temporary road markings in the form of temporary overlap markers (TOMs) or reflectorized road marking tape can be used for short-term pavement markings and should not conflict with permanent pavement markings. At intersections, TOMs can provide guidance to vehicles when the alignment of departure and receiving lanes has been temporarily modified.

Temporary Rumble Strips

Temporary rumble strips are used to alert drivers to a changing roadway environment. They act as a form of tactile stimuli can be used at the start of DCZs as a supplement to the provincially regulated signage. Research has shown that temporary rumble strips can result in small decreases in speed and provide tactile and auditory feedback that increases driver alertness. Their use at the start of reduced speed zones in DCZs would further alert drivers to pay attention to their driving environment.

There are many types of temporary rumble strips, with each type having its own installation guidelines. A construction agency must submit drawings detailing the selection and placement of rumble strips to the Traffic Management branch for review and approval if they wish to implement temporary rumble strips as part of their work zone.

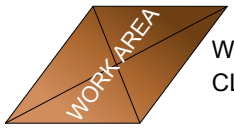
Snow Fencing

Orange plastic snow fencing can be installed and maintained on any perimeter side of a construction project site where there is a risk to the safety and health of a person travelling whether by walking or by vehicle immediately adjacent to the site. Orange plastic snow fencing must be a minimum 1 m in height.

5.03 Illustration Symbols



WARNING SIGN



WORK AREA/
CLOSED AREA

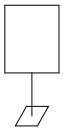


TRAFFIC CONE
SPACED AT 4.0 m INTERVALS

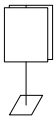


CONSTRUCTION
MARKER

DELINEATOR



DIRECTIONAL REGULATORY SIGN



BI- DIRECTIONAL REGULATORY SIGN



REFLECTORIZED BARRICADE



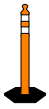
CHEVRON



CHANNELIZATION
BARREL



FLAGPERSON



TALL CONE



DIRECTION OF TRAVEL
(PLAN VIEW)



WARNING FLAGS



FLASHING OR SEQUENTIAL
ARROW TRAFFIC CONTROL DEVICE



SURVEYOR

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5.04 Illustrations of Typical Situations

FIGURE 1a

LONG TERM RIGHT LANE CLOSURE ON A MULTI-LANE STREET (USING CHANNELIZATION BARRELS)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

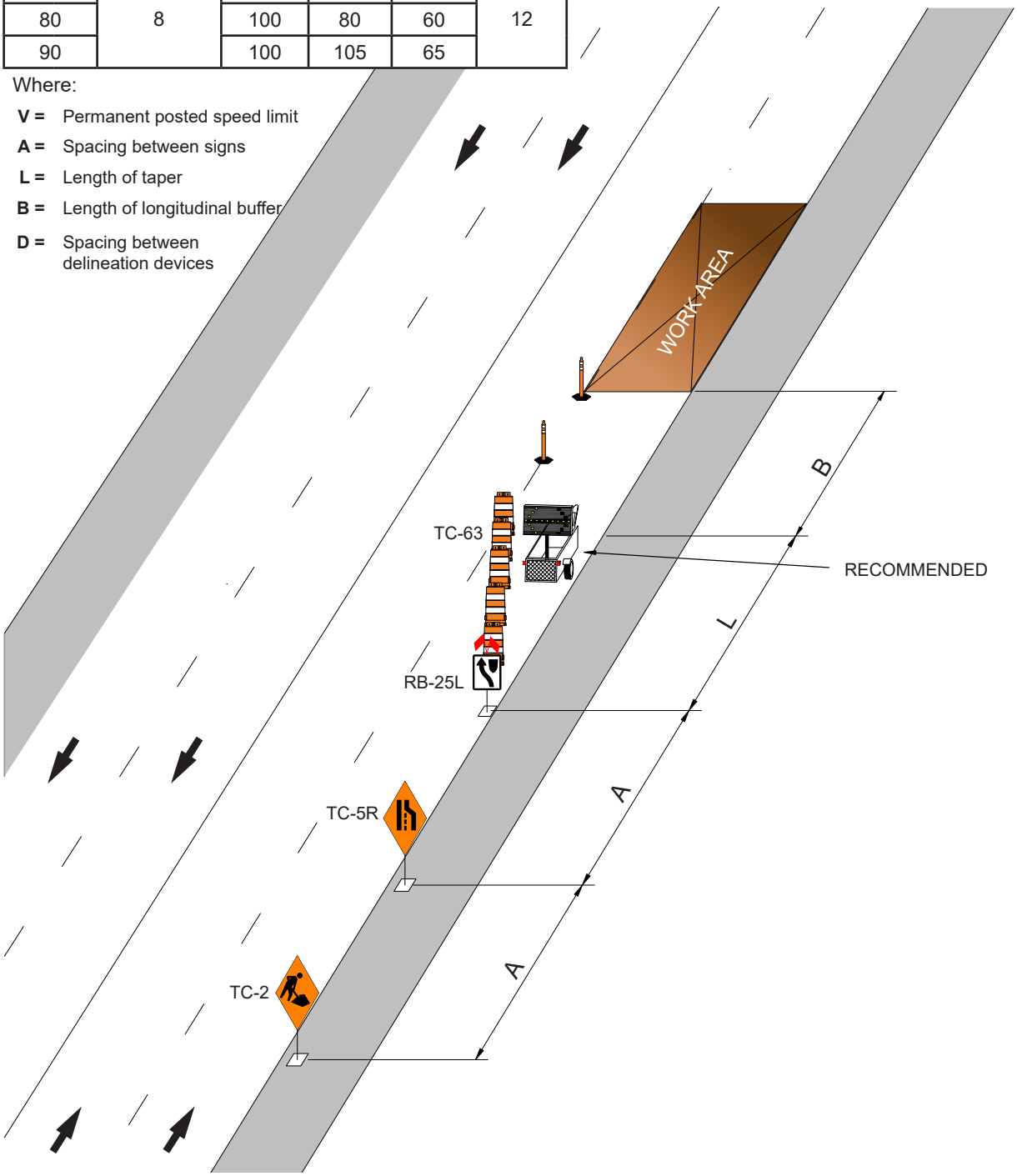
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



LONG TERM RIGHT LANE CLOSURE ON A MULTI-LANE STREET (USING CHEVRONS)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

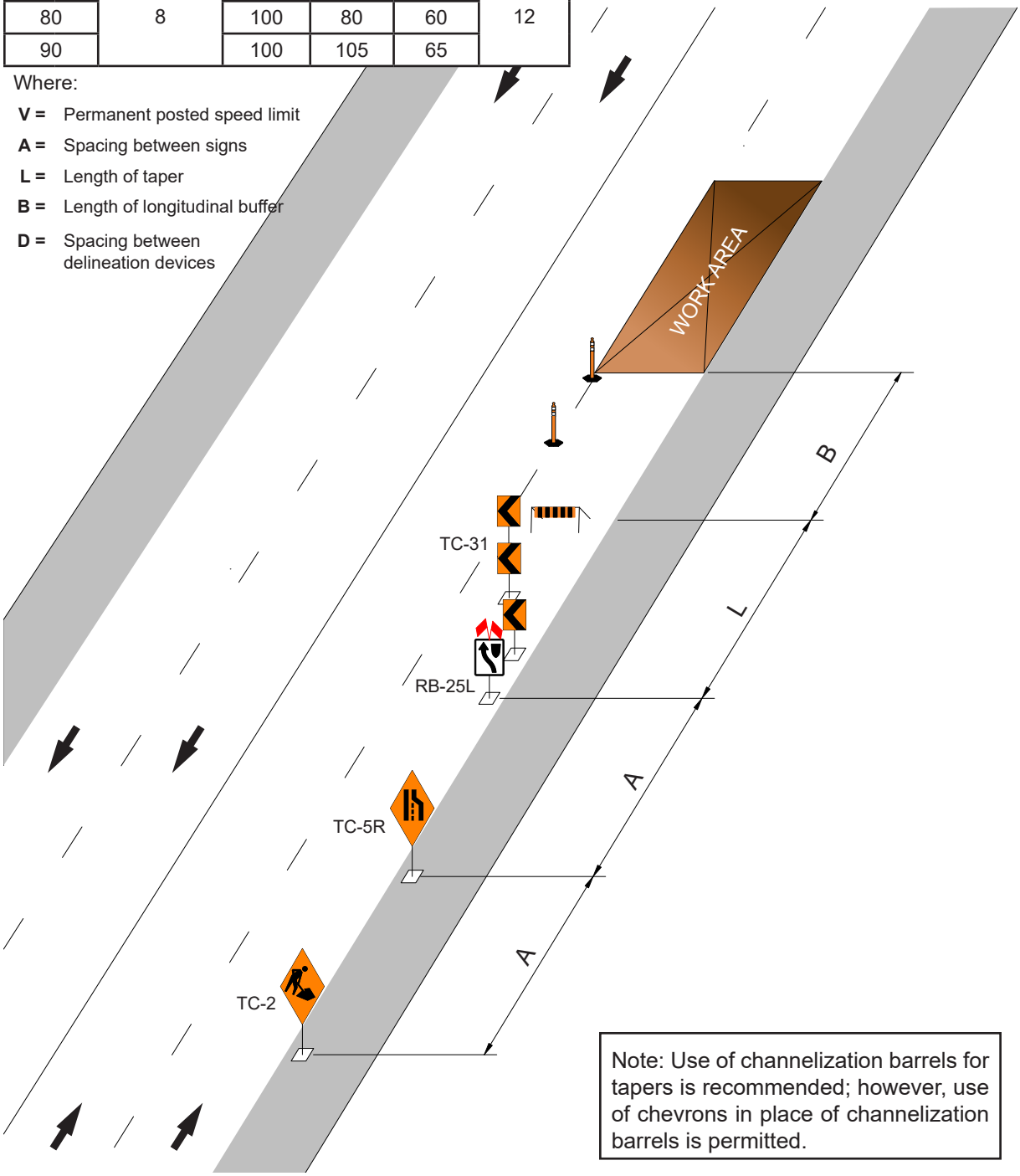
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: Use of channelization barrels for tapers is recommended; however, use of chevrons in place of channelization barrels is permitted.

FIGURE 2

LONG TERM RIGHT LANE CLOSURE ON A FOUR LANE UNDIVIDED HIGHWAY MAINTAINING TWO LANES IN THE CLOSURE DIRECTION (TWO LANE SHIFT)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

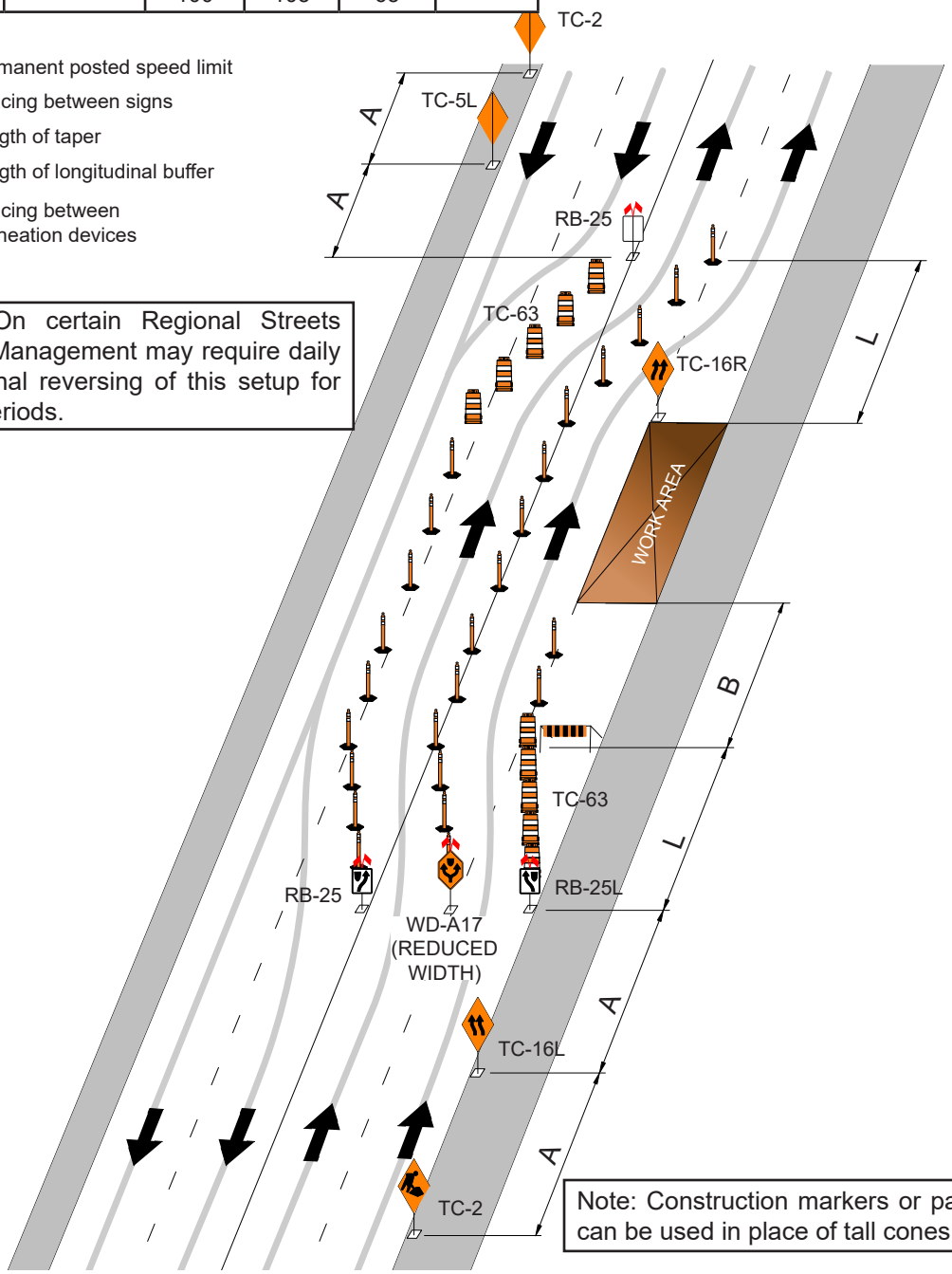
A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

Note: On certain Regional Streets Traffic Management may require daily directional reversing of this setup for peak periods.



Note: Construction markers or panels can be used in place of tall cones.

FIGURE 3

LONG TERM CLOSURE OF HALF OF A FOUR LANE UNDIVIDED STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

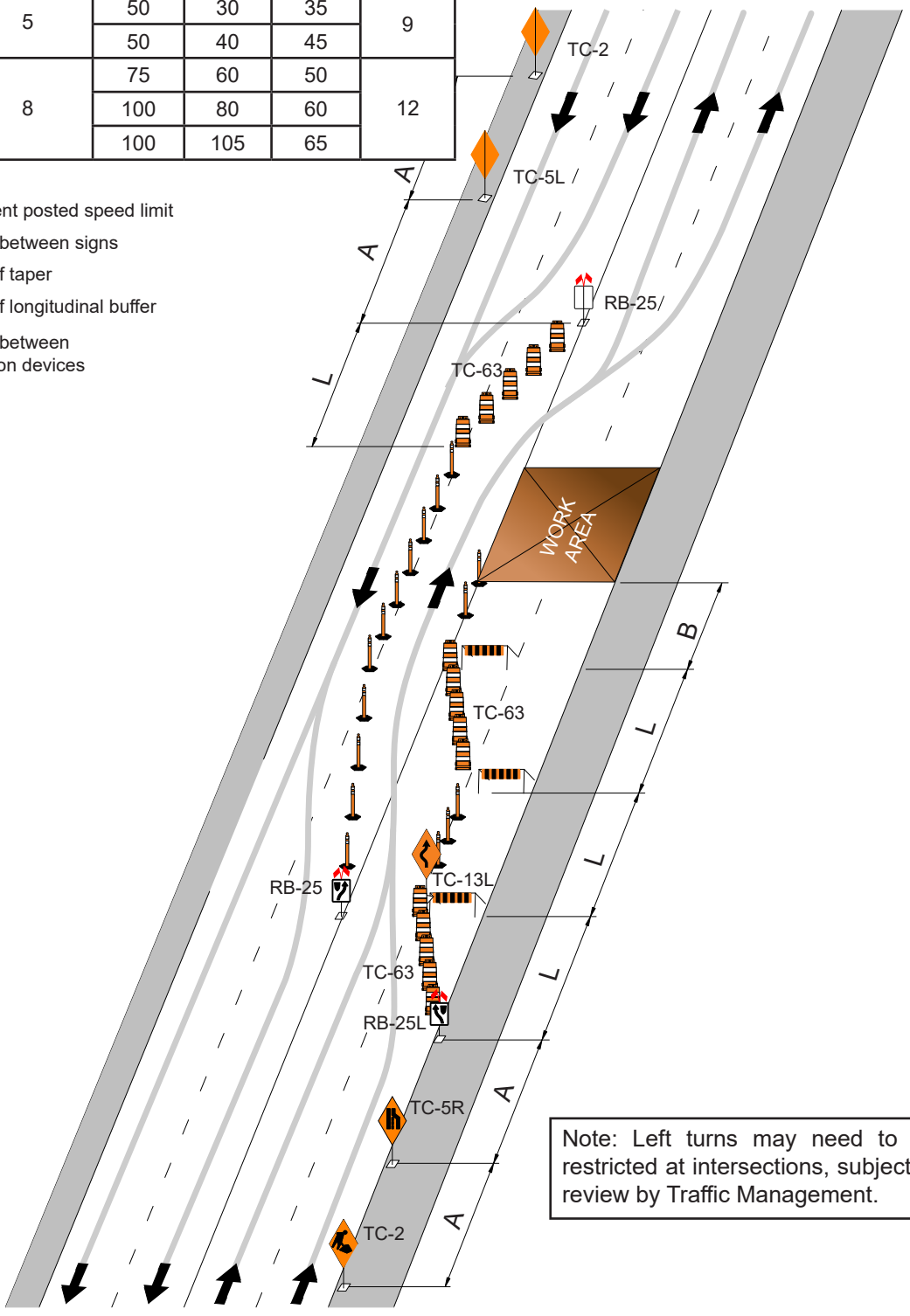
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: Left turns may need to be restricted at intersections, subject to review by Traffic Management.

FIGURE 4

LONG TERM CLOSURE OF TWO OUT OF THREE LANES ON A MULTI-LANE STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

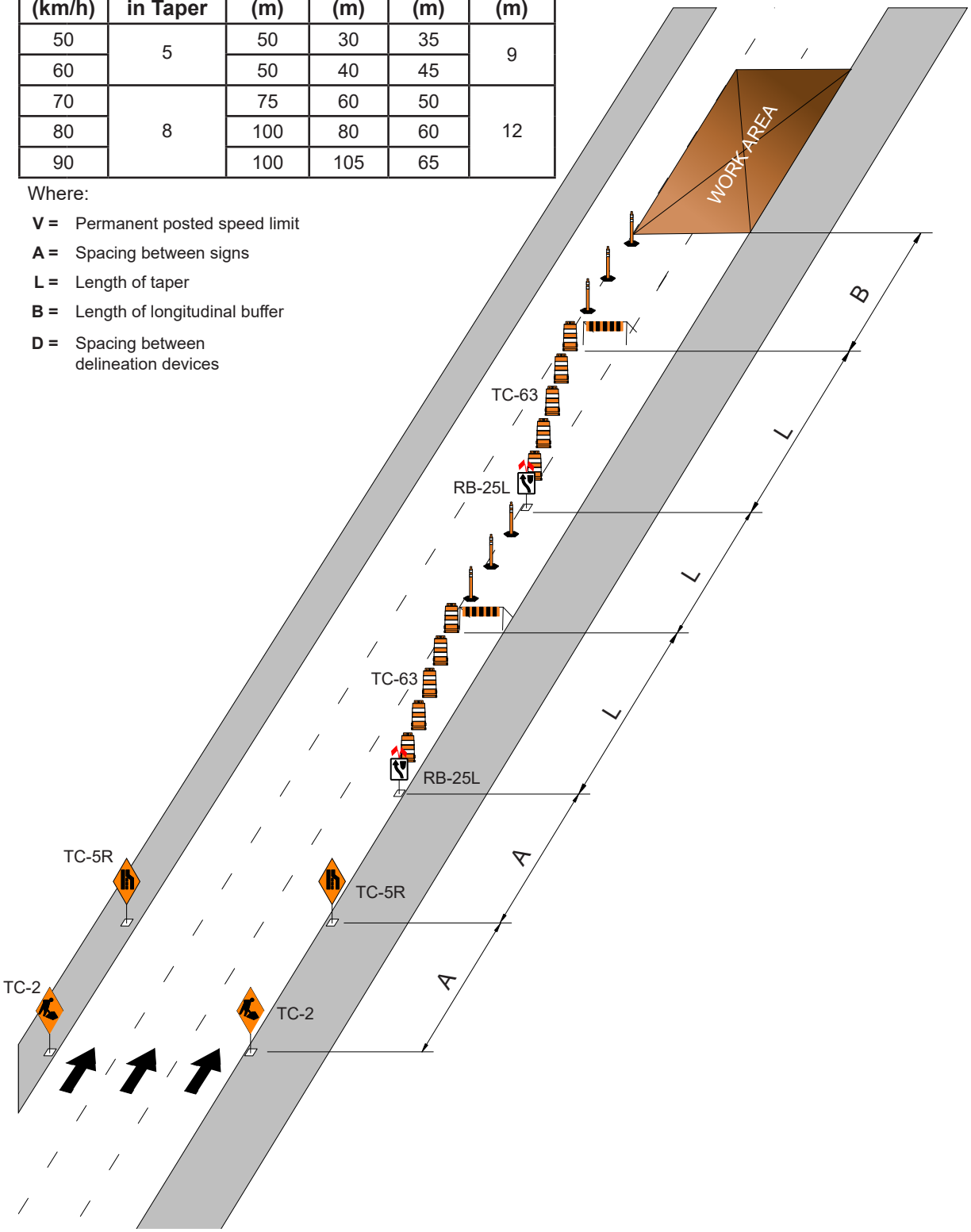
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



LONG TERM CLOSURE OF TWO OUT OF FOUR LANES ON A MULTI-LANE STREET (TWO LANE SHIFT)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

Note: A two lane shift returns traffic to original lanes without requiring merge movements allowing better traffic flow.

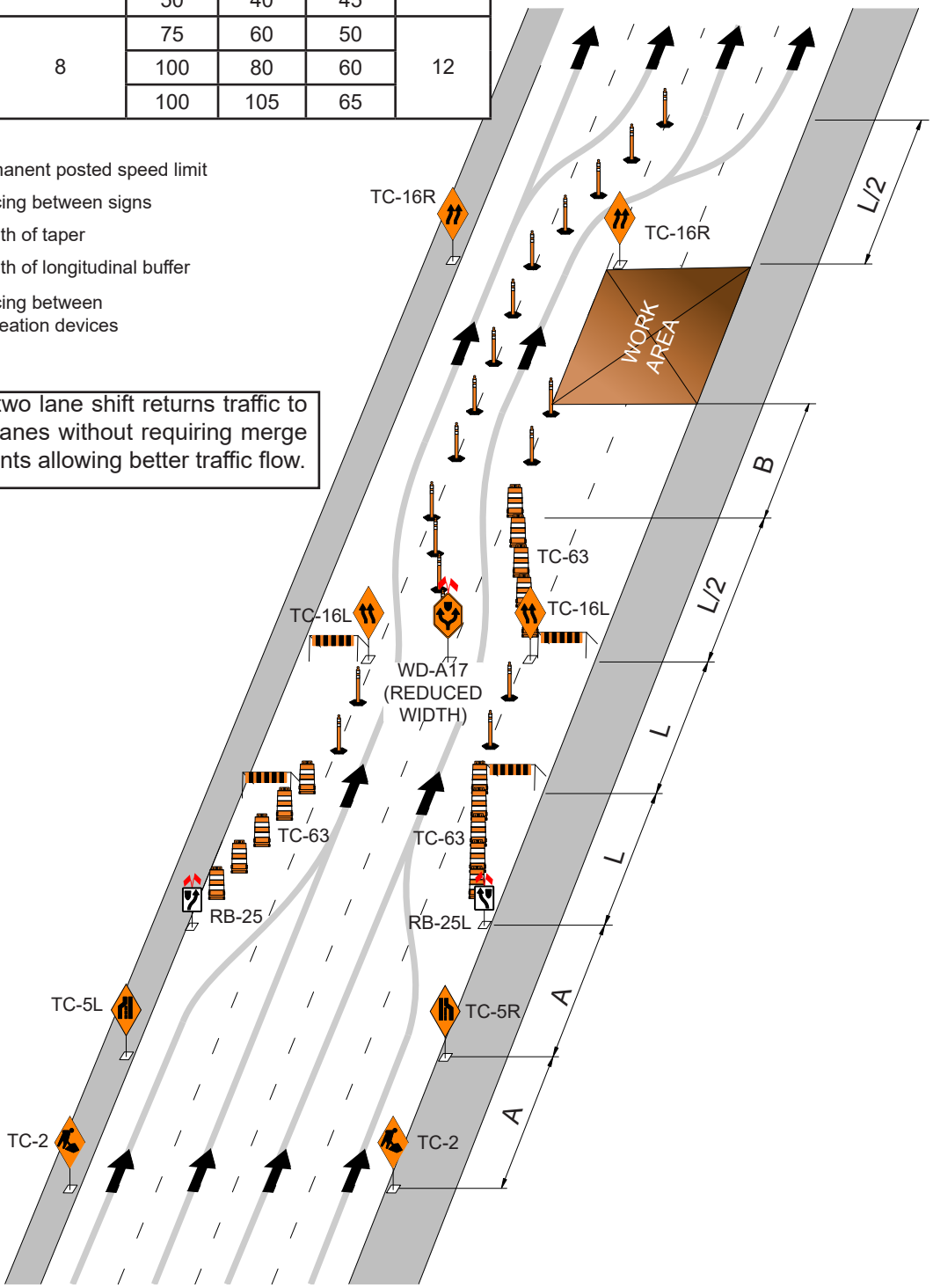


FIGURE 6

LONG TERM CLOSURE OF TWO OUT OF FOUR LANES ON A MULTI-LANE STREET INCLUDING AN INTERSECTION (TWO LANE SHIFT)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

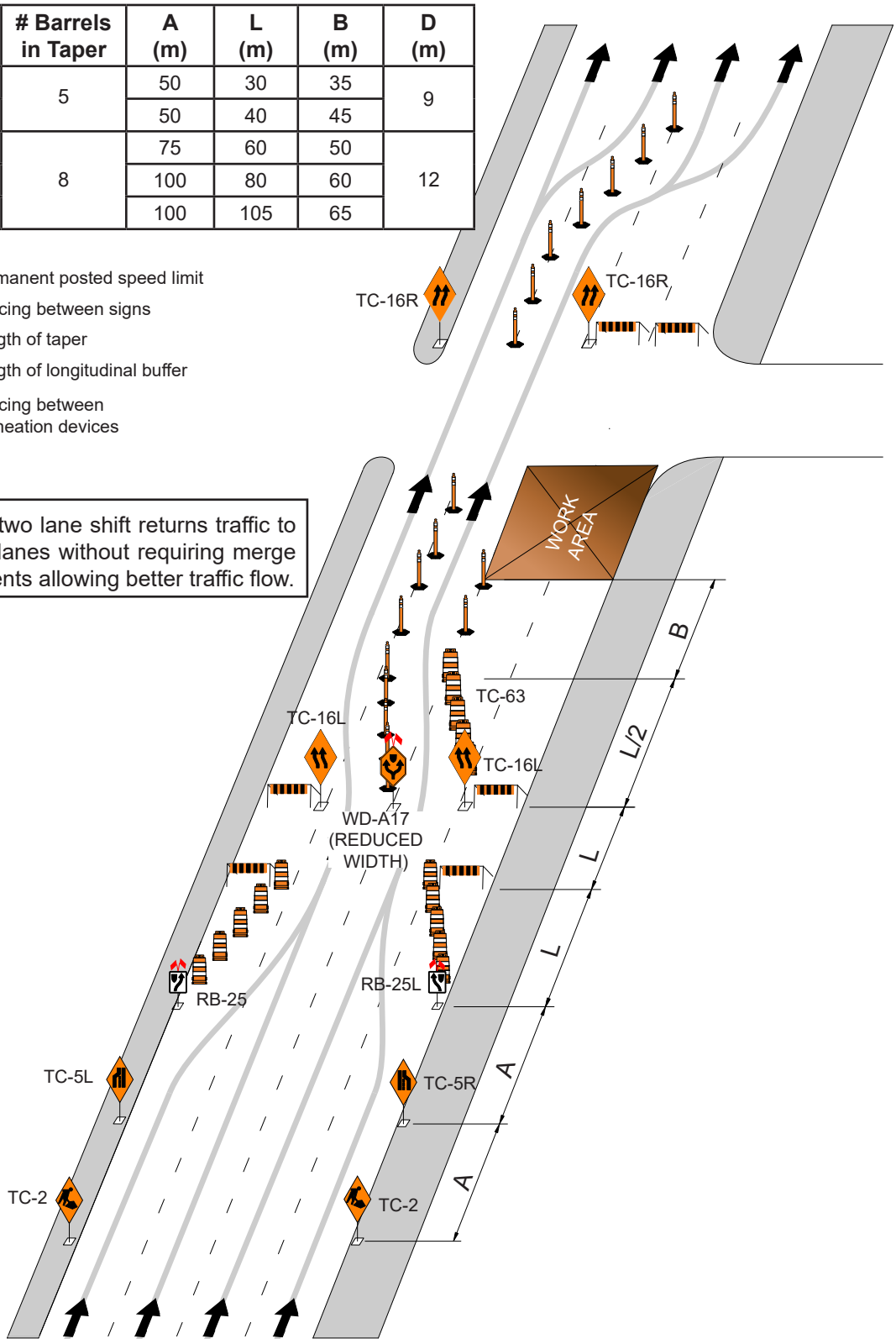
A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

Note: A two lane shift returns traffic to original lanes without requiring merge movements allowing better traffic flow.



LONG TERM CLOSURE OF NON-ADJACENT LANES ON A MULTI-LANE STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

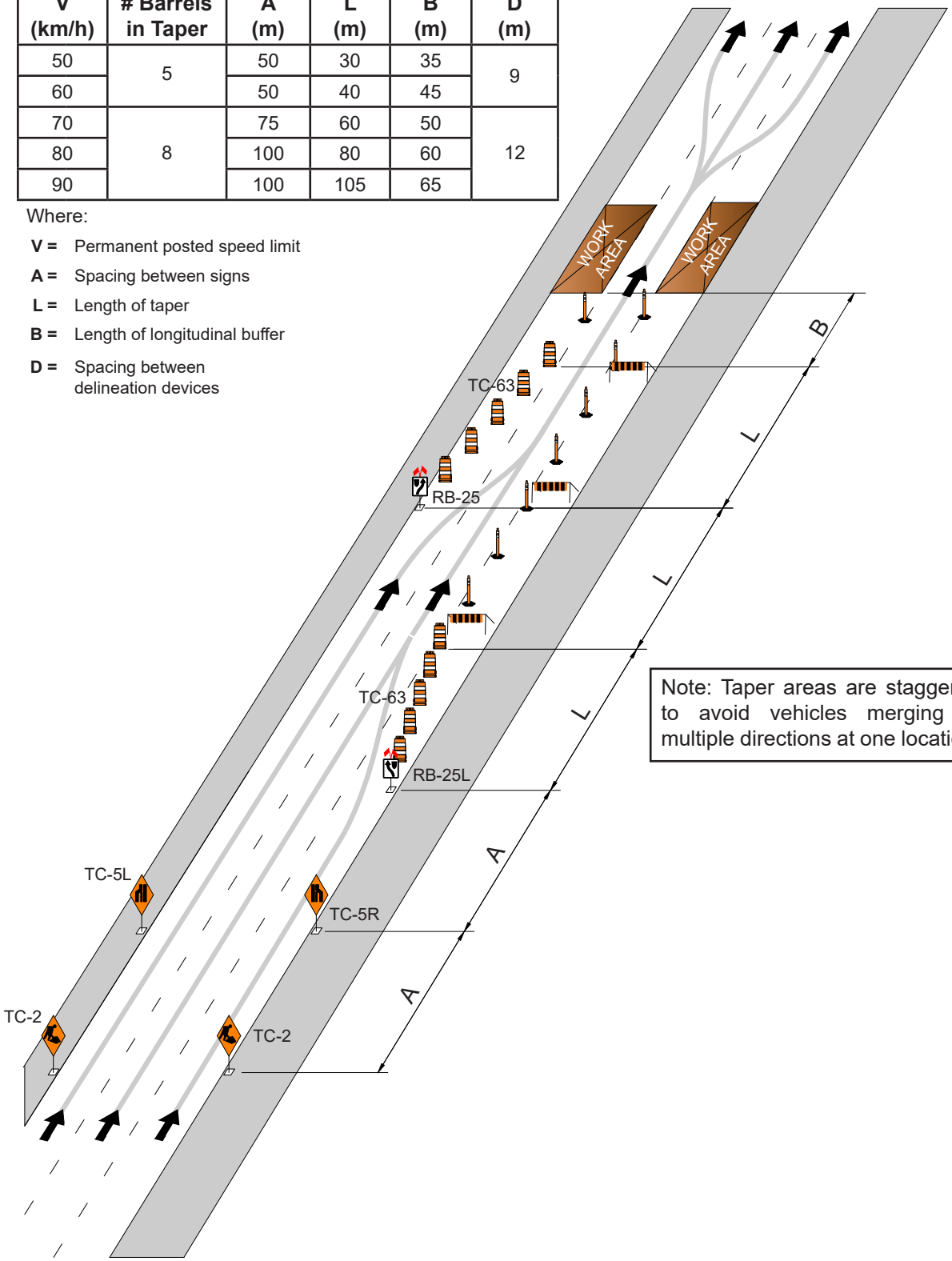
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: Taper areas are staggered to avoid vehicles merging in multiple directions at one location.

FIGURE 8a

LONG TERM CLOSURE OF ONE OUT OF THREE LANES ON A MULTI-LANE STREET (TWO LANE SHIFT)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

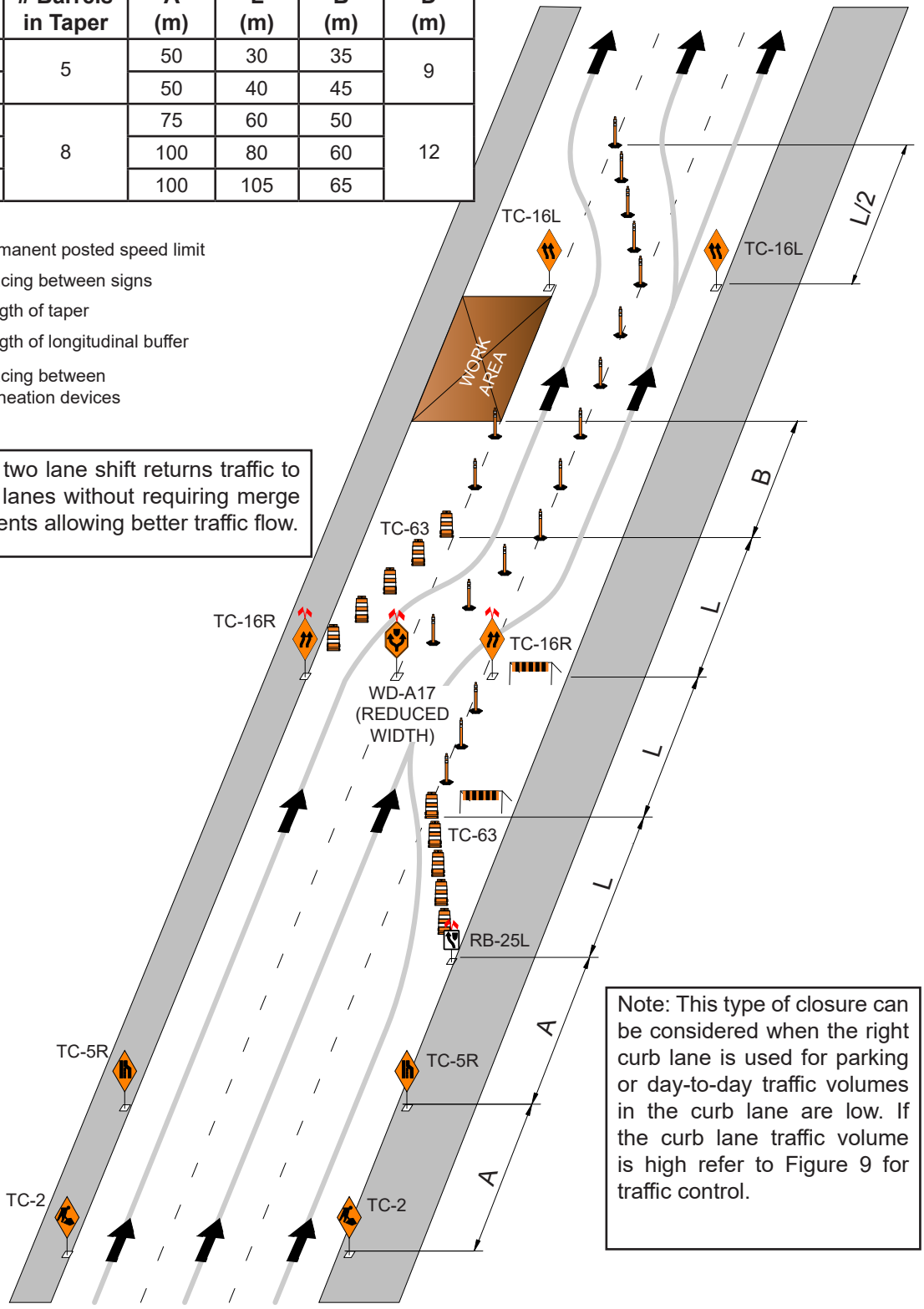
A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

Note: A two lane shift returns traffic to original lanes without requiring merge movements allowing better traffic flow.



Note: This type of closure can be considered when the right curb lane is used for parking or day-to-day traffic volumes in the curb lane are low. If the curb lane traffic volume is high refer to Figure 9 for traffic control.

LONG TERM CLOSURE OF ONE OUT OF THREE LANES ON A MULTI-LANE STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

Note: This type of closure can be considered when day-to-day traffic volumes in the right curb lane are high. If the curb lane traffic volumes are generally low or the curb lane is used for parking refer to Figure 8 for traffic control.

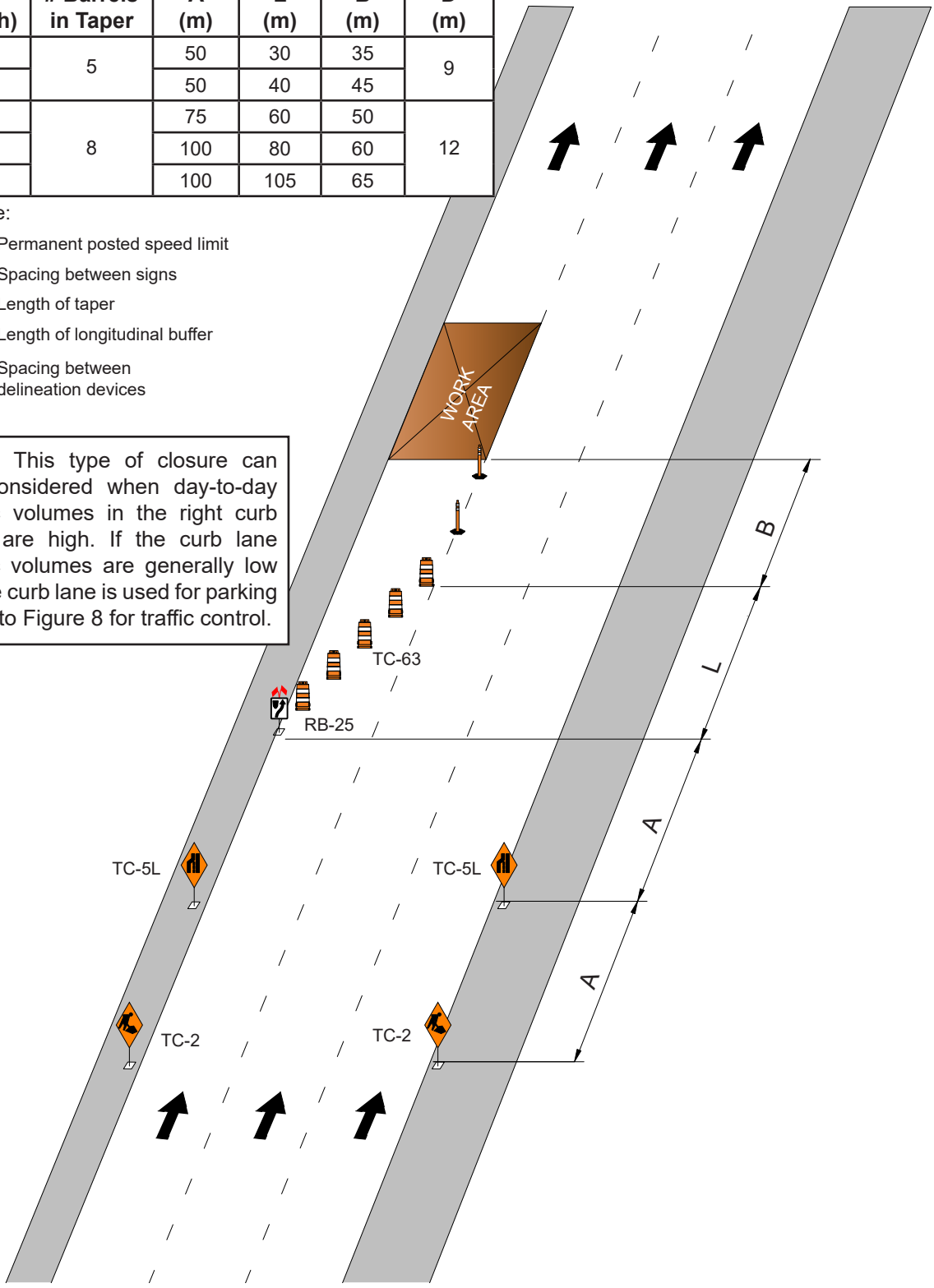


FIGURE 9

LONG TERM CLOSURE OF THE CENTRE LANE OR LANES OF A DIVIDED STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

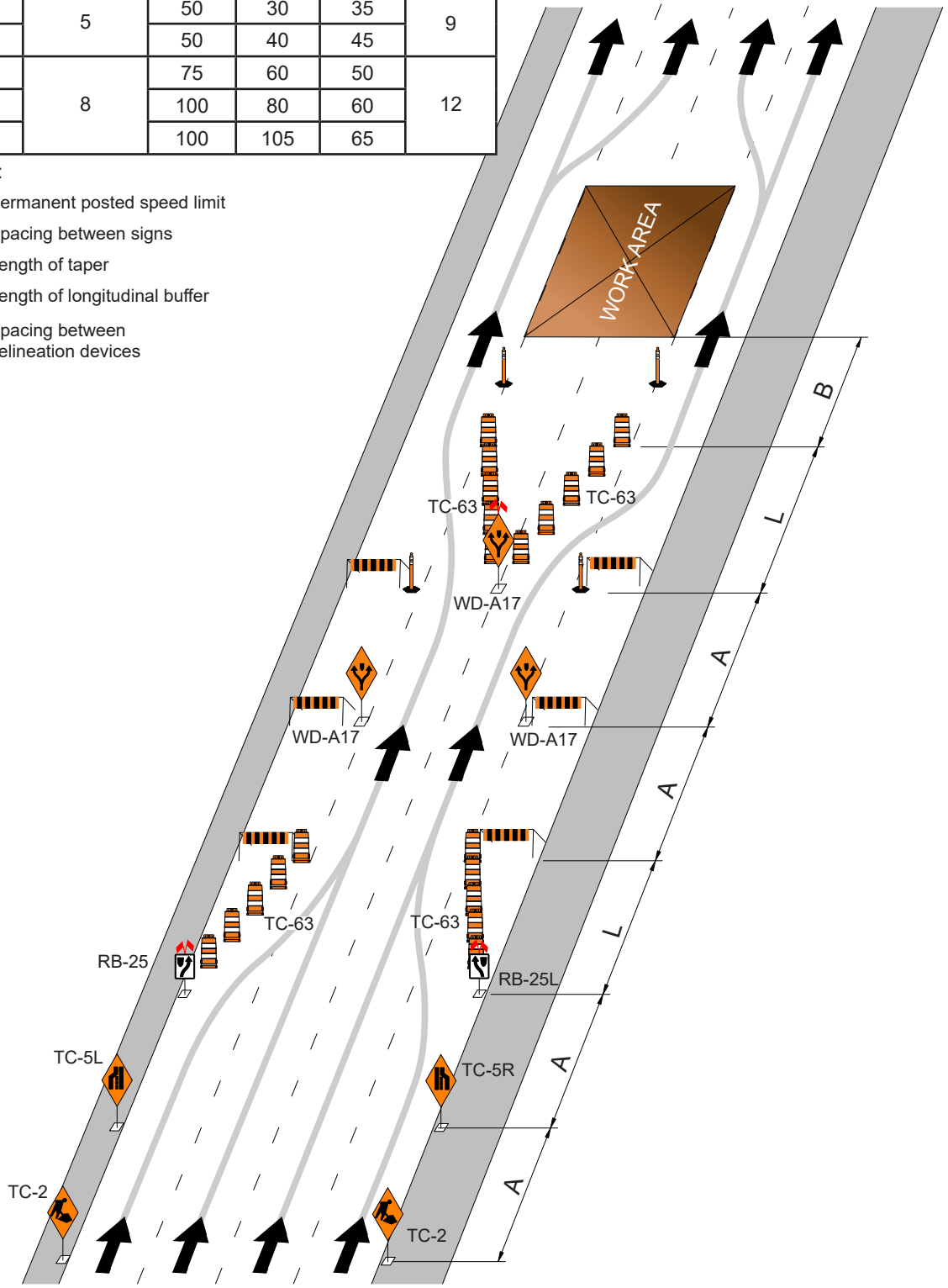
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



LONG TERM CLOSURE OF THE CENTRE LANE OR LANES OF A MULTI-LANE STREET (LEFT TURN LANE ALTERNATIVE)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

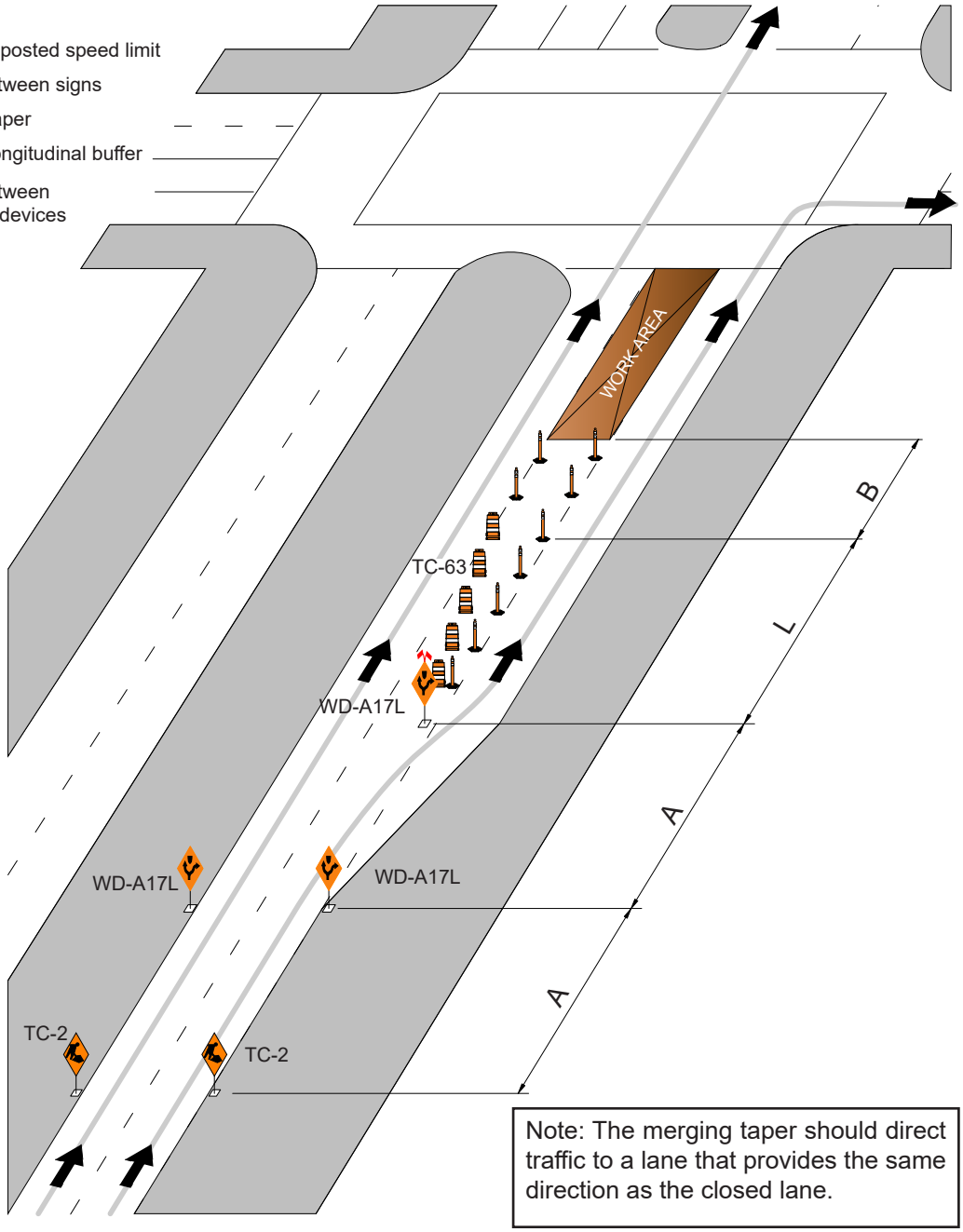
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: The merging taper should direct traffic to a lane that provides the same direction as the closed lane.

FIGURE 11

LONG TERM CLOSURE OF THE CENTRE LANE OR LANES OF A MULTI-LANE STREET (RIGHT TURN LANE ALTERNATIVE)

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

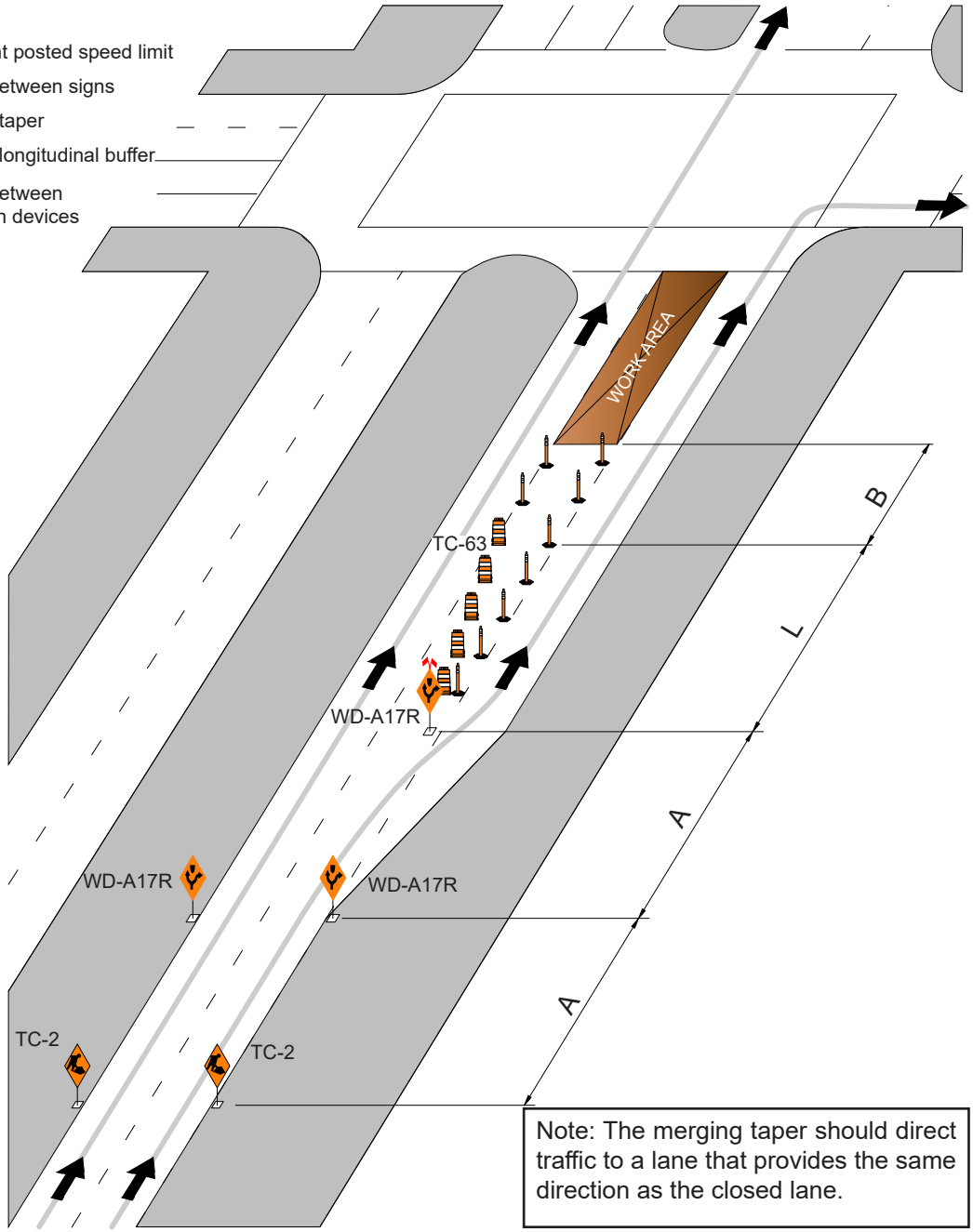
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: The merging taper should direct traffic to a lane that provides the same direction as the closed lane.

LONG TERM CLOSURE ADJACENT TO AN INTERSECTION OF A FOUR LANE UNDIVIDED STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

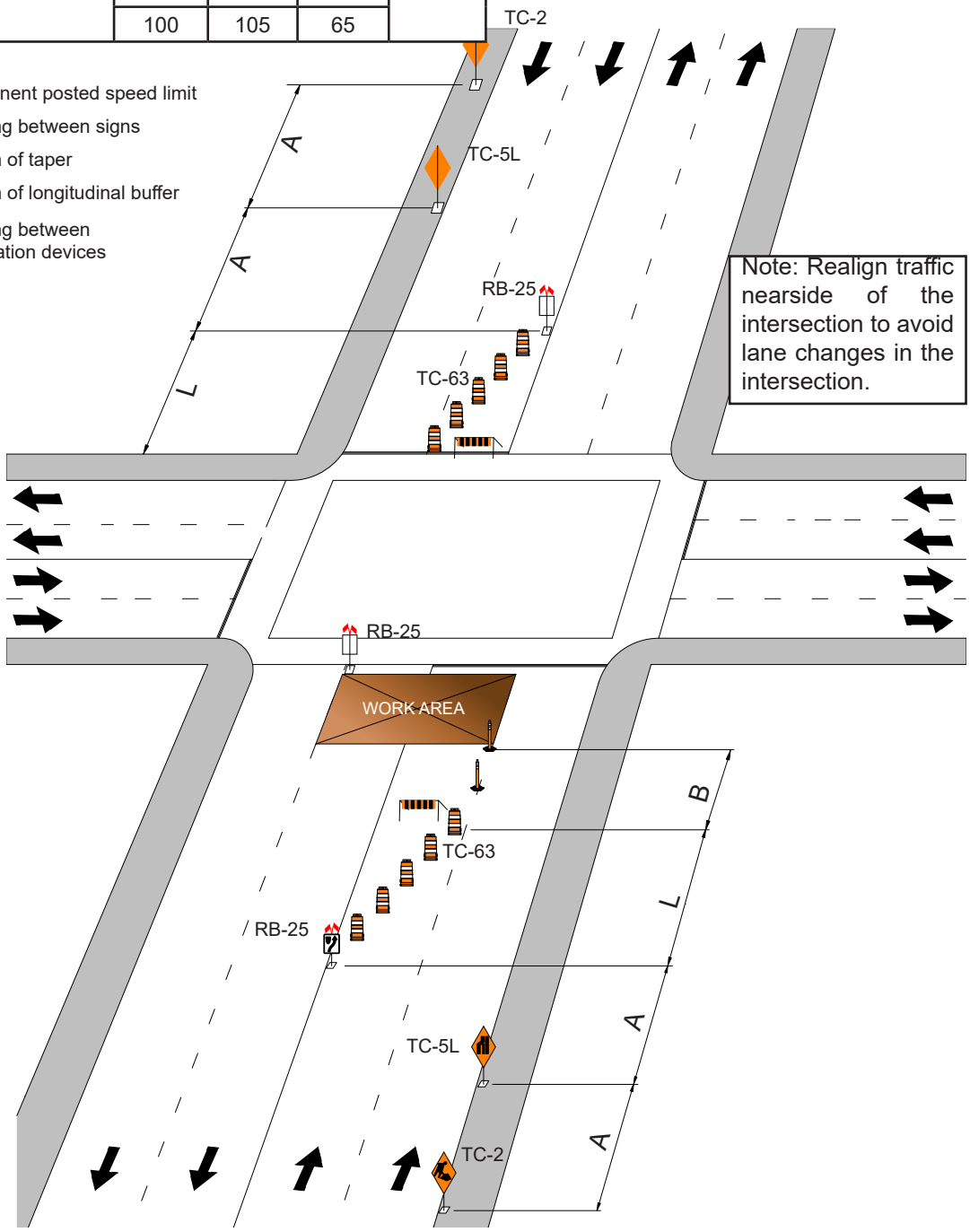


FIGURE 13

LONG TERM CLOSURE WITHIN AN INTERSECTION OF A FOUR LANE UNDIVIDED STREET

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

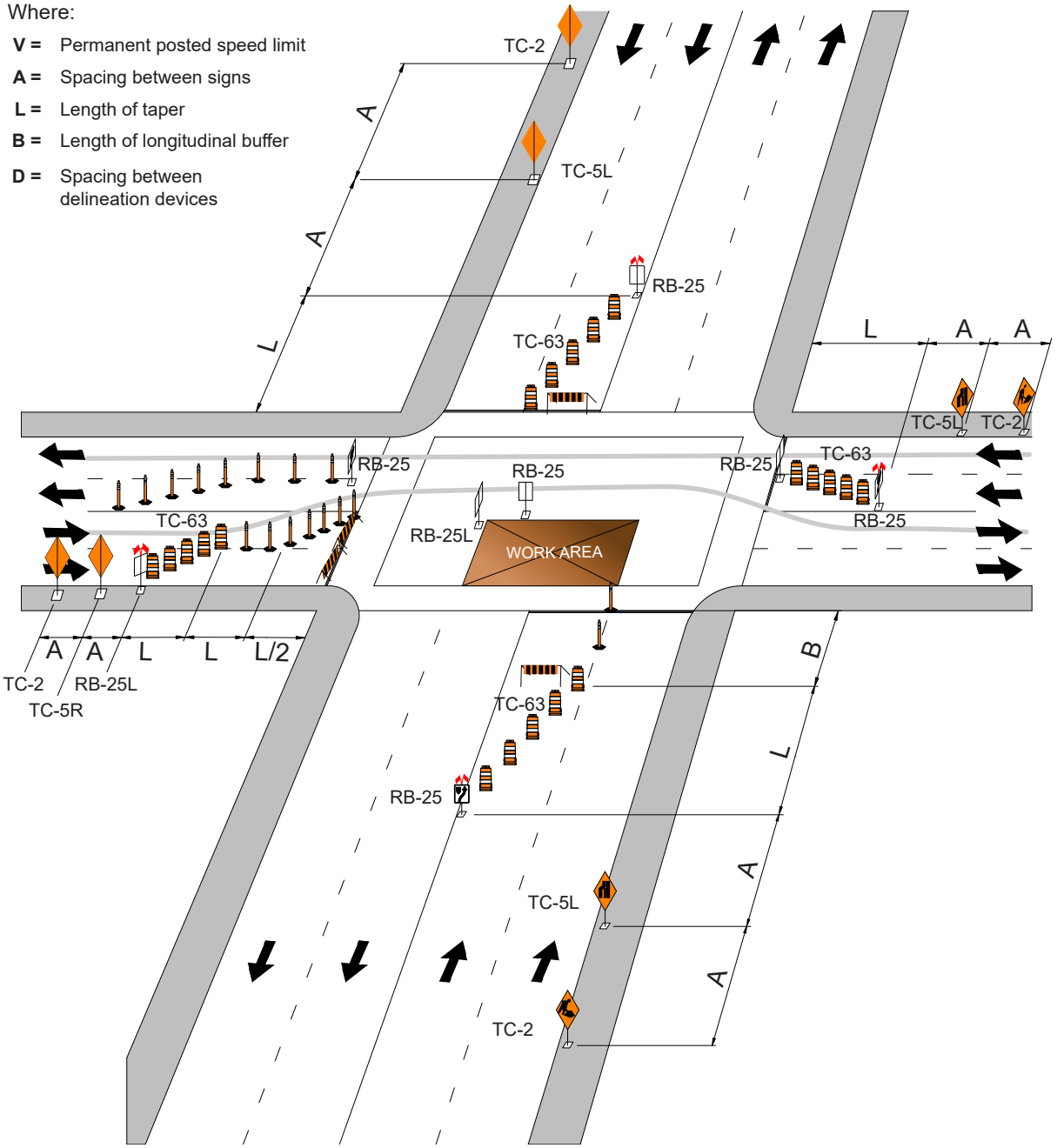
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



LONG TERM CLOSURE ON A HORIZONTAL CURVE

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

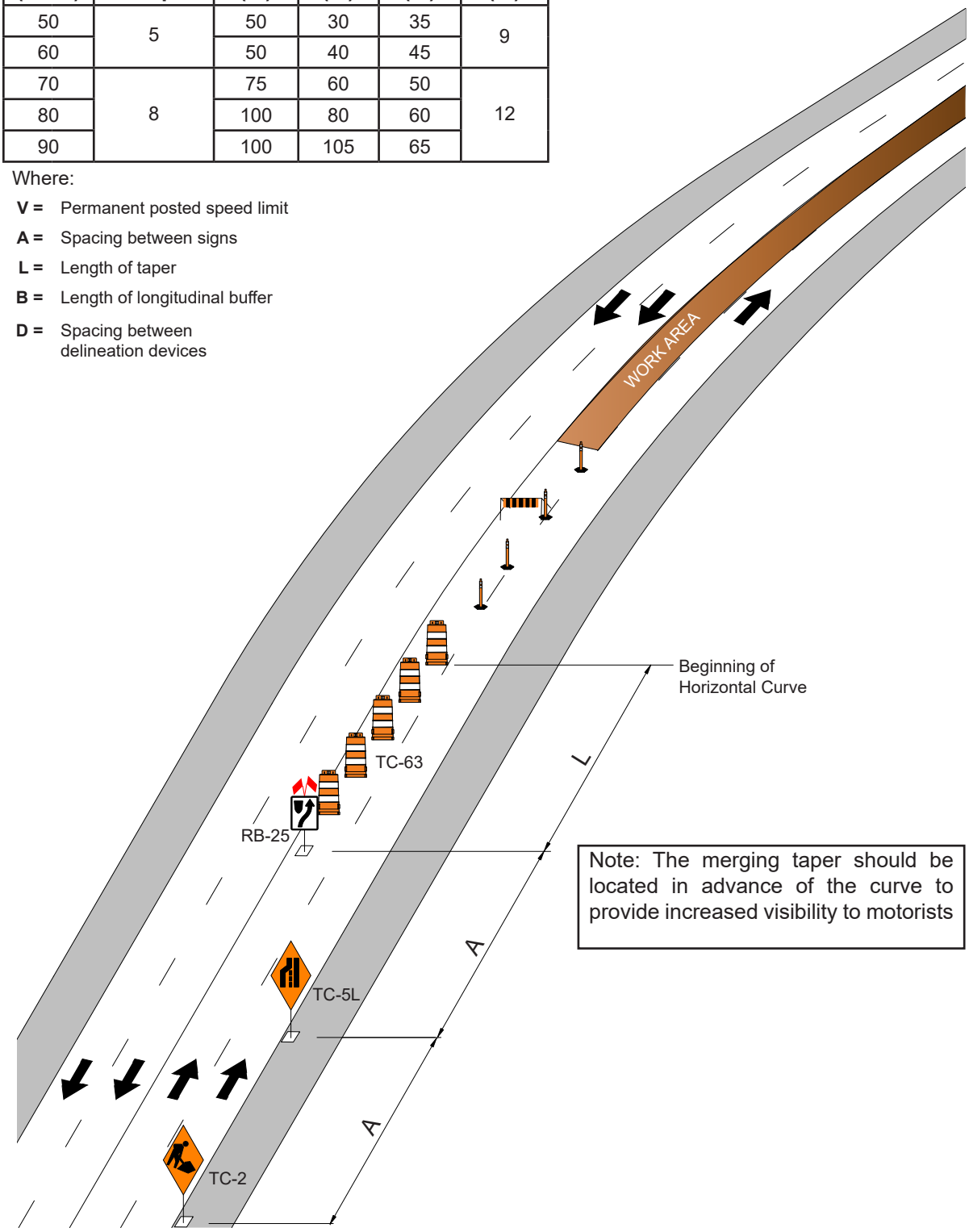
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: The merging taper should be located in advance of the curve to provide increased visibility to motorists

FIGURE 15

LONG TERM CLOSURE ON A VERTICAL CURVE

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

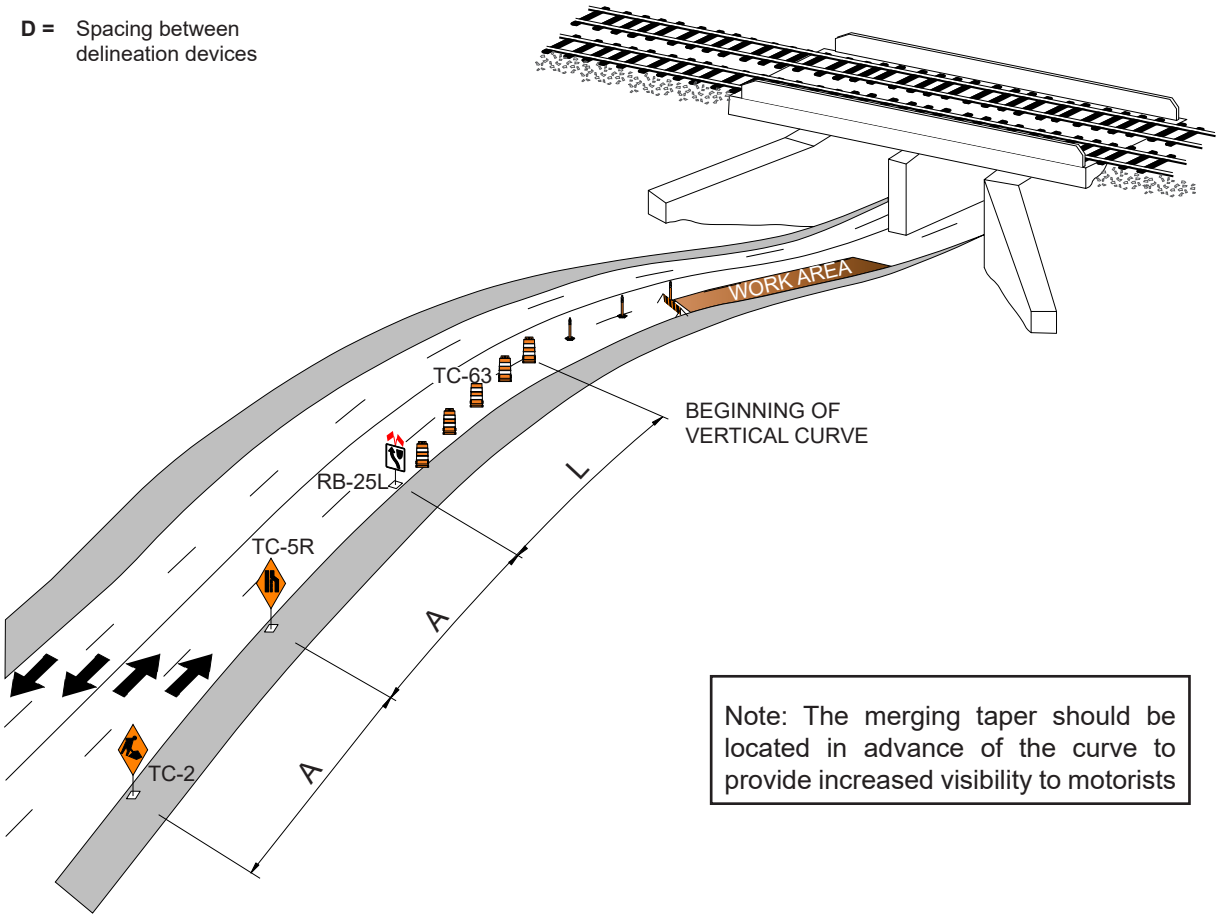
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: The merging taper should be located in advance of the curve to provide increased visibility to motorists

LONG TERM DIVERSION AROUND A WORK AREA USING THE SHOULDER

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

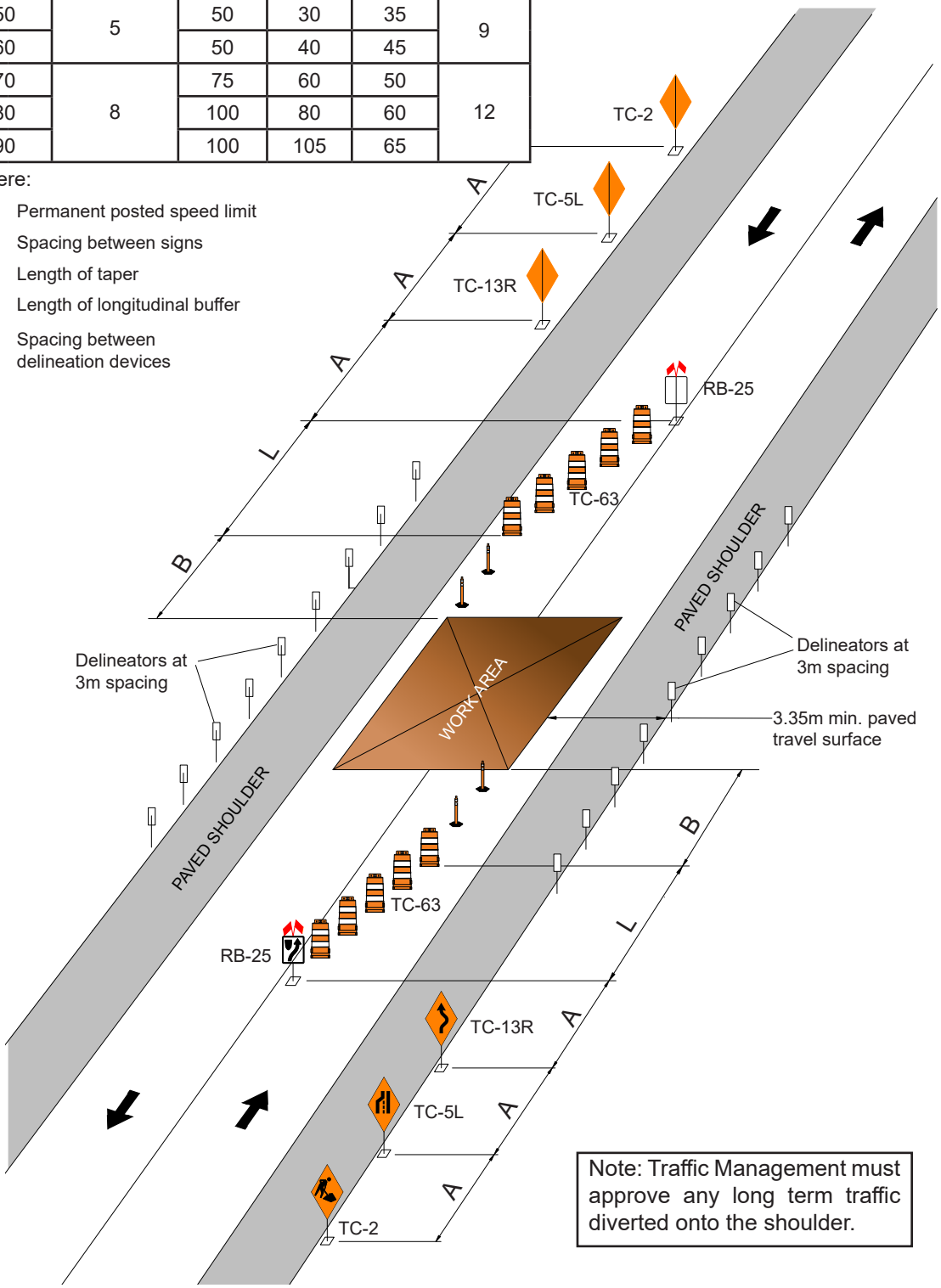
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: Traffic Management must approve any long term traffic diverted onto the shoulder.

FIGURE 17

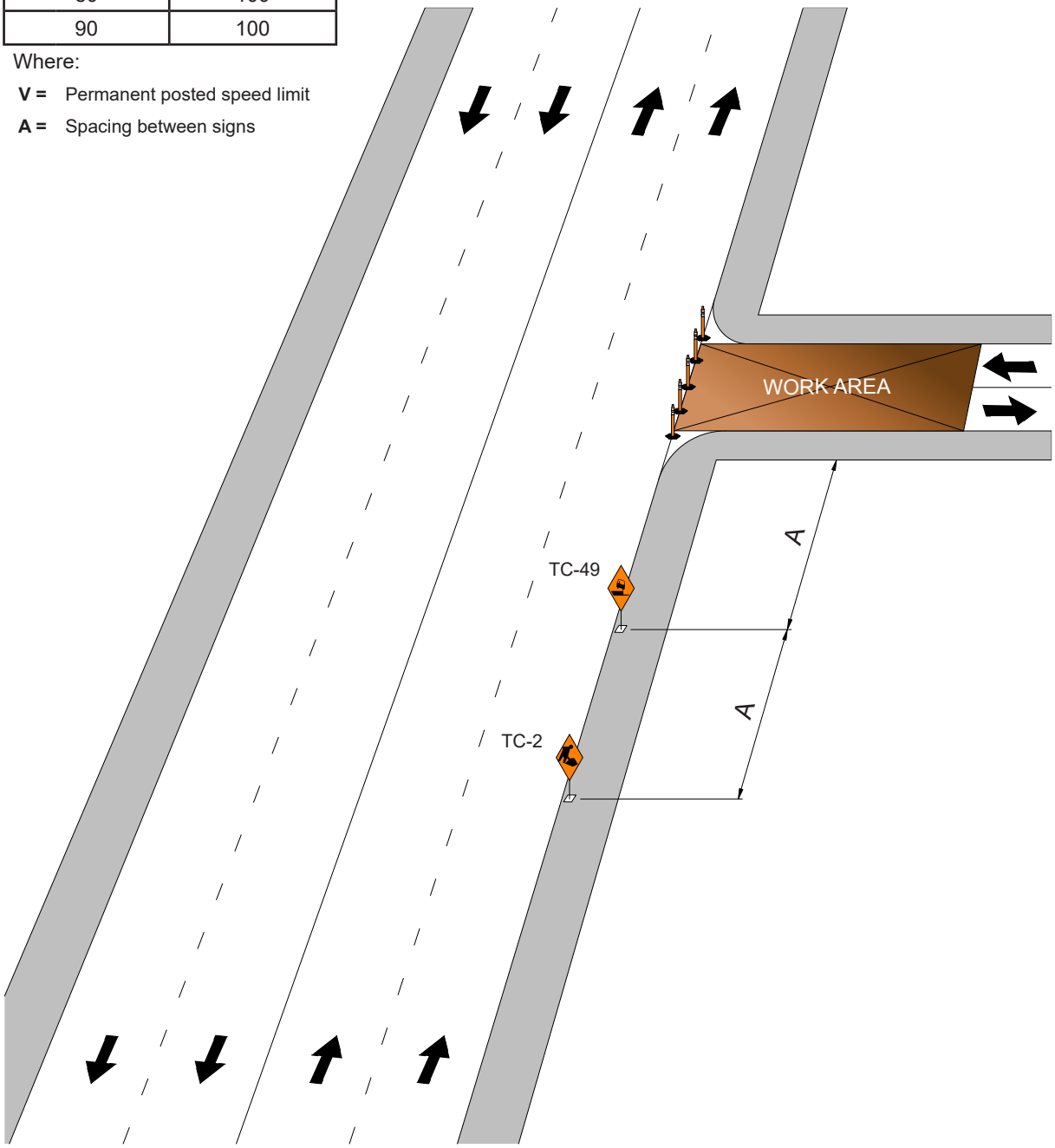
LONG TERM CLOSURE ON A CROSS STREET

V (km/h)	A (m)
50	50
60	50
70	75
80	100
90	100

Where:

V = Permanent posted speed limit

A = Spacing between signs



USE OF FLAGPERSONS FOR ON-STREET AND OFF-STREET CONSTRUCTION

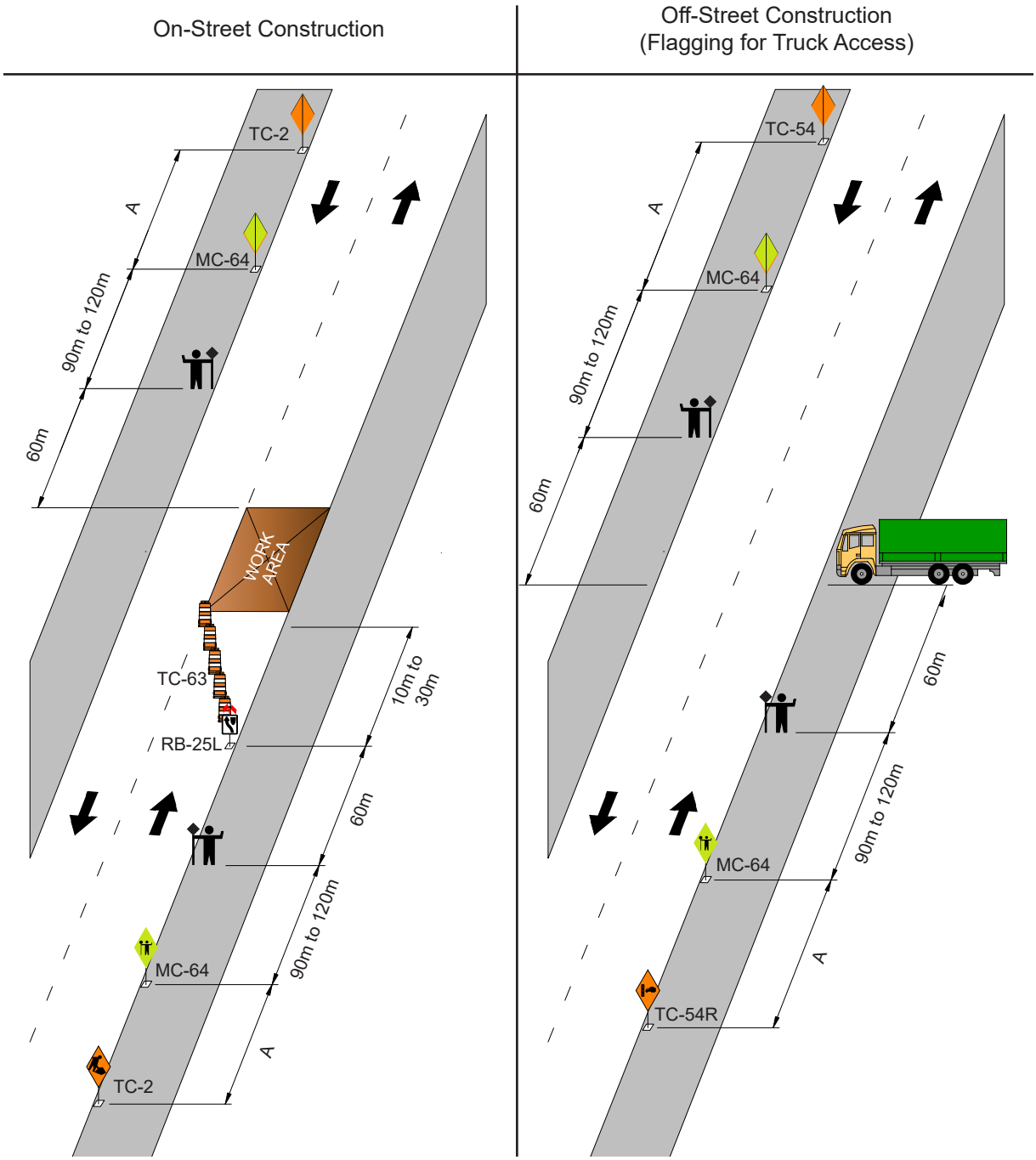
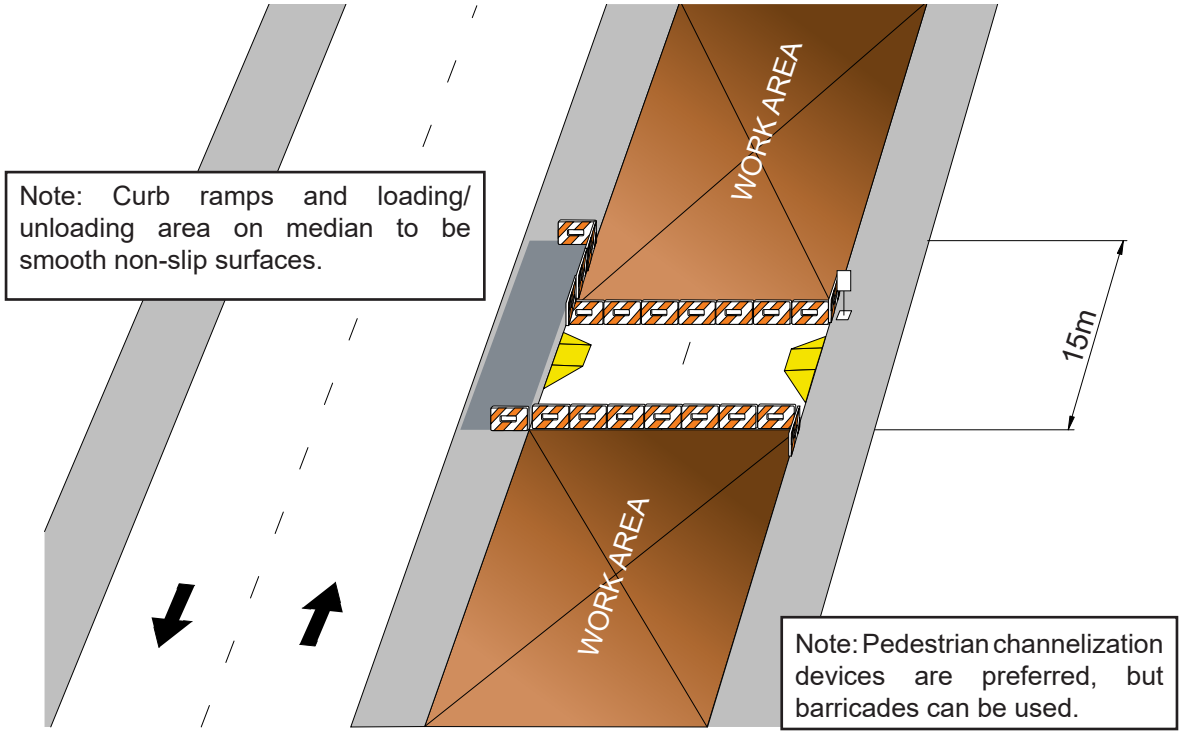


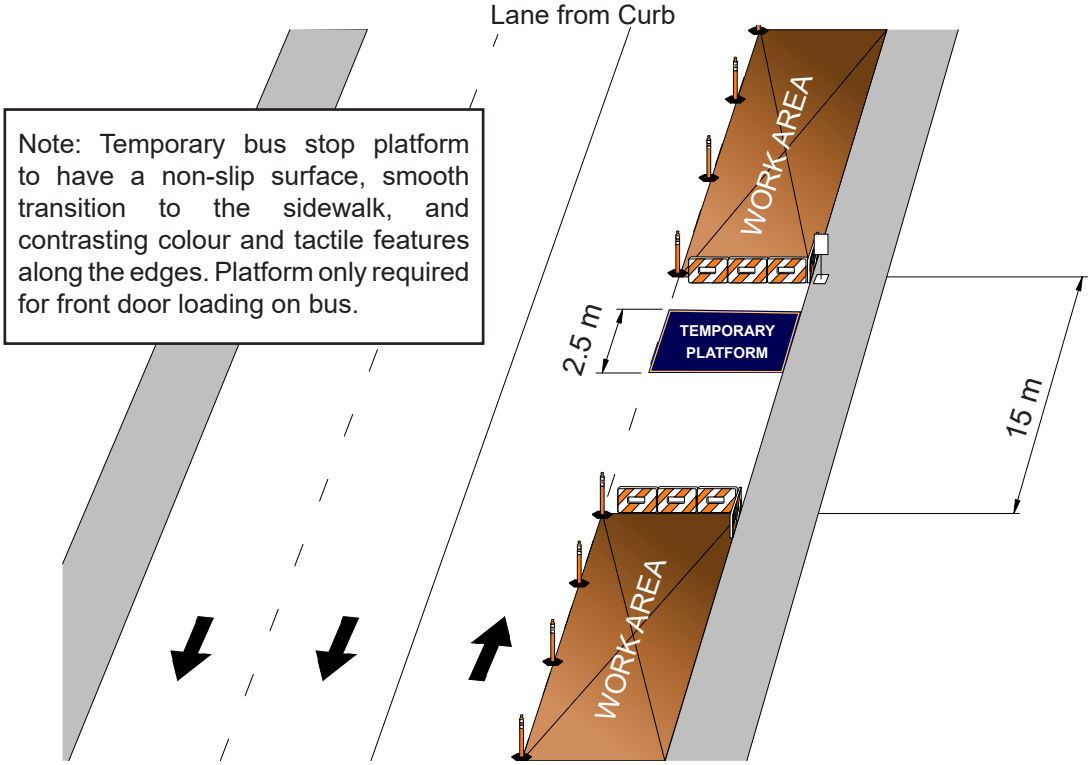
FIGURE 19

ACCOMODATION OF A TRANSIT STOP AWAY FROM THE CURB

Bus Stop Loading/Unloading on Median



Bus Stop Loading/Unloading from Second Lane from Curb



LONG TERM BIKE FACILITY CLOSURE WITH DETOUR

This figure illustrates bicycle related signs for a situation where a section of a bike facility is closed and a reasonable detour route can be provided.

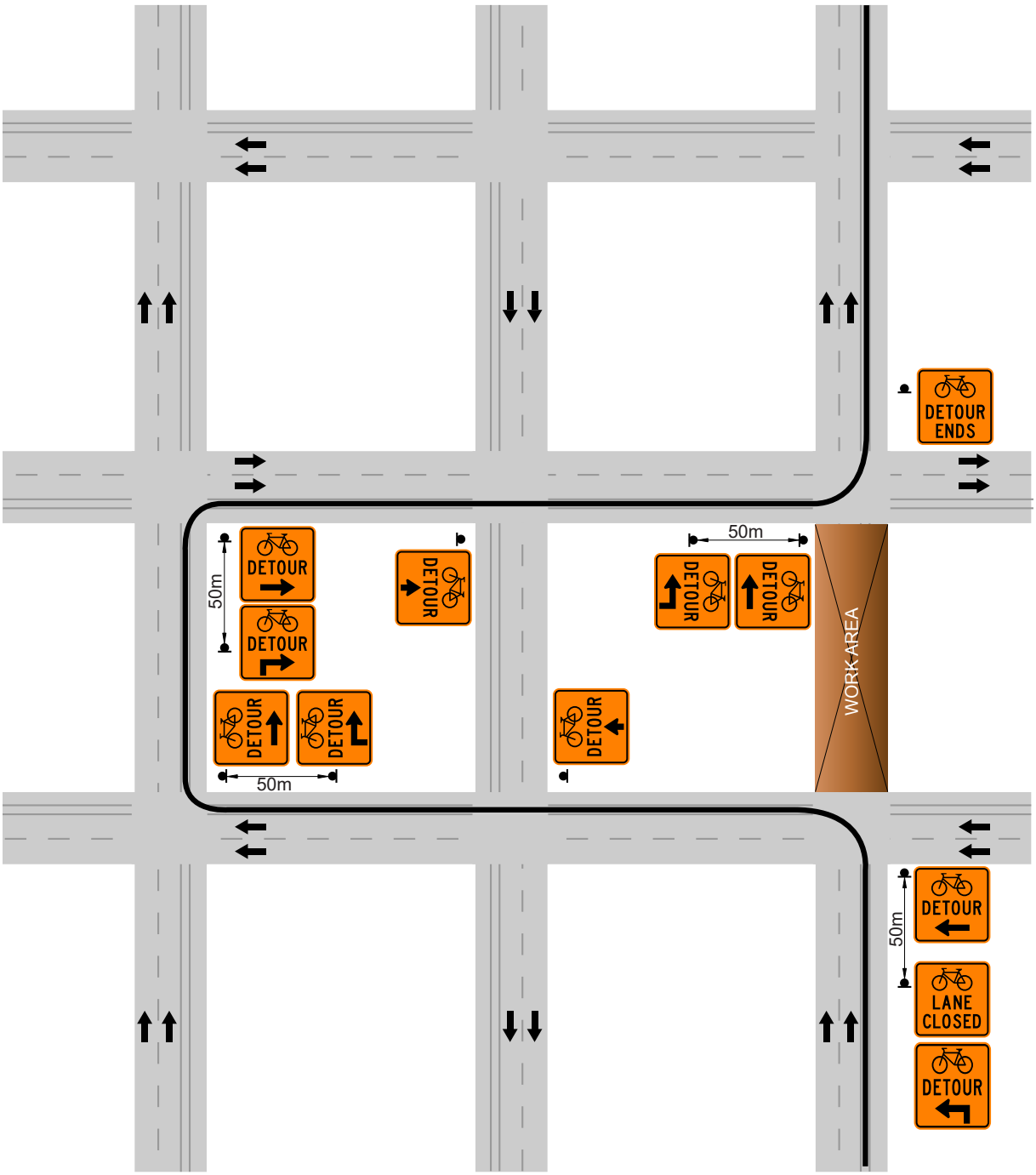
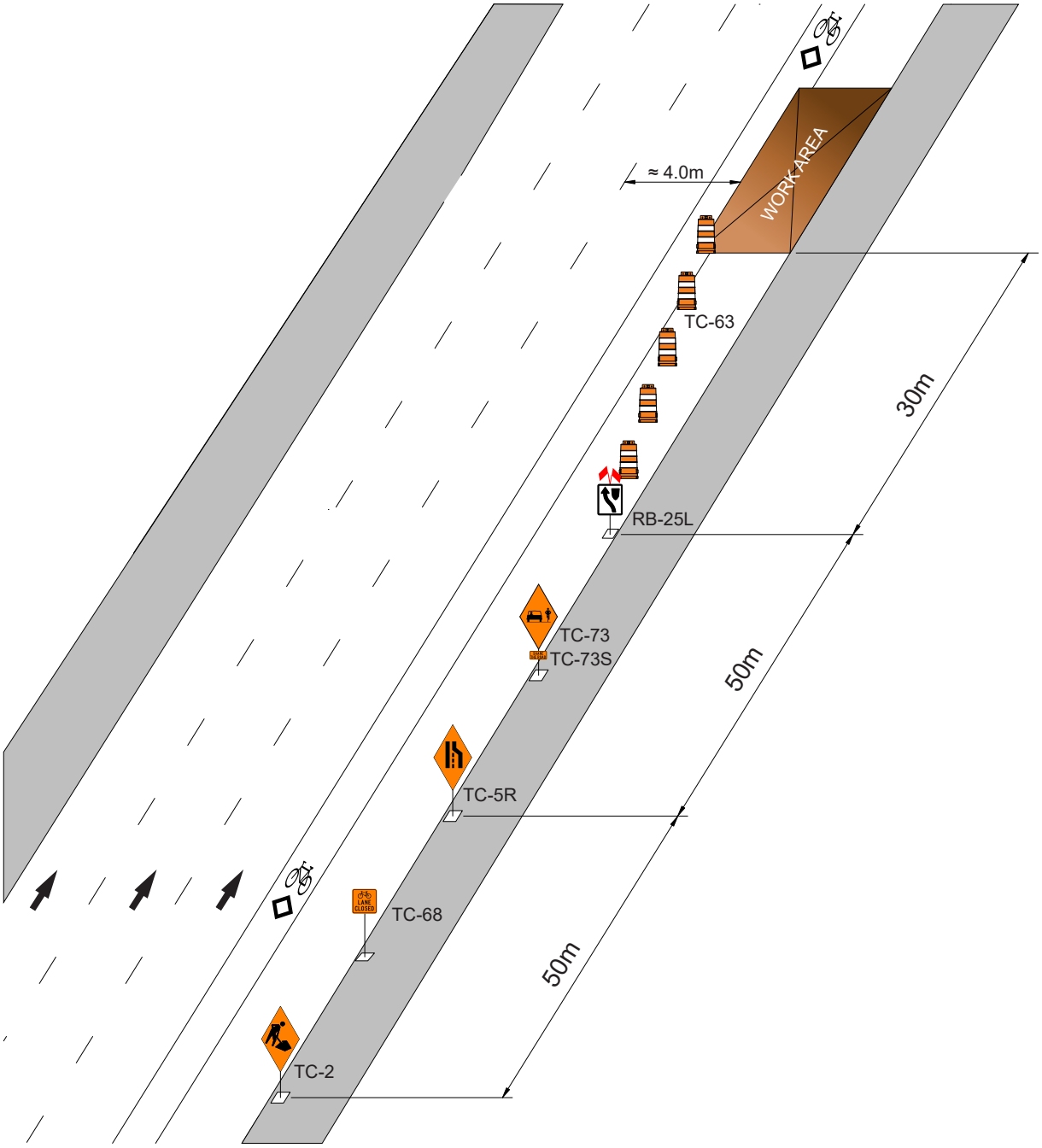


FIGURE 21a

LONG TERM BIKE FACILITY CLOSURE WITHOUT A DETOUR: SHARE THE LANE

This figure illustrates bicycle related signs for a situation where a section of a bike facility is closed for construction and a seperate bike facility cannot be accomodated. Bicycle facilities can be diverted into a shared lane. The shared lane should be a minimum 4.0m in width to allow vehicles and cyclists to comfortably share the lane side-by-side.



LONG TERM BIKE FACILITY CLOSURE WITHOUT A DETOUR: TAKE THE LANE

This figure illustrates bicycle related signs for a situation where a section of a bike facility is closed for construction and a seperate bike facility cannot be accomodated. When cyclists are being diverted into a travel lane that is too narrow to comfortably handle side-by-side vehicle and cyclist operation, cyclists are to be directed to take the lane using single file signage.

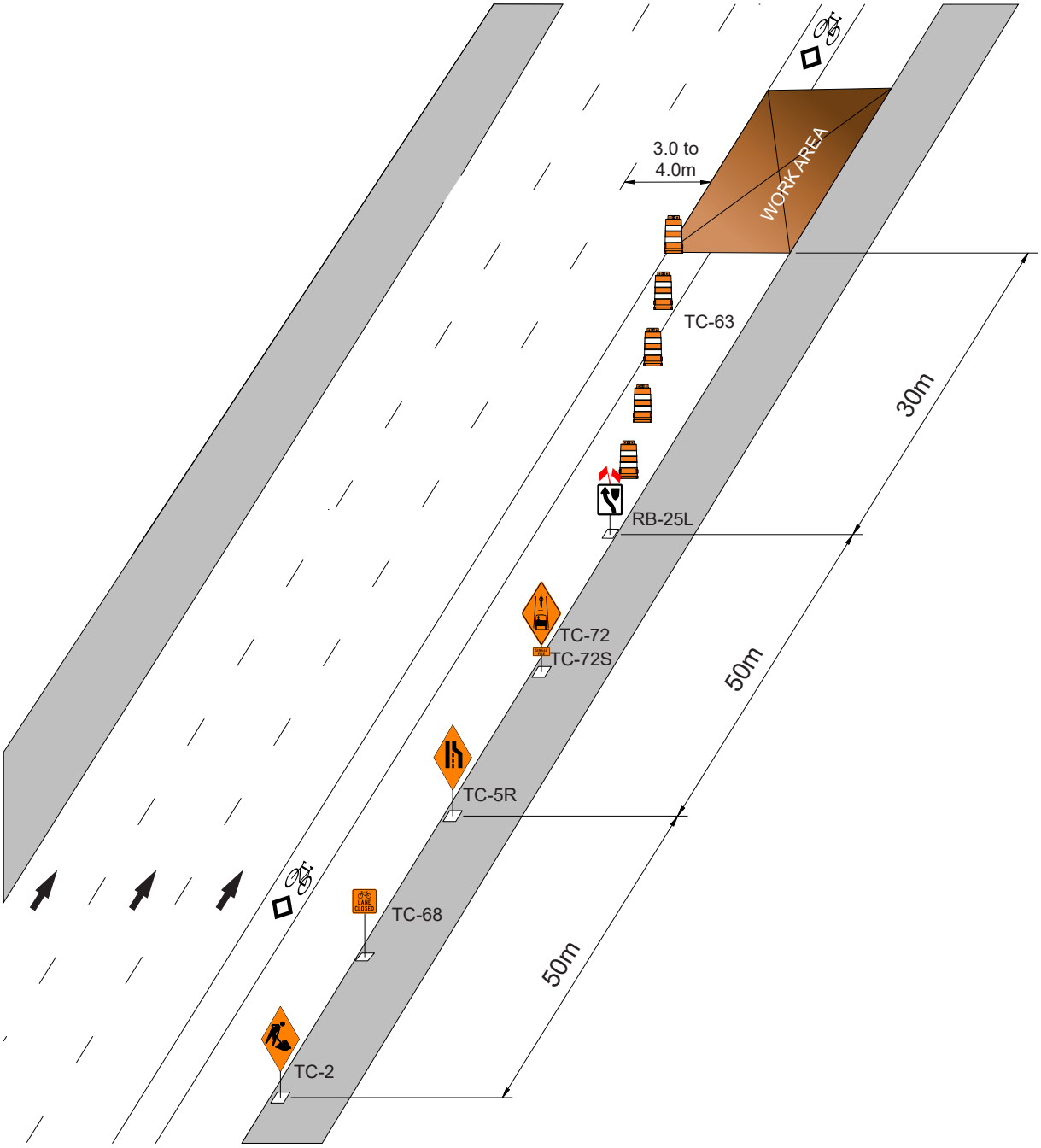


FIGURE 22a

LONG TERM PROTECTED BIKE LANE DIVERSION WITH PARKING REMOVAL

This figure illustrates a situation where a section of a protected bike lane is closed and diverted into the curb lane. When adequate gaps in the bike lane curb are not availabel for a lane shift, the shift can be located further from the work area, adjustable curbs can be moved with permission from the Traffic Management branch, or temporary asphalt curb ramps can be constructed.

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

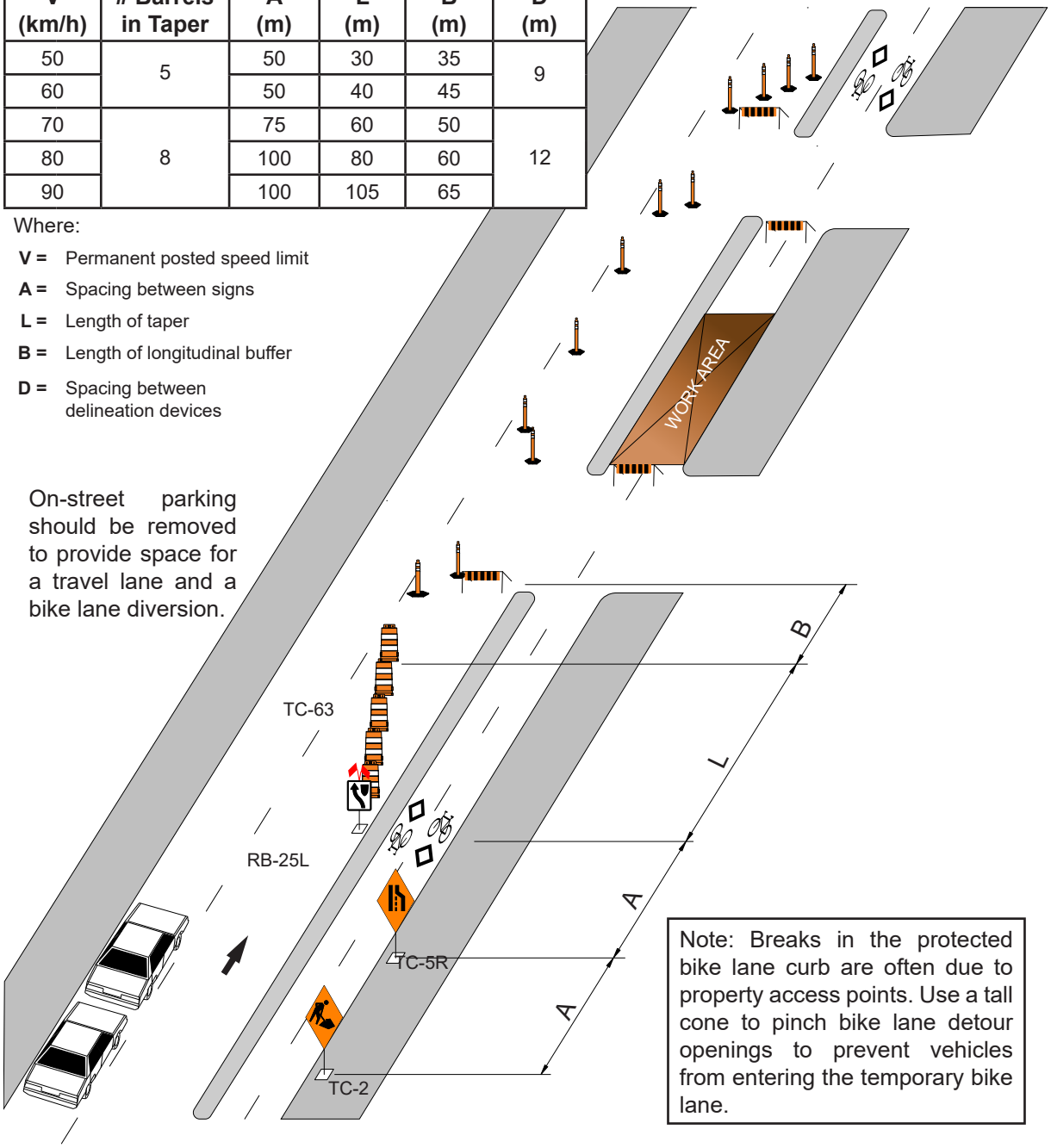
A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices

On-street parking should be removed to provide space for a travel lane and a bike lane diversion.



Note: Breaks in the protected bike lane curb are often due to property access points. Use a tall cone to pinch bike lane detour openings to prevent vehicles from entering the temporary bike lane.

LONG TERM PROTECTED BIKE LANE DIVERSION

This figure illustrates a situation where a section of a protected bike lane is closed and diverted into the curb lane. When adequate gaps in the bike lane curb are not availabel for a lane shift, the shift can be located further from the work area, adjustable curbs can be moved with permission from the Traffic Management branch, or temporary asphalt curb ramps can be constructed.

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

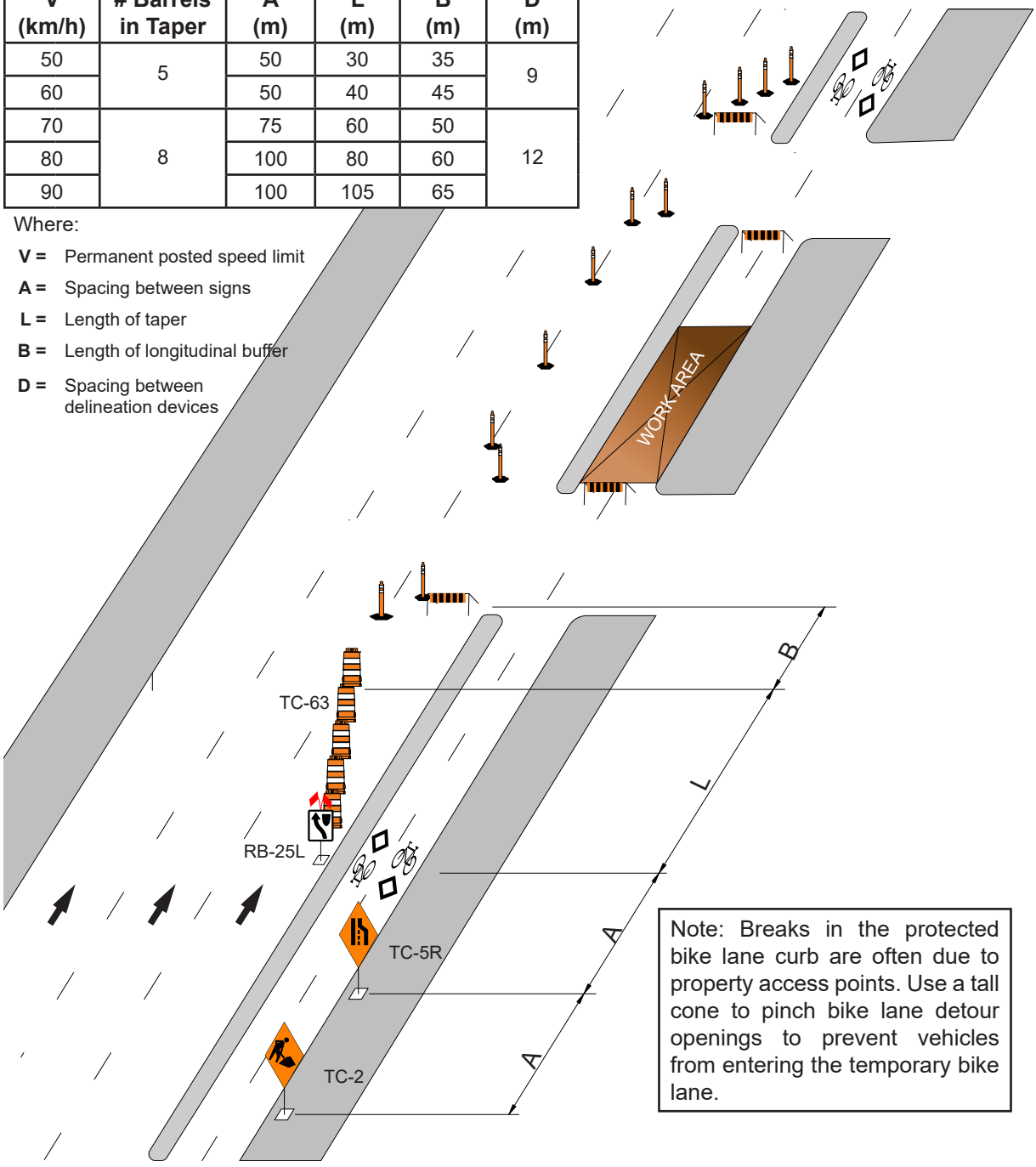
V = Permanent posted speed limit

A = Spacing between signs

L = Length of taper

B = Length of longitudinal buffer

D = Spacing between delineation devices



Note: Breaks in the protected bike lane curb are often due to property access points. Use a tall cone to pinch bike lane detour openings to prevent vehicles from entering the temporary bike lane.

FIGURE 23

LONG TERM CLOSURE OF A SIDEWALK WITH PEDESTRIANS DIVERTED ONTO THE ROADWAY

V (km/h)	# Barrels in Taper	A (m)	L (m)	B (m)	D (m)
50	5	50	30	35	9
60		50	40	45	
70	8	75	60	50	12
80		100	80	60	
90		100	105	65	

Where:

V = Permanent posted speed limit

A = Spacing between signs

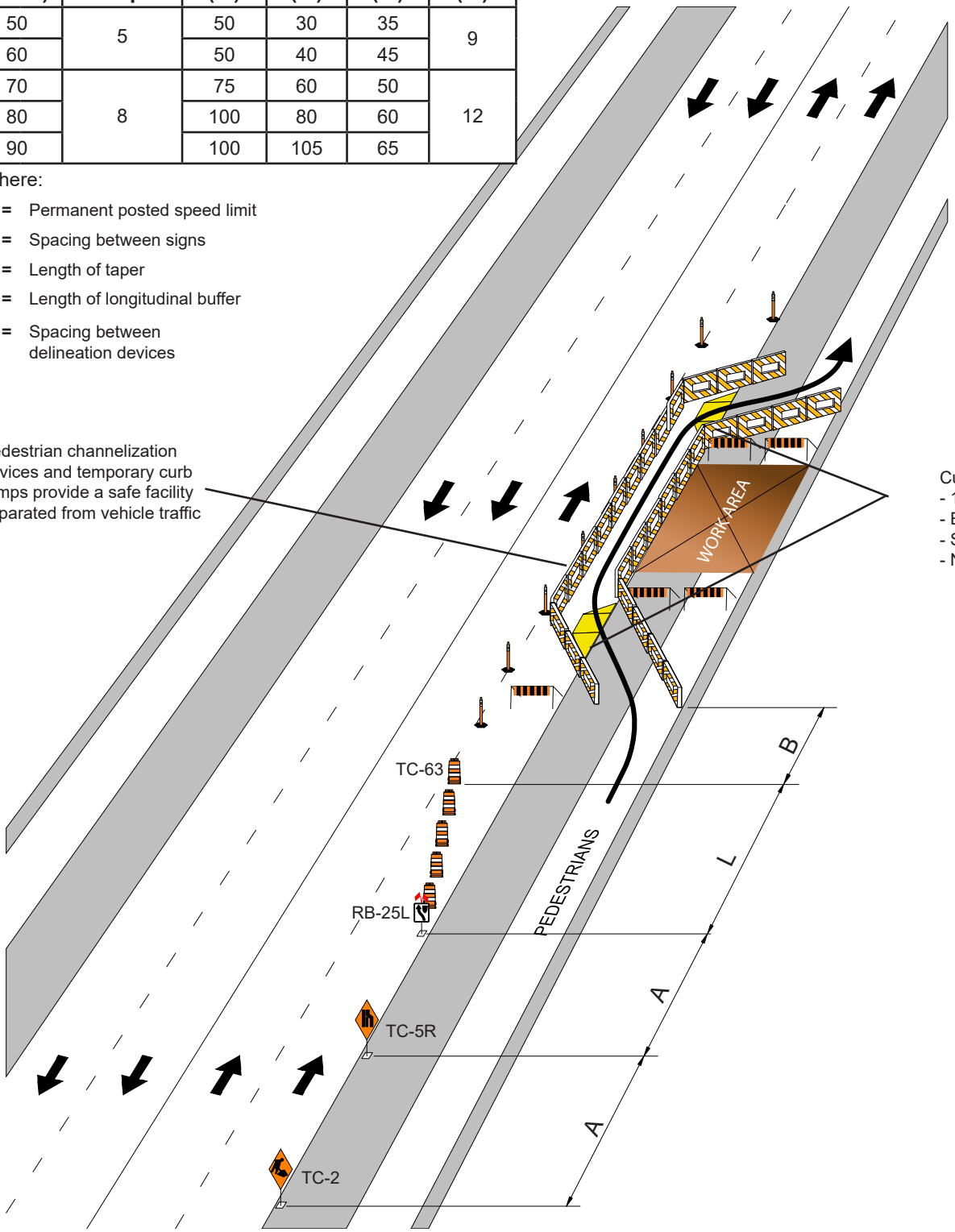
L = Length of taper

B = Length of longitudinal buffer

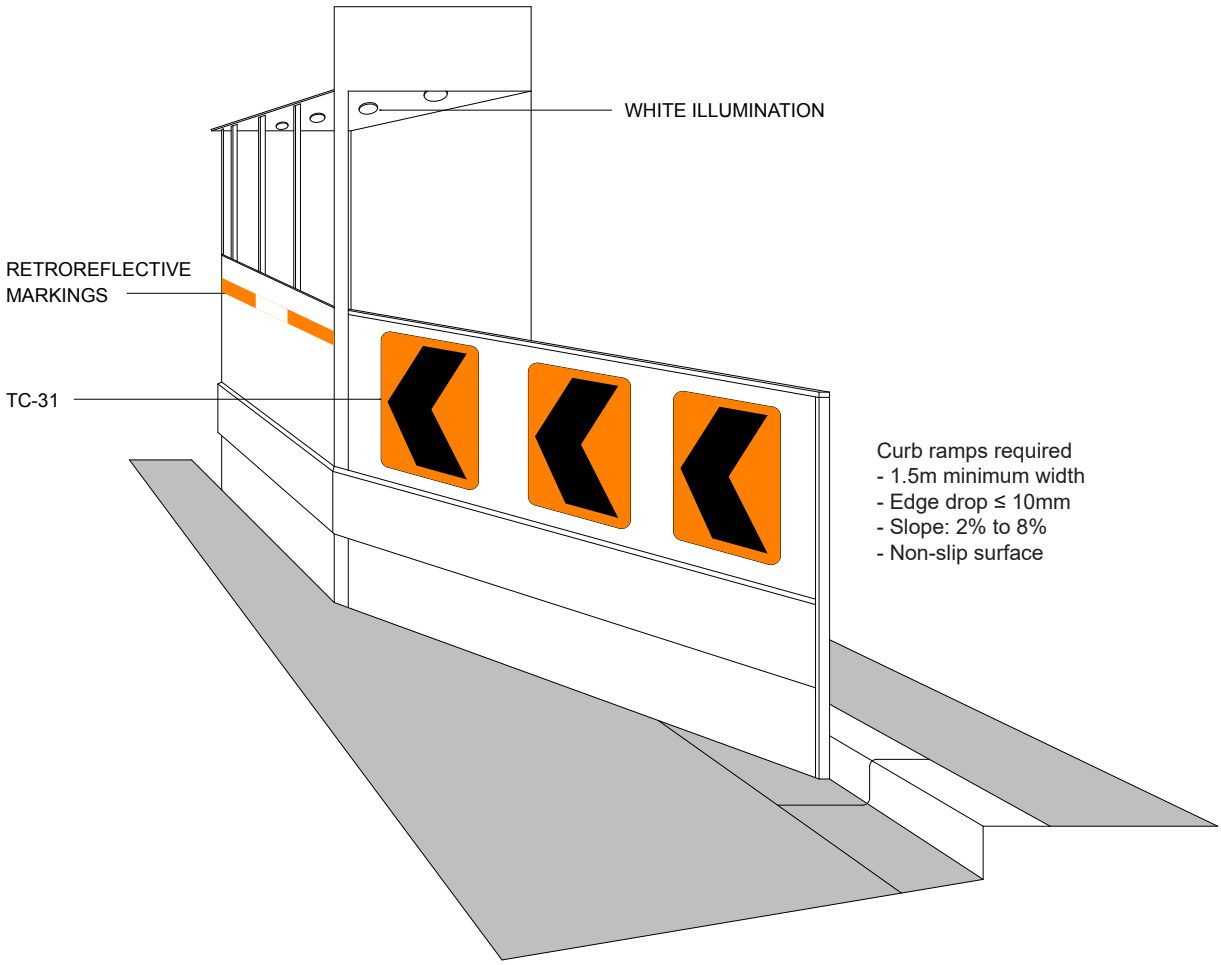
D = Spacing between delineation devices

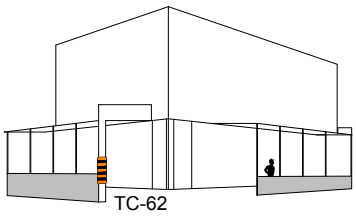
Pedestrian channelization devices and temporary curb ramps provide a safe facility separated from vehicle traffic

Curb ramps required
- 1.5m minimum width
- Edge drop ≤ 10mm
- Slope: 2% to 8%
- Non-slip surface



LONG TERM COVERED WALKWAY ON A ROADWAY

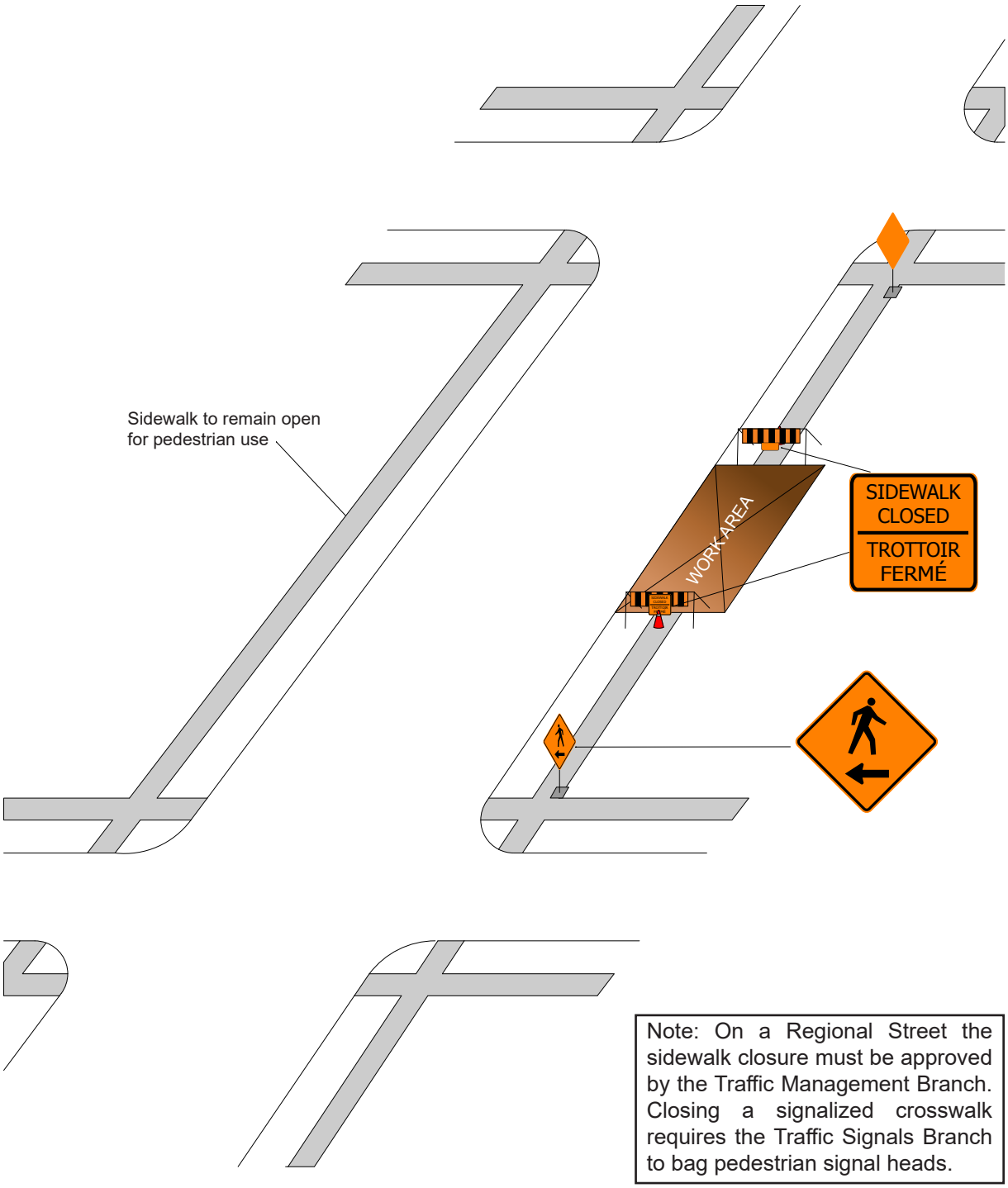




Note: Install advance signing as specified in Figure 23 in conjunction with covered walkway on the roadway.

FIGURE 25

LONG TERM CLOSURE OF A SIDEWALK OR PATH



Note: On a Regional Street the sidewalk closure must be approved by the Traffic Management Branch. Closing a signalized crosswalk requires the Traffic Signals Branch to bag pedestrian signal heads.

FIGURE 26

LONG TERM PARTIAL BLOCKAGE OF A SIDEWALK

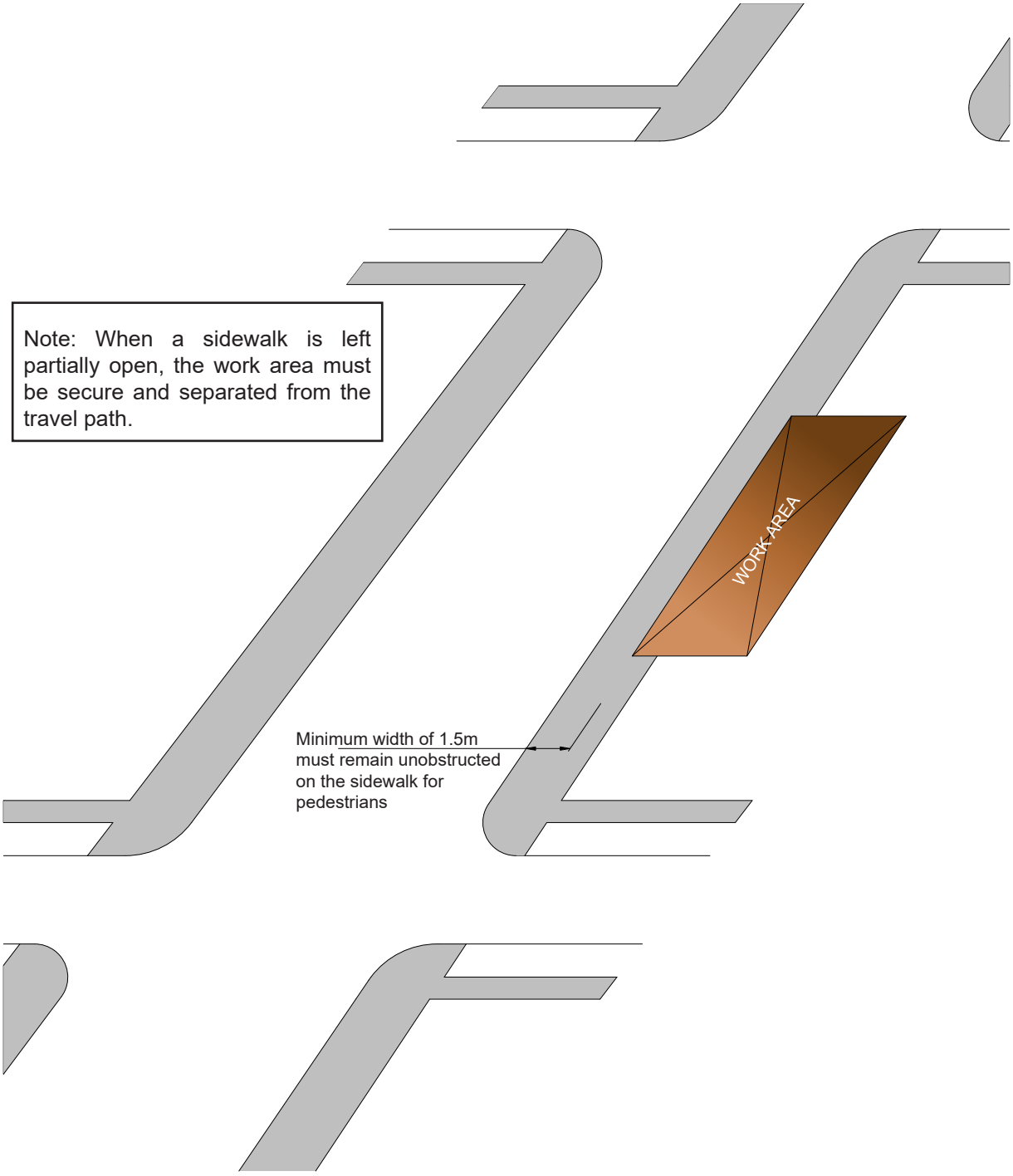


FIGURE 27

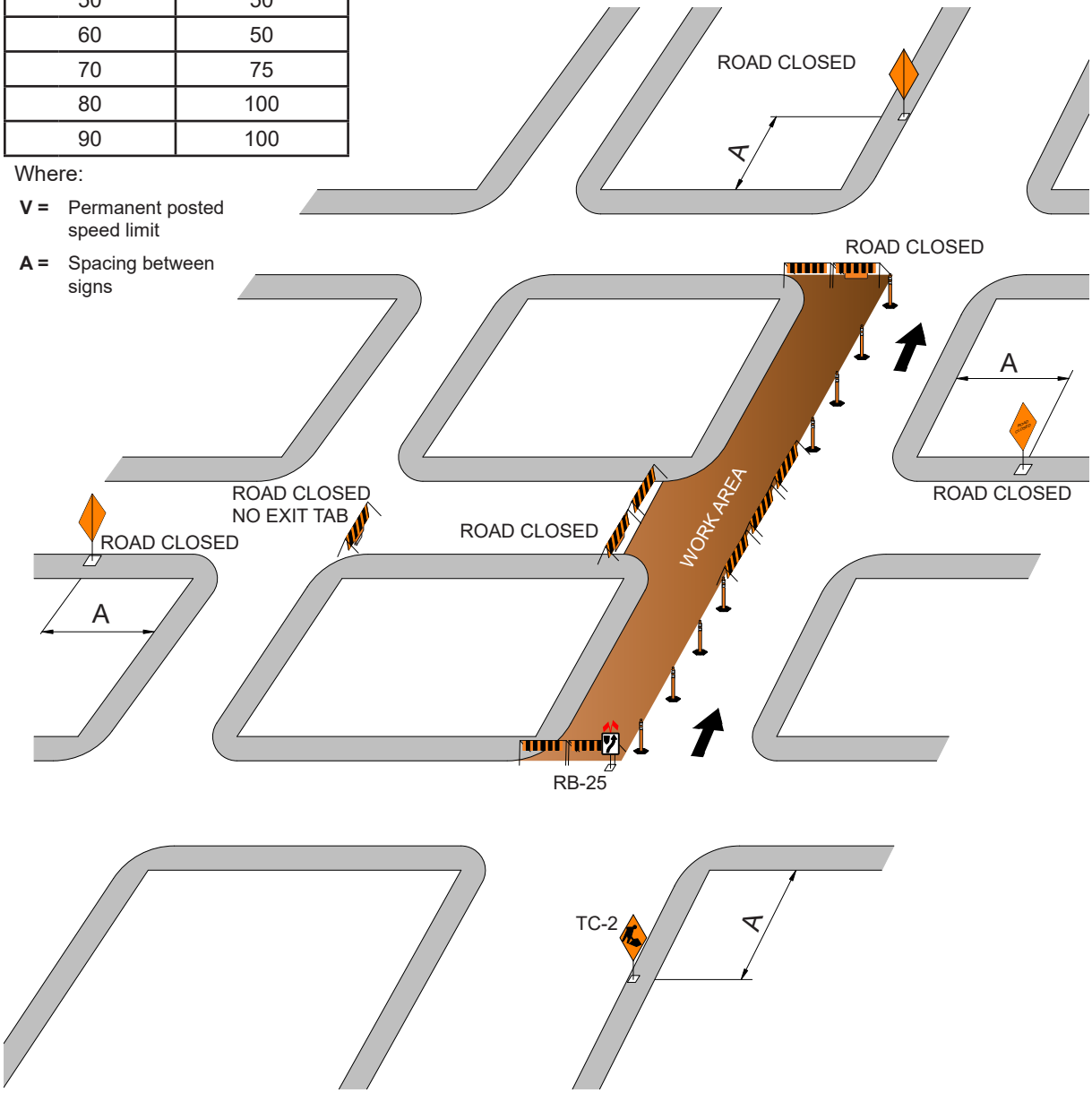
LONG TERM DIRECTIONAL CLOSURE OF A NON-REGIONAL STREET

V (km/h)	A (m)
50	50
60	50
70	75
80	100
90	100

Where:

V = Permanent posted speed limit

A = Spacing between signs



Notes:

- Required regulatory signs to be placed by Traffic Services or Authorized Construction Agency are not shown in the illustration.
- Construction markers or panels can be used in place of tall cones.
- A list of Regional Streets is contained in Schedule “E” of The City of Winnipeg Streets By-law #1481/77 (all of the streets not listed are classified as non-regional local streets).

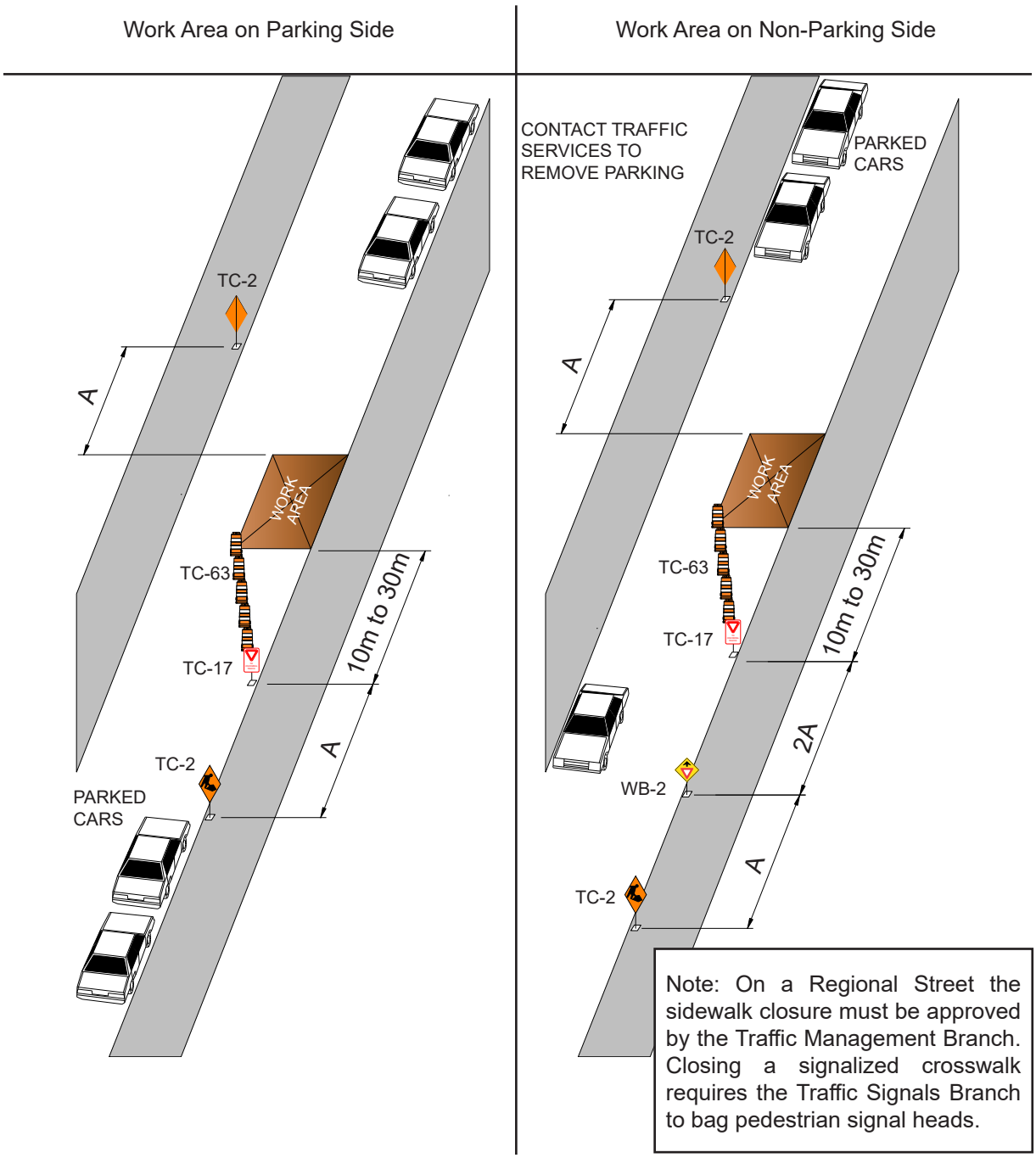
LONG TERM CLOSURE OF HALF OF A NON-REGIONAL STREET

V (km/h)	A (m)
50	50
60	50
70	75
80	100

Where:

V = Permanent posted speed limit

A = Spacing between signs



Note: On a Regional Street the sidewalk closure must be approved by the Traffic Management Branch. Closing a signalized crosswalk requires the Traffic Signals Branch to bag pedestrian signal heads.

FIGURE 29

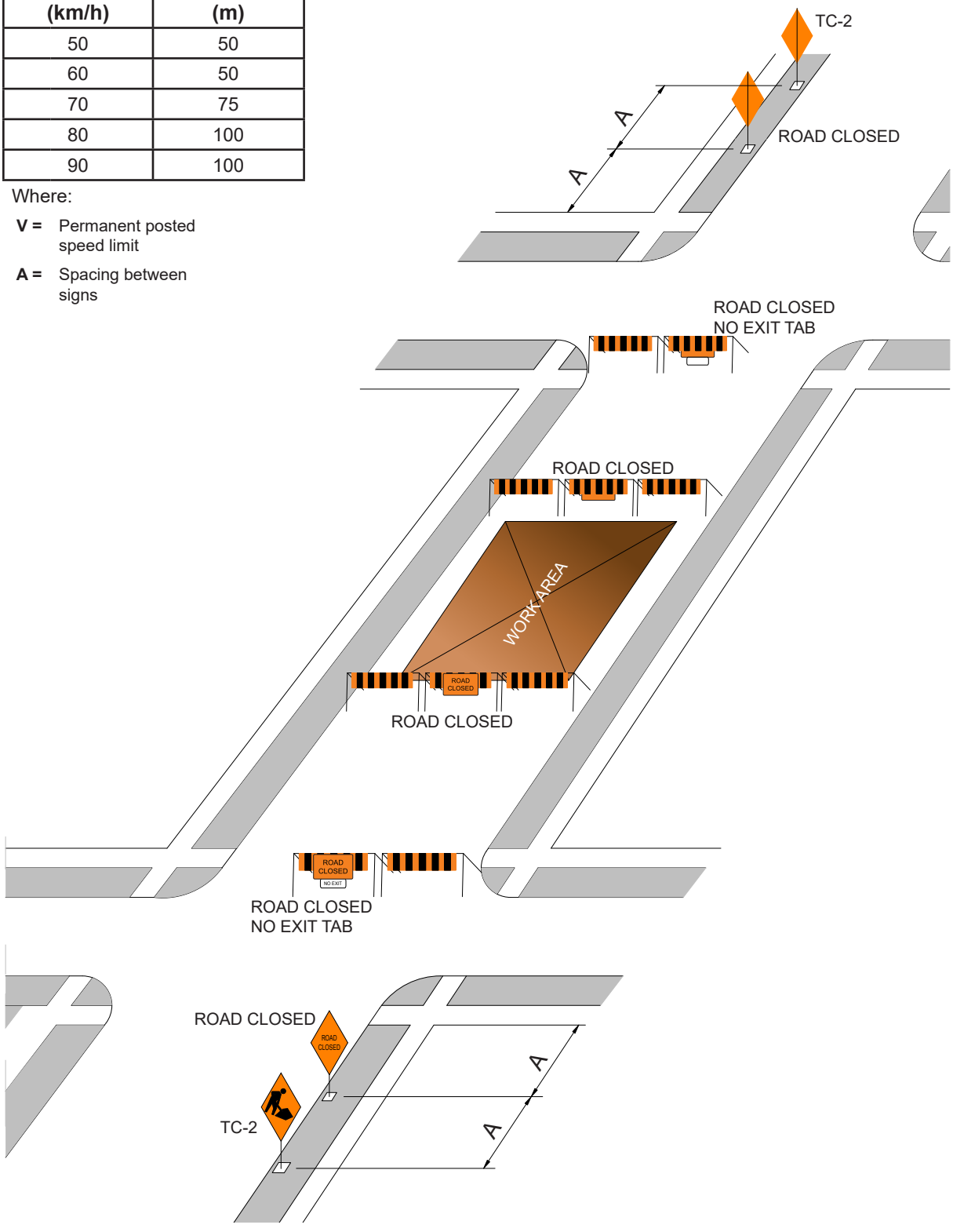
LONG TERM FULL CLOSURE OF ONE BLOCK OF A NON-REGIONAL STREET

V (km/h)	A (m)
50	50
60	50
70	75
80	100
90	100

Where:

V = Permanent posted speed limit

A = Spacing between signs



LONG TERM FULL CLOSURE OF SEVERAL BLOCKS OF A NON-REGIONAL STREET

V (km/h)	A (m)
50	50
60	50
70	75
80	100

Where:

V = Permanent posted speed limit

A = Spacing between signs

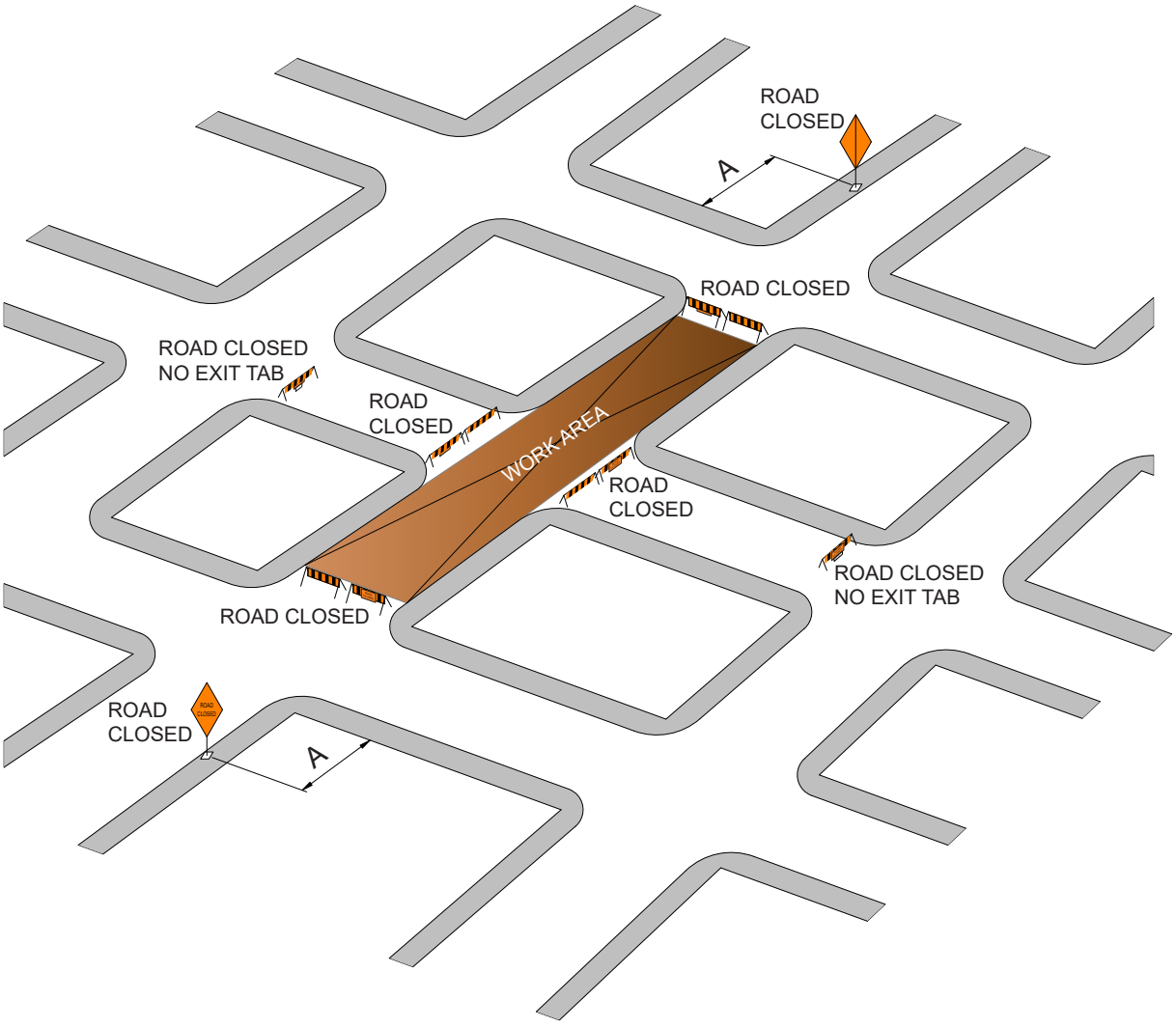


FIGURE 31

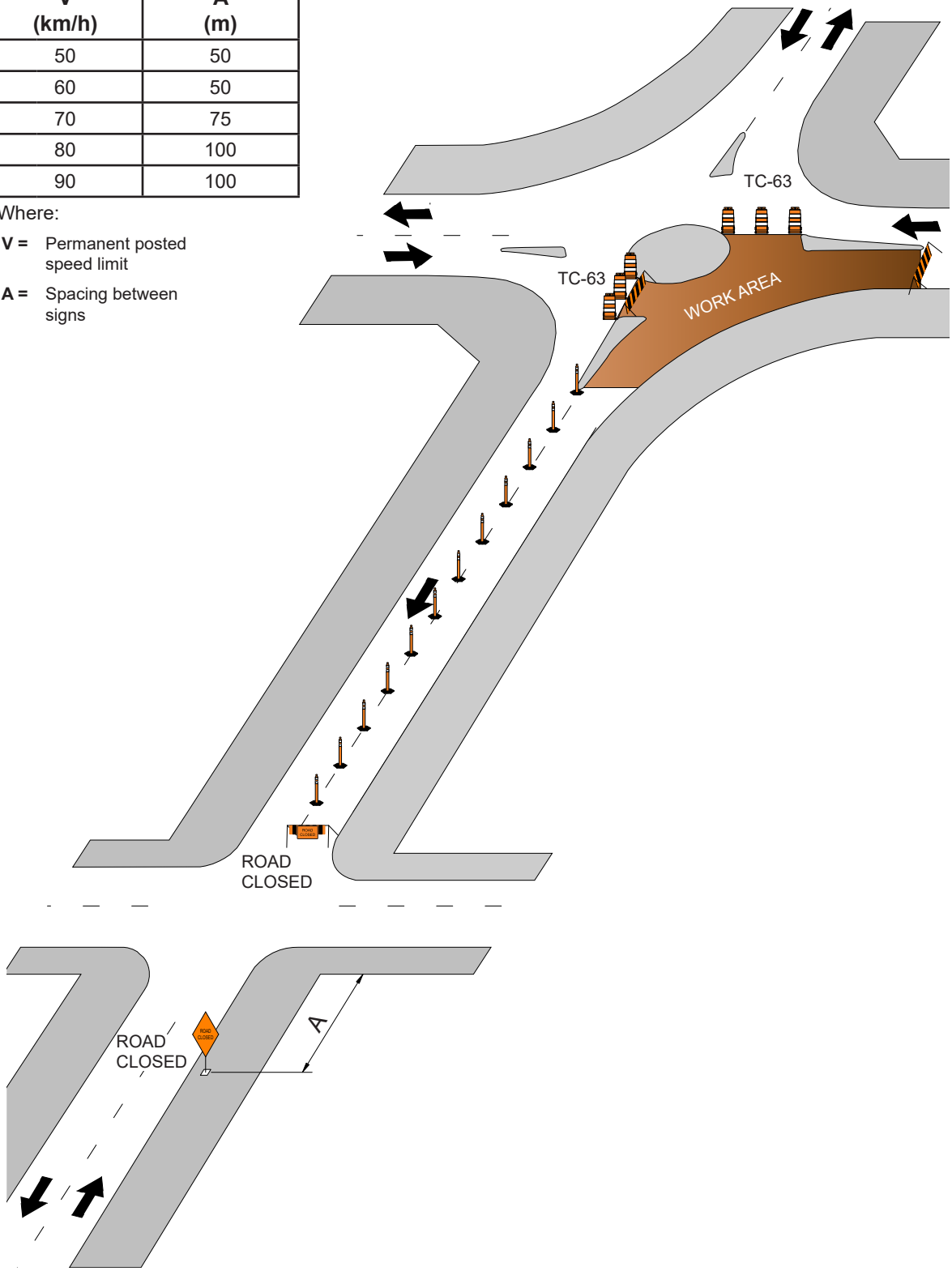
LONG TERM CLOSURE OF ONE QUADRANT OF A ROUNDABOUT ON A NON-REGIONAL STREET

V (km/h)	A (m)
50	50
60	50
70	75
80	100
90	100

Where:

V = Permanent posted speed limit

A = Spacing between signs



LONG TERM MAINTENANCE OF GRANULAR SURFACE ROADWAYS

V (km/h)	A (m)
50	50
60	50
70	75
80	100
90	100

Where:

V = Permanent posted speed limit

A = Spacing between signs



WD-A69 may be substituted for WD-A65 in the setup

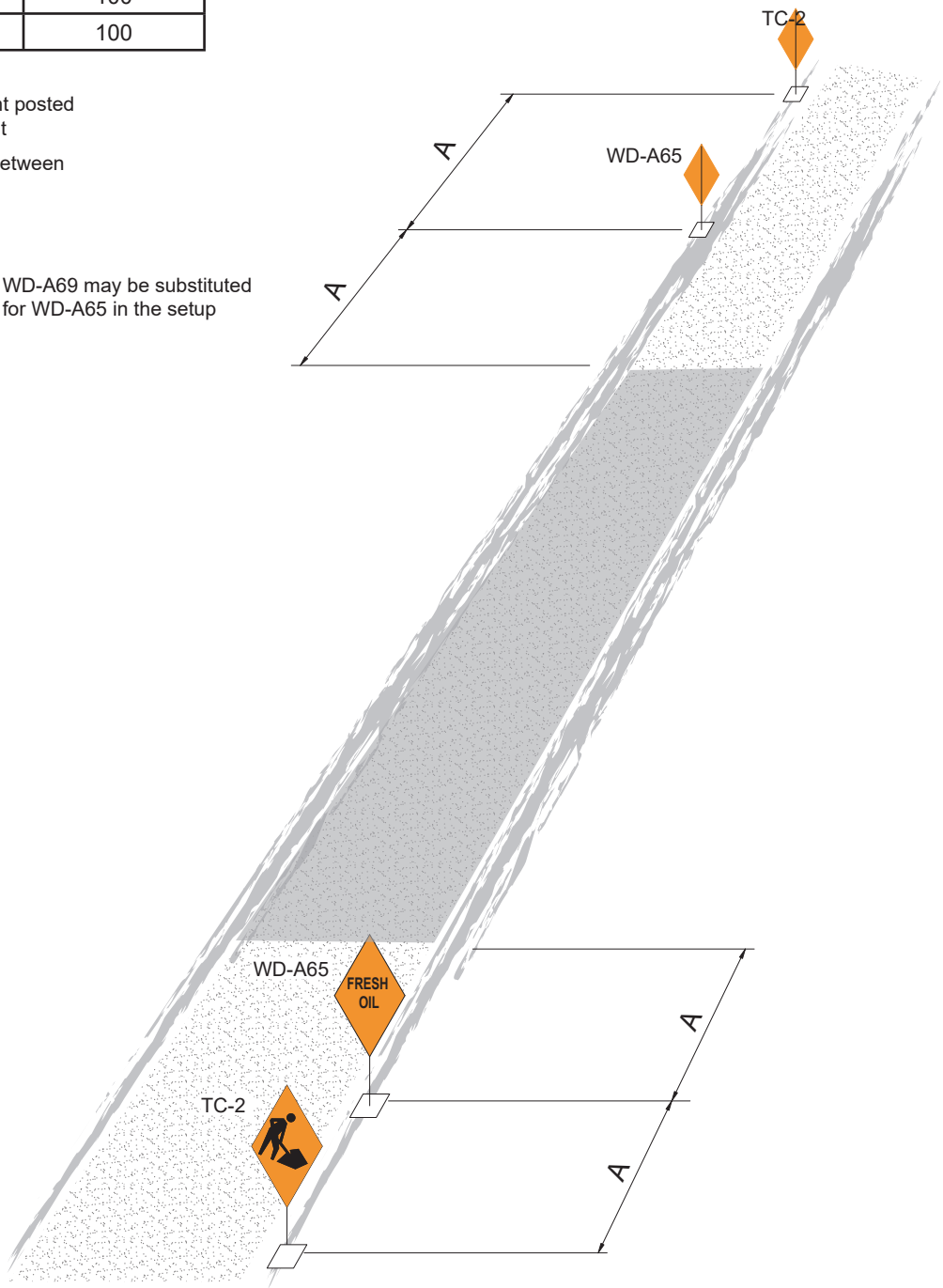


FIGURE 33

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF HALF OF A NON-REGIONAL STREET

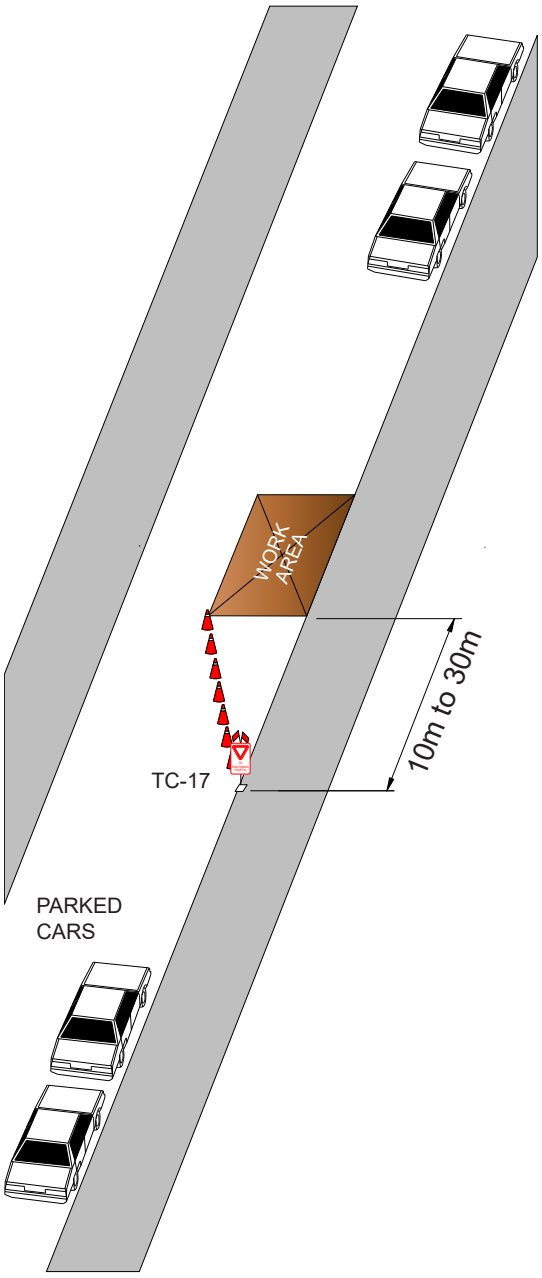
V (km/h)	A (m)
50	50
60	50
70	75
80	100

Where:

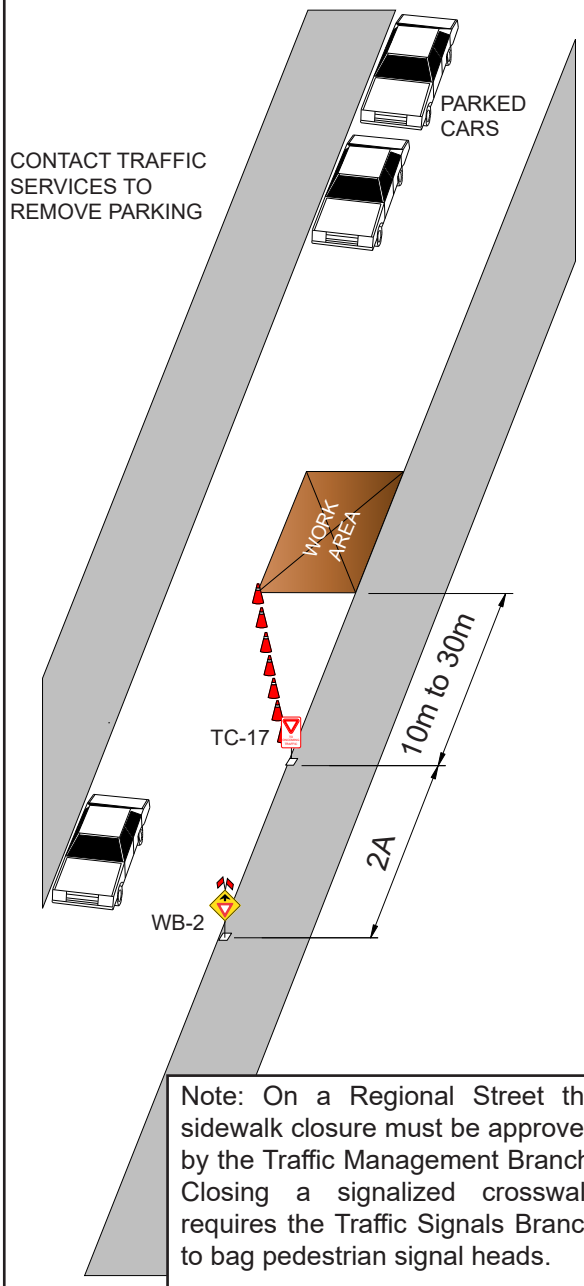
V = Permanent posted speed limit

A = Spacing between signs

Work Area on Parking Side



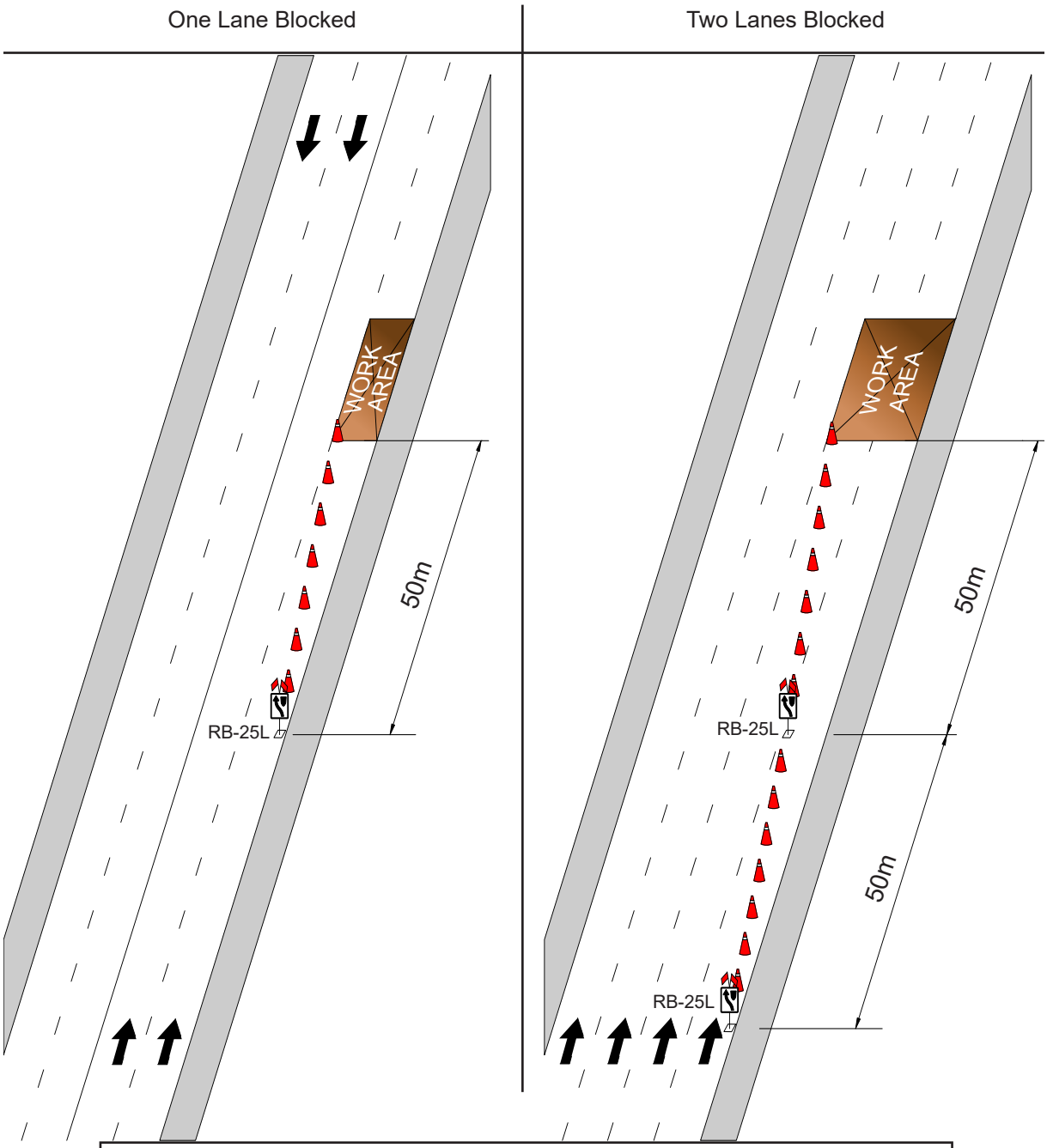
Work Area on Non-Parking Side



Note: On a Regional Street the sidewalk closure must be approved by the Traffic Management Branch. Closing a signalized crosswalk requires the Traffic Signals Branch to bag pedestrian signal heads.

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF THE CURB LANE OR LANES

Speed Limit 50 km/h or 60 km/h
Minimum 7 cones per 50m taper

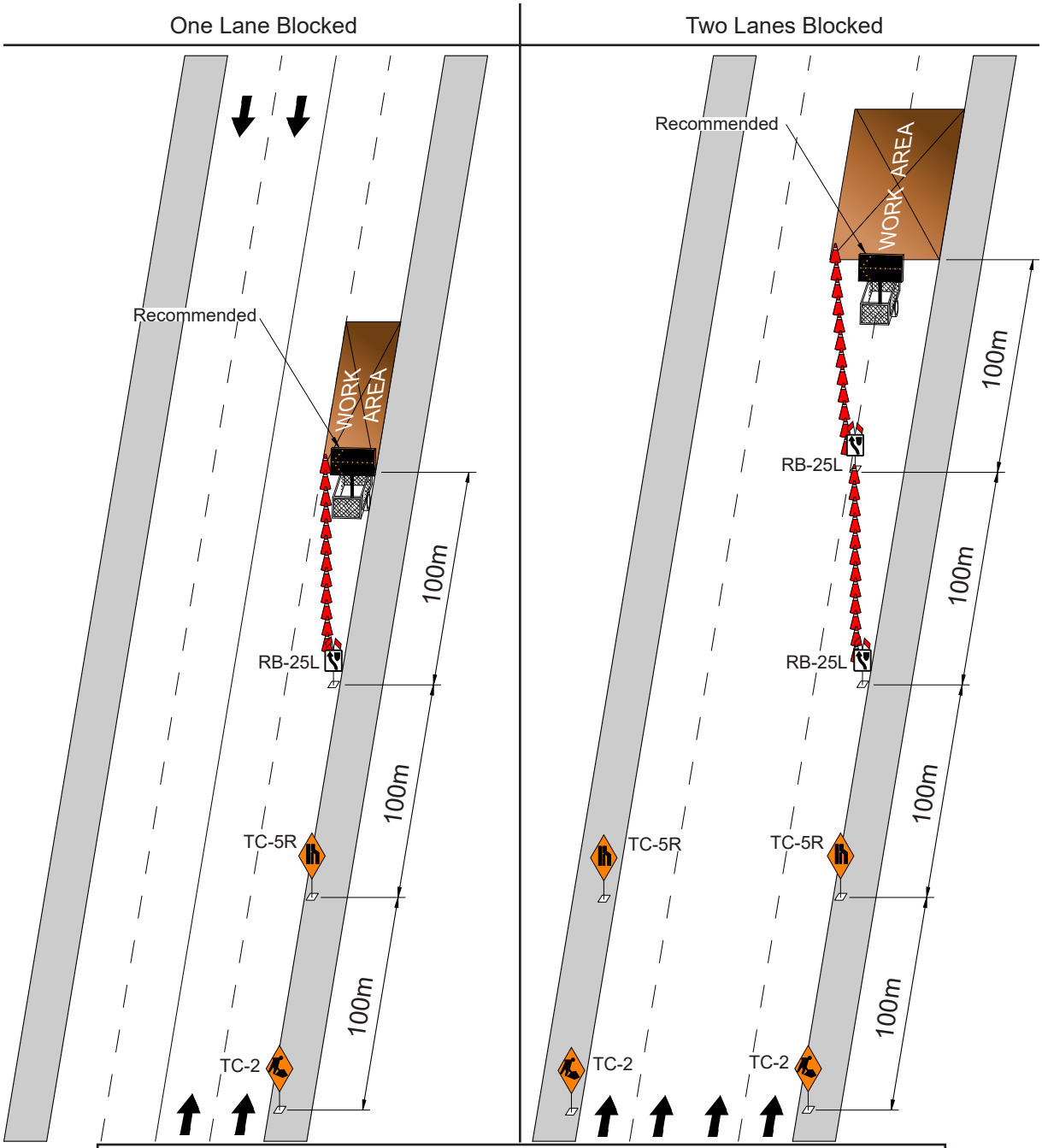


Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

FIGURE 34b

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF THE CURB LANE OR LANES

Speed Limit 70, 80 or 90 km/h
Minimum 12 cones per 100m taper

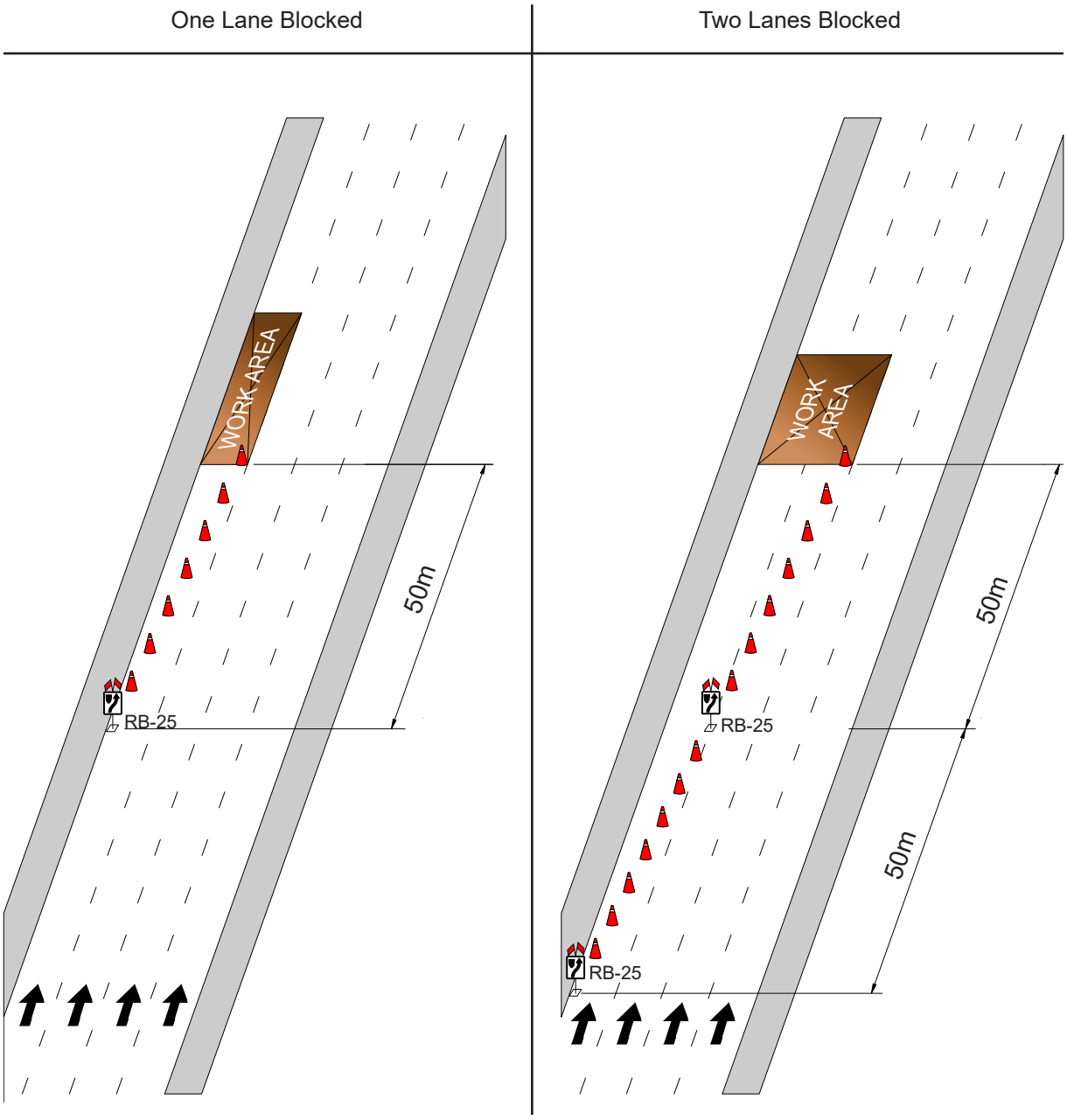


Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

FIGURE 35a

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF THE MEDIAN LANE OR LANES

Speed Limit 50 km/h or 60 km/h
Minimum 7 cones per 50m taper

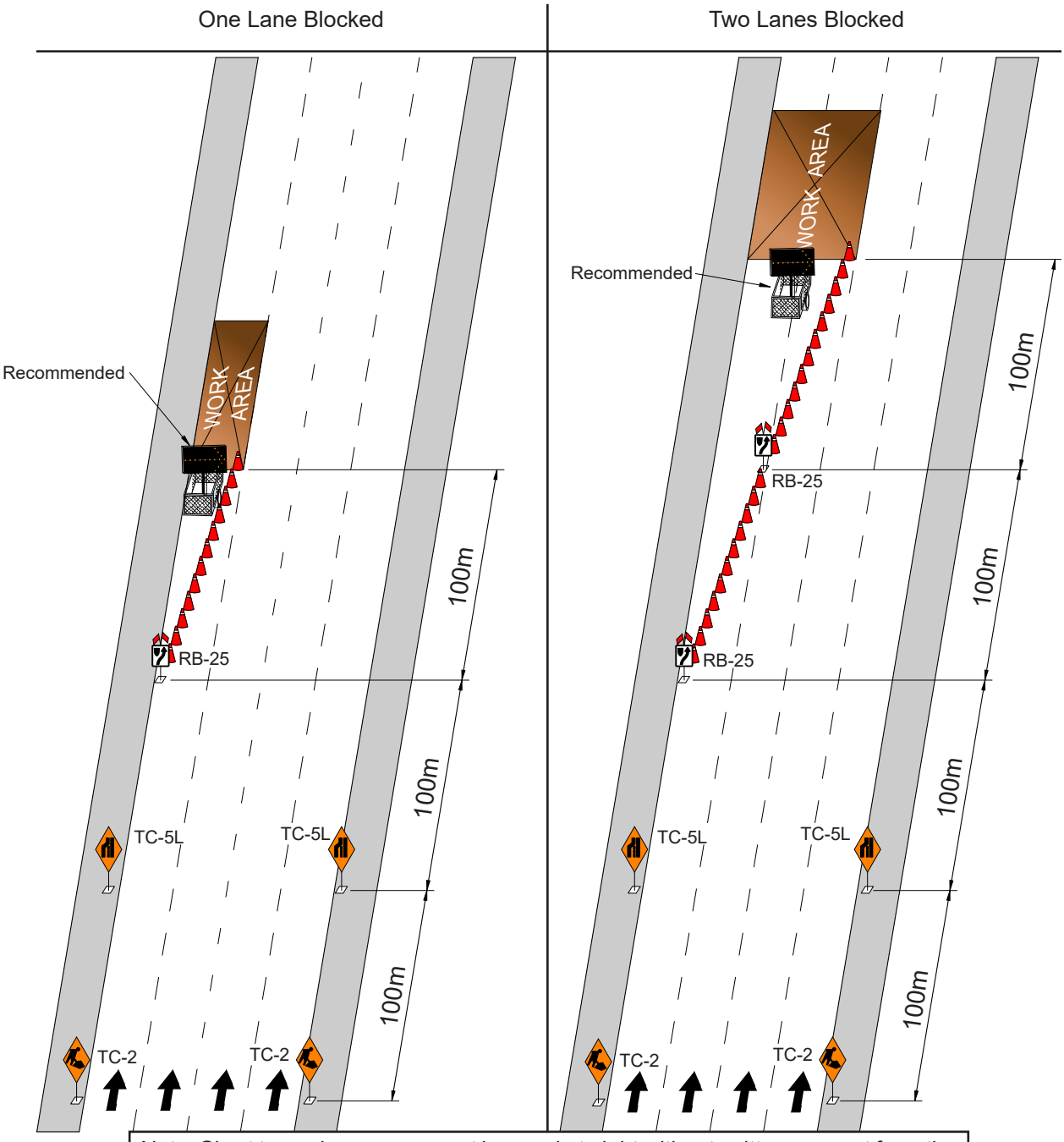


Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

FIGURE 35b

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF THE MEDIAN LANE OR LANES

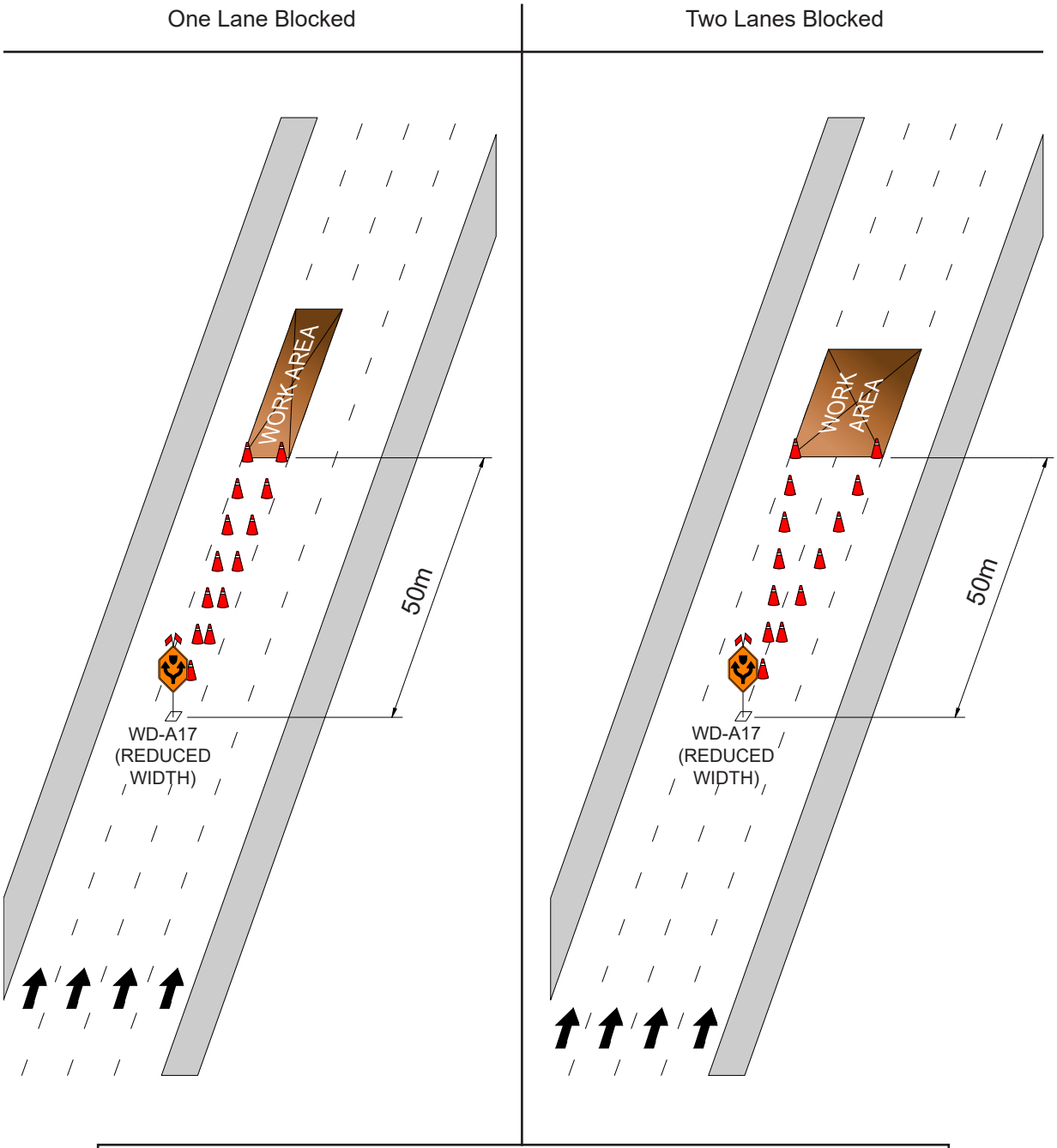
Speed Limit 70, 80 or 90 km/h
Minimum 12 cones per 100m taper



Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF THE CENTRE LANE OR LANES

Speed Limit 50 km/h or 60 km/h
Minimum 7 cones per 50m taper

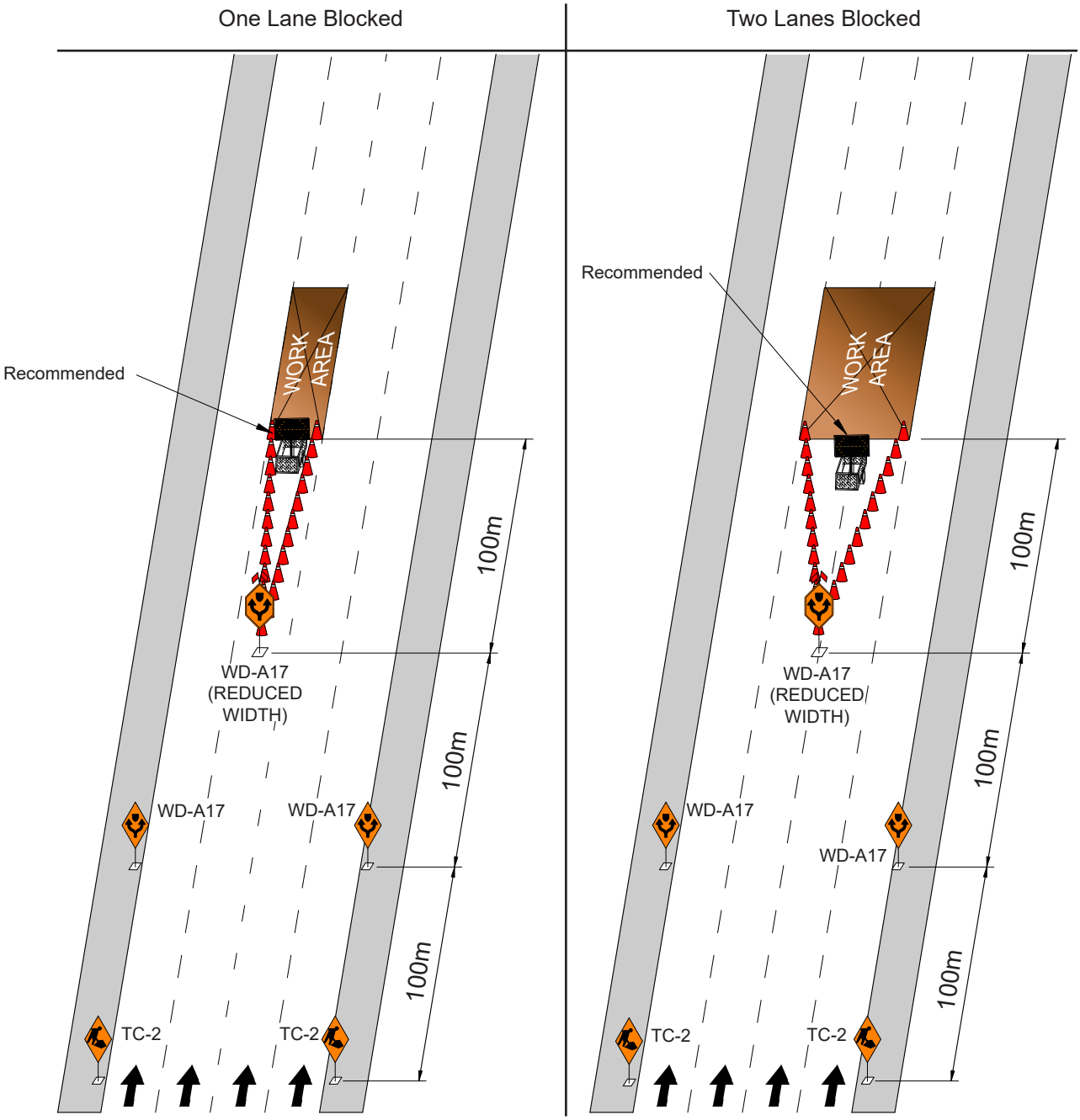


Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

FIGURE 36b

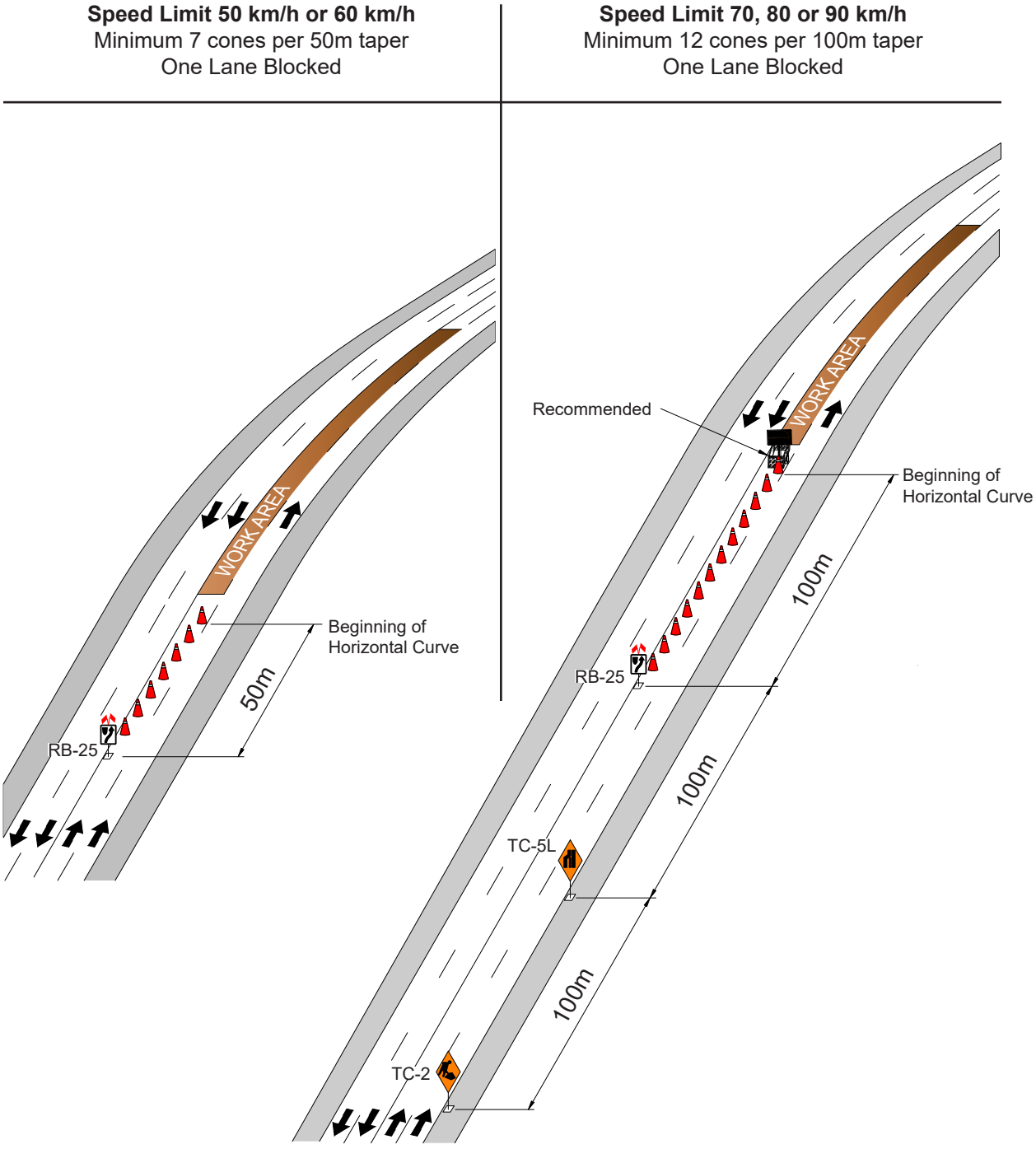
SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF THE CENTRE LANE OR LANES

Speed Limit 70, 80 or 90 km/h
Minimum 12 cones per 100m taper



Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE ON A HORIZONTAL CURVE

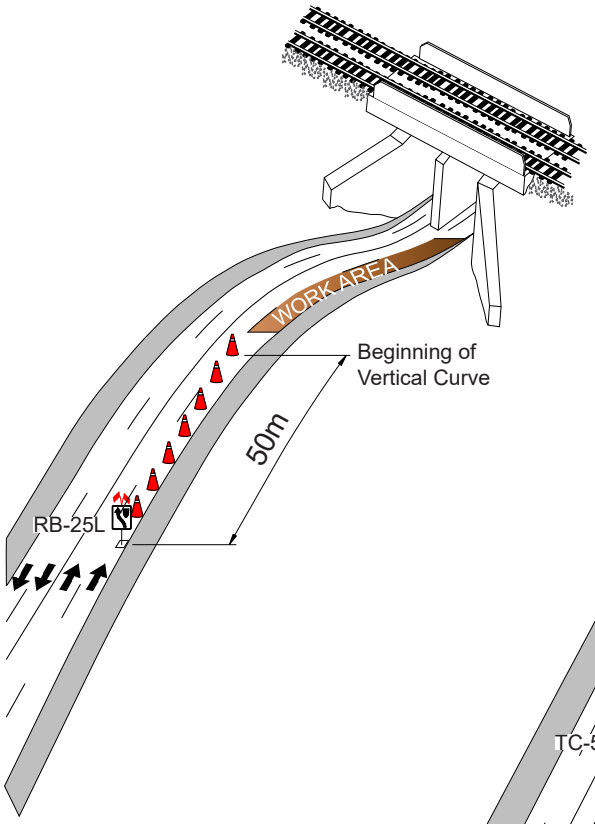


Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

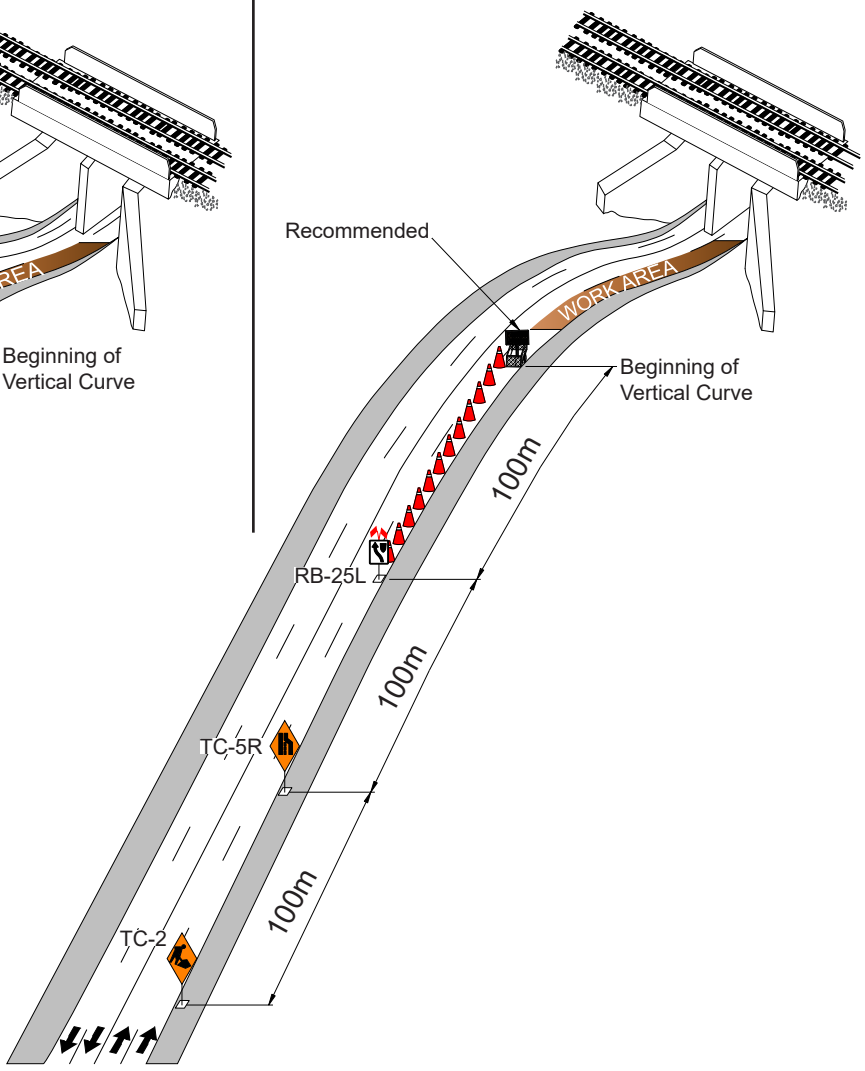
FIGURE 38

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE ON A VERTICAL CURVE

Speed Limit 50 km/h or 60 km/h
Minimum 7 cones per 50m taper
One Lane Blocked



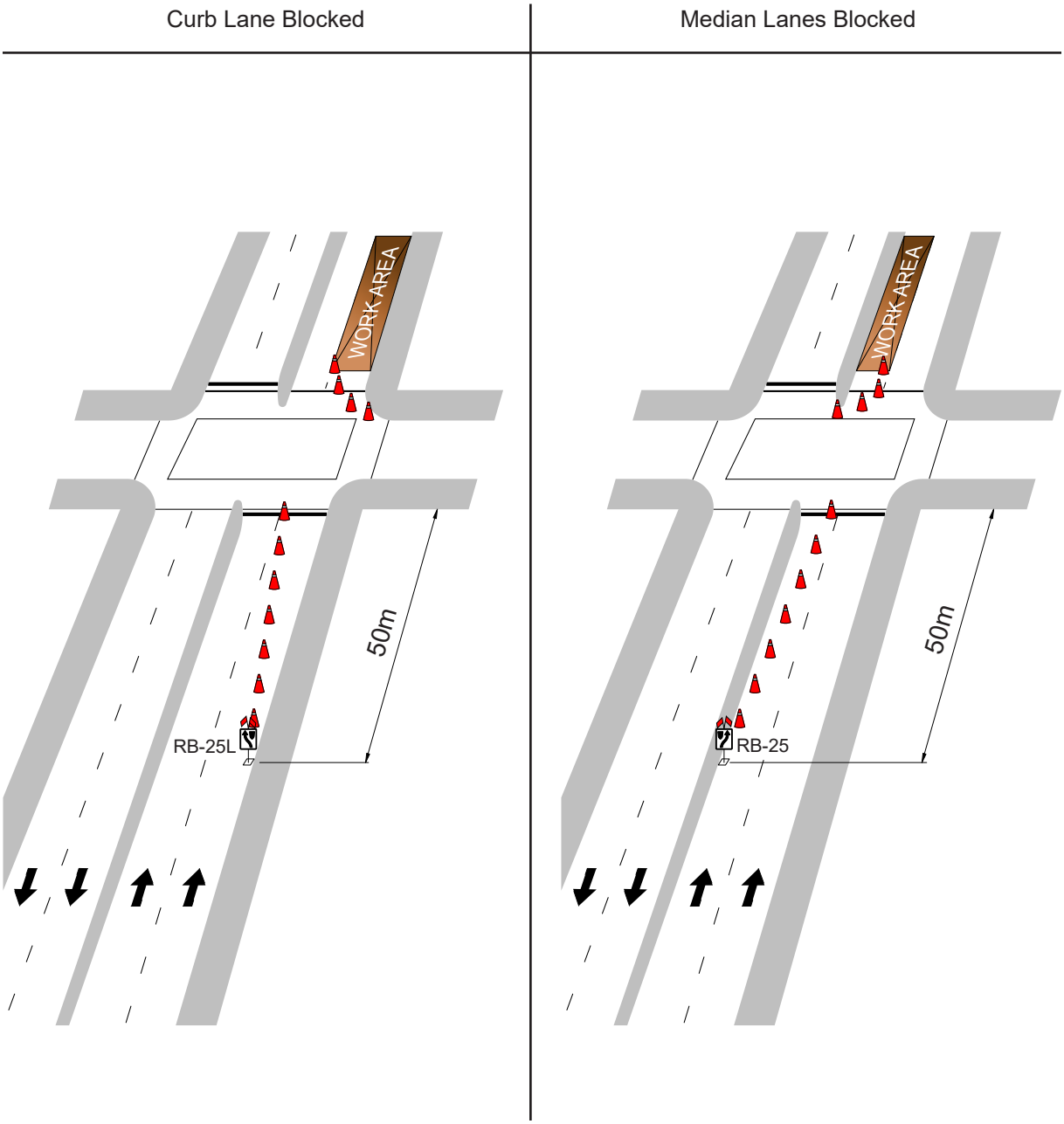
Speed Limit 70, 80 or 90 km/h
Minimum 12 cones per 100m taper
One Lane Blocked



Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF A CURB LANE OR MEDIAN LANE ADJACENT TO AN INTERSECTION

Speed Limit 50 km/h or 60 km/h
Minimum 7 cones per 50m taper

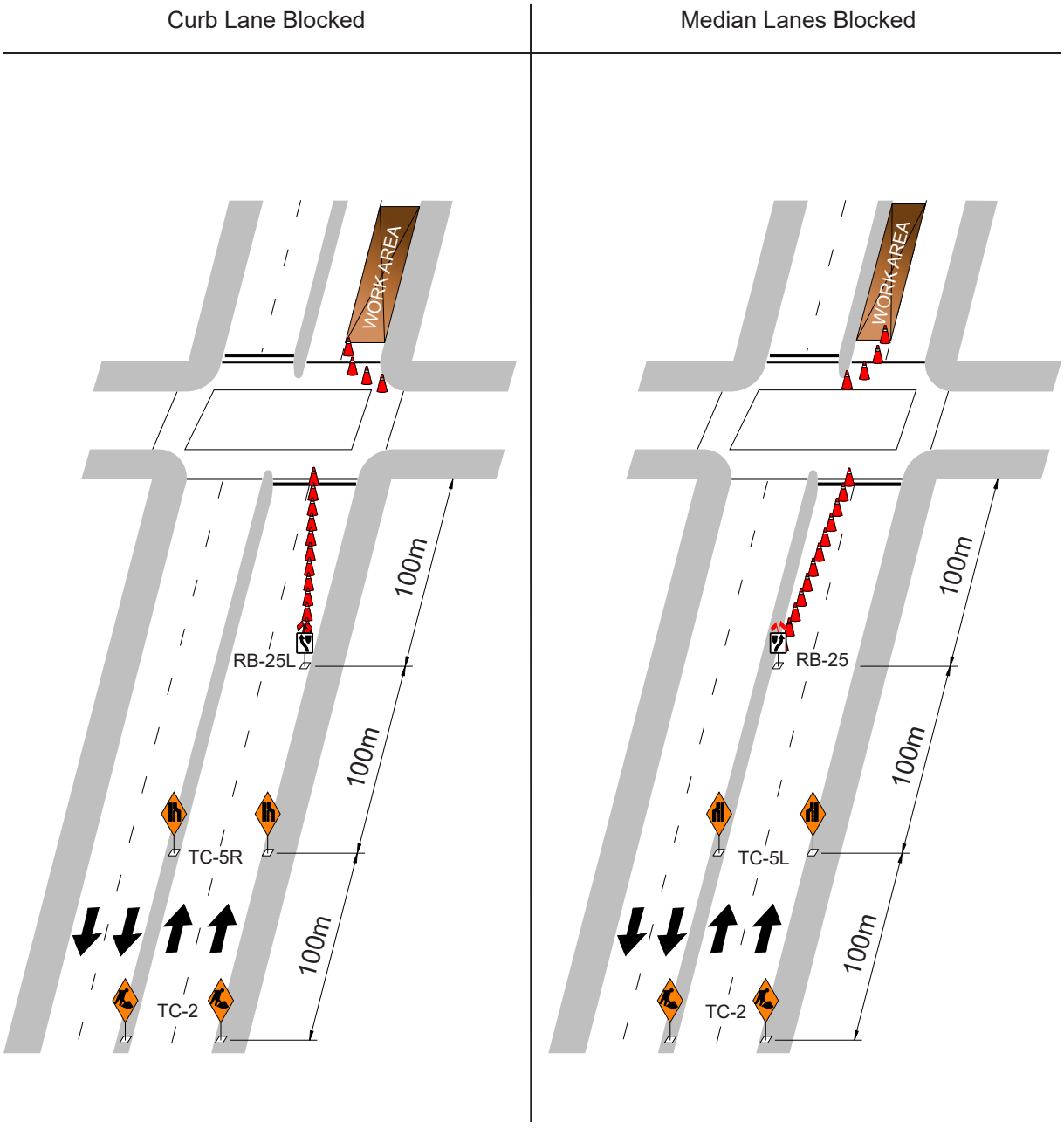


Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

FIGURE 39b

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE OF A CURB LANE OR MEDIAN LANE ADJACENT TO AN INTERSECTION

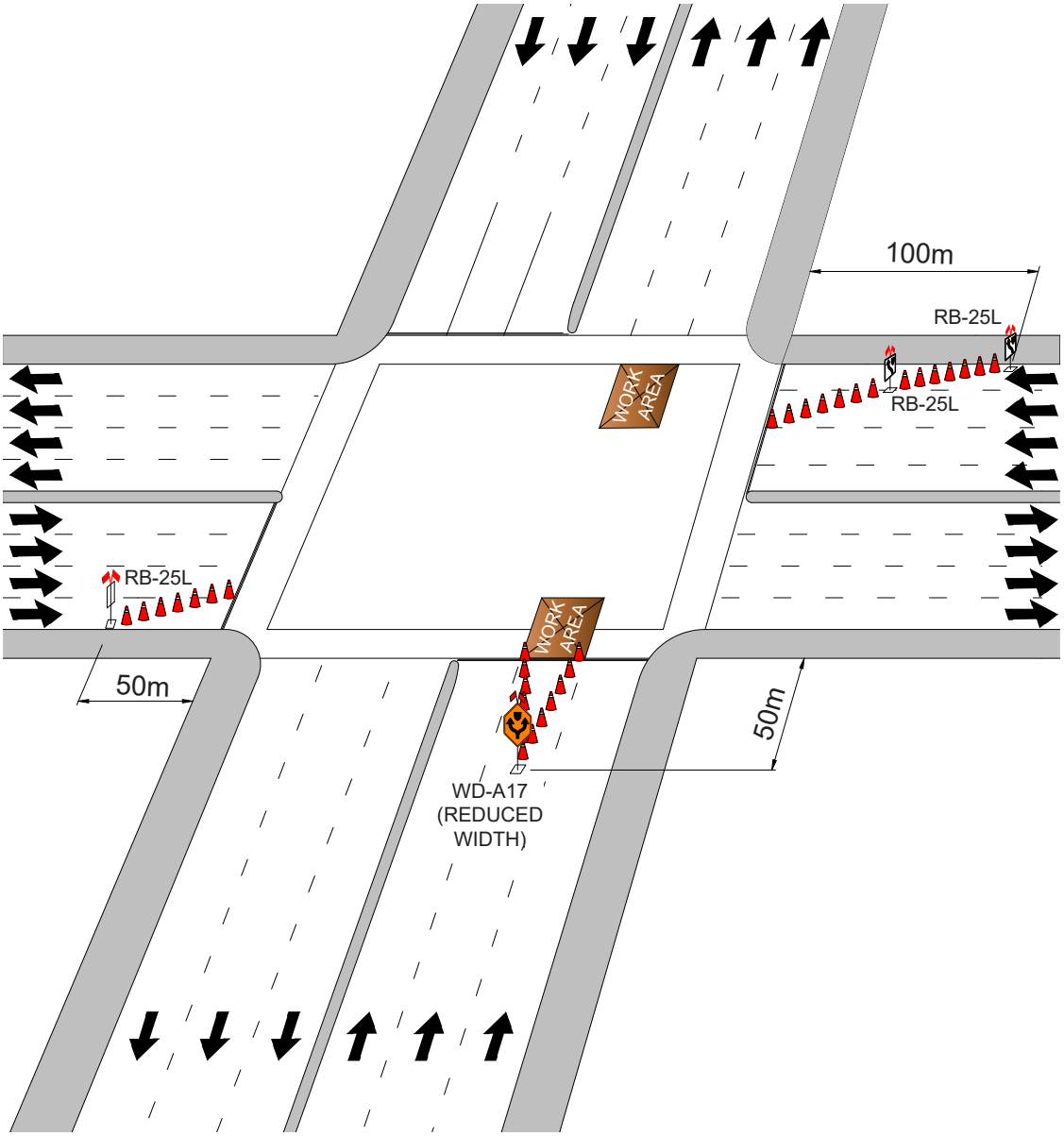
Speed Limit 70, 80 or 90 km/h
Minimum 12 cones per 100m taper



Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

SHORT TERM (GREATER THAN 30 MINUTES AND UP TO 2 HOURS) CLOSURE WITHIN AN INTERSECTION - EIGHT LANE AND SIX LANE DIVIDED HIGHWAYS

Speed Limit 50 km/h or 60 km/h
Minimum 7 cones per 50m taper



Note: Short term closures may not be used at night without written consent from the Traffic Management Branch (PWDLaneClosures@winnipeg.ca). Use of a flashing or sequential arrow traffic control device is a requirement for work at night.

MOBILE AND VERY SHORT DURATION WORK ZONES

(Figure 41)

Figure 39 depicts vehicles suitably equipped to act as traffic control vehicles for mobile and very short duration work zones (work zones that move continuously or intermittently stopping at a fixed location for up to 30 minutes). The devices shall conform to the requirement of Section 5 and shall be kept clean and in proper working order and the following conditions must prevail:

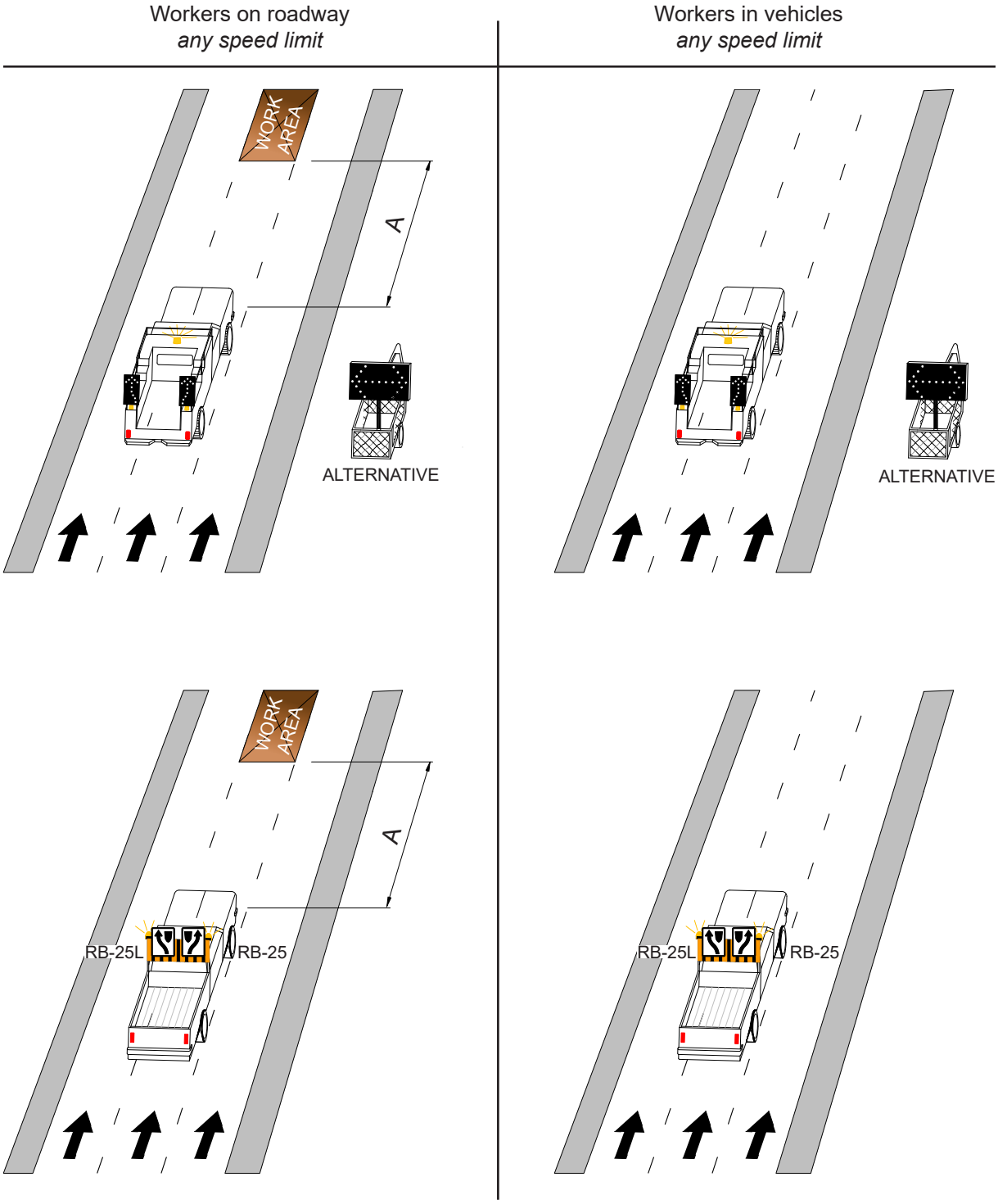
1. The blockage shall not exceed 30 minutes duration or occur during peak periods.
2. Only one lane is closed at any one time and there must be at least one other lane available for that direction of travel.
3. A buffer vehicle equipped with a flashing or sequential arrow traffic control device must be used where visibility of the work zone is limited by horizontal or vertical curves (example: bridges, overpasses or underpasses). The buffer vehicle should be located at the most visible location available. The table below provides guidance as to appropriate separation distances between the buffer vehicle and the work area.

Speed Limit	50 km/h	60 km/h	70 km/h	80 km/h	90 km/h
Buffer Vehicle to Work Area Separation Distance ('A')	35 m	45 m	50 m	55 m	65 m

4. On streets with a posted speed limit of 70, 80 or 90 km/h, a flashing or sequential arrow traffic control device is required.
5. A flashing or sequential arrow traffic control device is required at night.
6. The flashing or sequential arrow traffic control device must be turned off when traffic control is no longer required or when the vehicle is being moved from one work zone to another.
7. Truck or trailer mounted impact attenuators (also known as crash cushions) are recommended for the first vehicle or trailer in a mobile or very short duration setup on a roadway with a posted speed limit of 70, 80 or 90 km/h.
8. The minimum requirement for streets with 50 km/h or 60 km/h speed limits are:
   - Two flashing amber beacons at least 2.0 m from ground level.
   - Orange and black reflectorized hazard panel with a minimum dimension of 2.0 m by 0.5 m at least 1.0 m from ground level.
   - Two 600 mm x 750 mm reflectorized black on white "Keep Right" (RB-25) and/or "Keep Left" (RB-25L) regulatory signs.
   - Where it is possible to pass on the right, a "Keep Right" sign shall be used. Where it is possible to pass on the left, a "Keep Left" sign shall be used. Where it is possible to pass on either the right or the left, a "Keep Right" and a "Keep Left" sign shall be used. The "Keep Right" and/or "Keep Left" signs mounted on the vehicle must not be visible to motorists when not in use.

MOBILE AND VERY SHORT DURATION WORK ZONES

Minimum Requirement 50 km/h or 60 km/h Speed Limit



SURVEY CREW WORK ZONE CLOSURE

(Figure 42)

Figure 42 depicts vehicles suitably equipped to act as traffic control vehicles for survey crew work zones (work zones that involve a survey crew taking measurements along the roadway). The devices shall conform to the requirement of Section 5 and shall be kept clean and in proper working order, and the following conditions must prevail:

1. The blockage shall not occur during peak periods.
2. Only one lane is closed at any one time and there must be at least one other lane available for that direction of travel.
3. A buffer vehicle equipped with a flashing or sequential arrow traffic control device must be used. The table below provides guidance as to appropriate separation distances between the buffer vehicle and the work area.

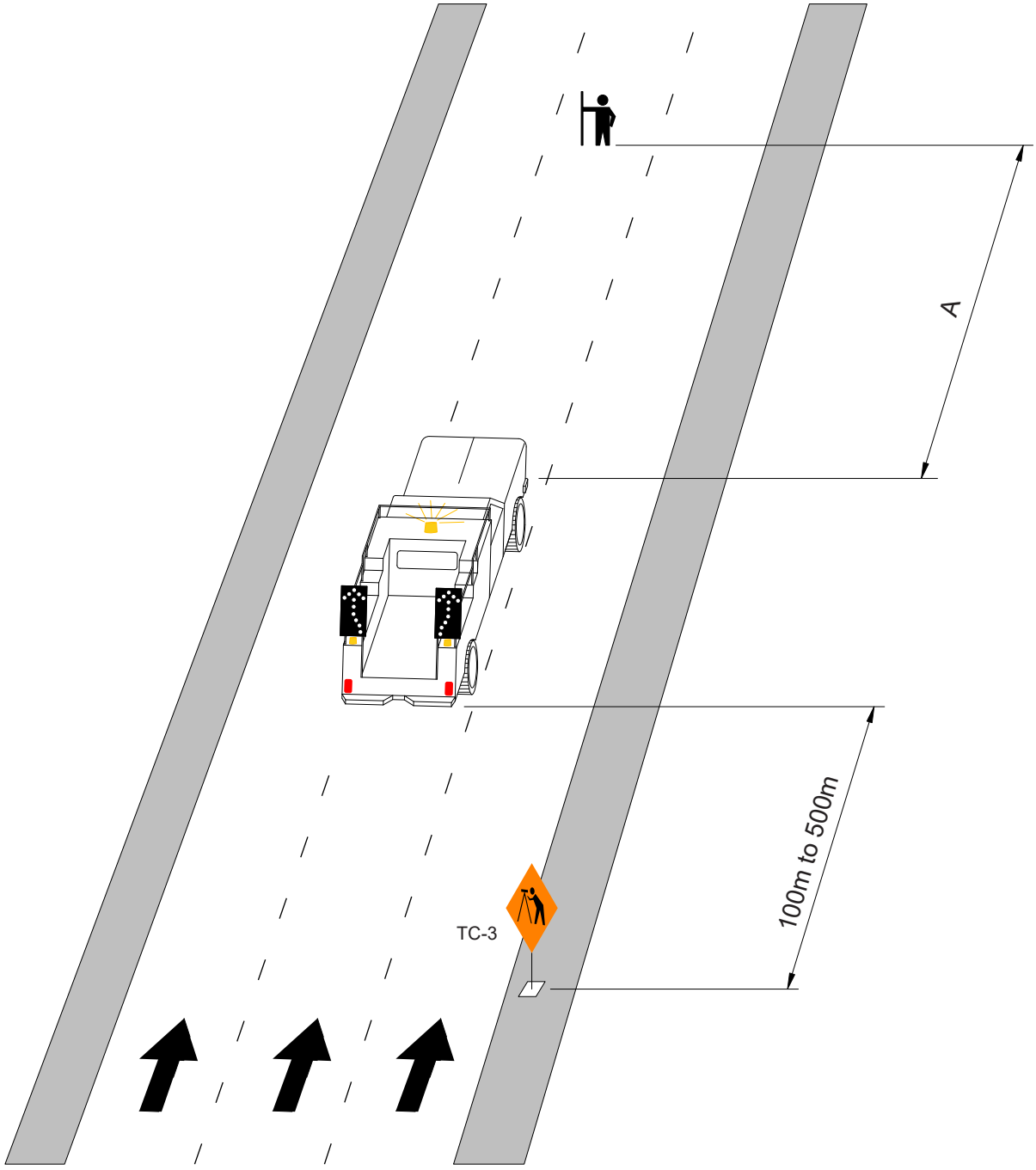
Speed Limit	50 km/h	60 km/h
Buffer Vehicle to Work Area Separation Distance ('A')	35 m	45 m

4. On streets with a posted speed limit of 70, 80 or 90 km/h, a DCZ with a reduced speed of 60 km/h or lower must be used.
5. The flashing or sequential arrow traffic control device must be turned off when traffic control is no longer required or when the vehicle is being moved from one work zone to another.

FIGURE 42

SURVEY CREW WORK ZONE CLOSURE

Minimum Requirement 50 km/h or 60 km/h Speed Limit



Appendix

LIST OF REGIONAL STREETS

Street	From	To
Academy Road	Maryland Bridge	Kenaston Boulevard
Alexander Avenue	Main Street	Princess Street
Archibald rue	CPR Keewatin Subdivision	Fermor Avenue
Arlington Street	Portage Avenue	Inkster Boulevard
Arlington Street Bridge		
Balmoral Street	Notre Dame Avenue	Ellice Avenue
Bishop Grandin Boulevard	Kenaston Boulevard	Lagimodiere Boulevard
Bison Drive	Kenaston Boulevard	Kenaston Boulevard (Southbound)
Bison Drive	Waverley Street	Pembina Highway
Broadway	Portage Avenue	Main Street
Brookside Boulevard	Mollard Road	Oak Point Highway
Carlton Street	Notre Dame Avenue	Broadway
Century Street	St. James Bridge	Dublin Avenue
Century Street/Portage Avenue Interchange		
Chancellor Matheson Road	Pembina Highway	University Crescent
Chancellor Drive	Pembina Highway	A point 100 m West
Chief Peguis Trail	Main Street	Lagimodiere Boulevard
Colony Street	Portage Avenue	Ellice Avenue
Colony Street	St. Mary Avenue	York Avenue
Concordia Avenue	Gateway Road	Lagimodiere Boulevard
Concordia Overpass		
Cornish Avenue	Maryland Street	Sherbrook Street
Corydon Avenue	Donald Street	Roblin Boulevard
Cumberland Avenue	Maryland Street	Donald Street
Dakota Street	St. Mary's Road	Aldgate Road
Day Street	Pandora Avenue	Regent Ave West
Des Meurons rue	Provencher Boulevard	Marion Street
Disraeli Bridge and Overpass		
Disraeli Freeway	Main Street	Disraeli Bridge
Disraeli Freeway Interchange		
Disraeli Street	Sutherland Avenue	Rover Avenue
Donald Street	Notre Dame Avenue	McMillan Avenue
Dublin Avenue	Notre Dame Avenue	King Edward Street
Dublin Avenue Crossing of Omand's Creek		
Dufferin Avenue	Salter Street	McGregor Street

LIST OF REGIONAL STREETS (CONTINUED)

Street	From	To
Dugald Road	Lagimodiere Boulevard	P.T.H. 101
Dugald Road Overpass of the CNR Line West of Terracon Place		
Dunkirk Avenue	St. Vital Bridge	St. Mary's Road
Dunkirk Drive/Kingston Row/ Churchill Dr. Interchange		
Eastway	Empress Street	Empress Street E.
Edmonton Street	Broadway	Portage Avenue
Edmonton Street	Ellice Avenue	Cumberland Avenue
Ellice Avenue	Notre Dame Avenue	Ferry Road
Empress Street	Portage Avenue	Wellington Avenue
Empress Street East	St John Ambulance Way	Jack Blick Avenue
Empress Street Overpass		
Erin Street	Notre Dame Avenue	Portage Avenue
Fermor Avenue	Dunkirk Drive	Plessis Road
Fermor Avenue Crossing of Seine River		
Ferry Road	Portage Avenue	Ellice Avenue
Fort Garry Bridge		
Fort Street	Broadway	Portage Avenue
Garry Street	Broadway	Notre Dame Avenue
Gateway Road	Munroe Avenue	Chief Peguis Trail
Gladstone Street	Sutherland Avenue	Disraeli Street
Goulet Street	St. Mary's Road	Youville Street
Graham Avenue	Vaughan Street	Main Street
Grant Avenue	Pembina Highway	Roblin Boulevard
Grassie Boulevard	Lagimodiere Boulevard	Plessis Road
Hargrave Street	Broadway	Notre Dame Avenue
Harkness Avenue	Stradbrook Avenue	Mayfair Avenue
Harry Lazarenko Bridge	Redwood Avenue	Hespeler Avenue
Henderson Highway	Disraeli Bridge	Glenway Avenue
Henderson Highway/Talbot Avenue Interchange		
Hespeler Avenue	Harry Lazarenko Bridge	Henderson Highway
Higgins Avenue	Princess Street	Louise Bridge
Inkster Boulevard	Main Street	Brookside Boulevard
Isabel Street	Notre Dame Avenue	Logan Avenue
Israel Asper Way	Pioneer Avenue/ William Stephenson Way	York Avenue
James Avenue	King Street	Main Street
Johnson Avenue	Henderson Highway	Levis Street

LIST OF REGIONAL STREETS (CONTINUED)

Street	From	To
Jubilee Avenue	Osborne Street	Pembina Highway
Jubilee Overpass of Pembina Highway		
Keewatin Street	Notre Dame Avenue	Old Commonwealth Path
Kenaston Boulevard	P.T.H. 100	St. James Bridge
Kenaston Blvd/St. James Bridge Interchange		
Kennedy Street	Cumberland Avenue	Ellice Avenue
Kennedy Street	Portage Avenue	Broadway
Kildonan Settlers Bridge		
King Edward Street	King Edward Street E.	Oak Point Highway
King Edward Street Crossing of Omand's Creek		
King Edward Street E.	St. Matthews Avenue	King Edward Street
King Street	Smith Street	Higgins Avenue
Kintyre Street	St. James Bridge	Portage Avenue
Lagimodiere Blvd	John Bruce Road	North City Limit
Lagimodiere Blvd/Concordia Avenue Interchange		
Lagimodiere Blvd Overpass of CNR Reddit Subdivision		
Leila Avenue	Agnes Arnold Place	Main Street
Levis Street	Johnson Avenue	Watt Street
Levis Street	Nairn Avenue	Talbot Avenue
Logan Avenue	Disraeli Freeway	King Edward Street
Louise Bridge		
Main Street	Assiniboine River	North City Limit
Main/Norwood Bridges		
Marion Street	St. Mary's Road	Lagimodiere Blvd
Maryland Bridges		
Maryland Street	Notre Dame Avenue	Maryland Bridge
Mayfair Avenue	Harkness Avenue	Queen Elizabeth Way
McGillivray Blvd	Pembina Highway	Southwest City Limit
McGregor Street	Dufferin Avenue	Templeton Avenue
McMillan Avenue	Donald Street	Osborne Street
McPhillips Street	Notre Dame Avenue	North City Limit
Memorial Boulevard	York Avenue	Portage Avenue
Midtown Bridge		
Midwinter Avenue	Henderson Highway	Stadacona Street
Mission Street	Plinguet Street	Panet Road
Moray Street	North Bank of the Assiniboine River	Ness Avenue

LIST OF REGIONAL STREETS (CONTINUED)

Street	From	To
Mountain Avenue	Main Street	McPhillips Street
Munroe Avenue	Henderson Highway	Gateway Road
Nairn Avenue	Stadacona Street	Panet Road
Nairn Overpass		
Ness Avenue	Sturgeon Road	St. James Street
Notre Dame Avenue	Portage Avenue	King Edward Street
Oak Point Highway	King Edward Street	Brookside Boulevard
Osborne Bridge		
Osborne Street	St. Mary Avenue	St. Vital Bridge
Pandora Avenue E.	Day Street	Ravenhurst Street
Partridge Avenue	Leila Avenue	Main Street
Pembina Highway	Osborne Street	South City Limit
Pembina Highway/Bishop Grandin Blvd. Interchange		
Pembina Highway Crossing of La Salle River		
Pembina Highway/Jubilee Avenue Interchange		
Pioneer Avenue	Main Street	Provencher Bridge
Plessis Road	P.T.H 1 East	Grassie Boulevard
Portage Avenue	Main Street	P.T.H. 100
Portage Avenue Crossing of Omand's Creek		
Portage Avenue Crossing of Sturgeon Creek		
Portage Avenue East	Westbrook Street	Main Street
Prairie Grove Road	St. Anne's Road	Lagimodiere Boulevard
Princess Street	Notre Dame Avenue	Higgins Avenue
Provencher Blvd	Archibald rue	Provencher Bridge
Provencher Blvd Crossing of Seine River		
Provencher Bridge		
Queen Elizabeth Way	Assiniboine River	Red River
Queen Street	Portage Avenue	Century Street Ramp
Ravenhurst Street	Pandora Avenue E.	Dugald Road
Redwood Avenue	Salter Street	Harry Lazarenko Bridge
Regent Avenue	Panet Road	Day Street
River Avenue	Harkness Avenue	Wellington Crescent
River Road	St. Vital Road	St. Mary's Road
Riverton Avenue	Henderson Highway	Midwinter Avenue
Roblin Boulevard	Corydon Avenue	P.T.H No. 100
Salter Street	Logan Avenue	Leila Avenue
Sargent Avenue	Ferry Road	Edmonton Street

LIST OF REGIONAL STREETS (CONTINUED)

Street	From	To
Saskatchewan Avenue	P.T.H 101	Sturgeon Road
Selkirk Avenue	McPhillips Street	Main Street
Shaftesbury Boulevard	Wilkes Avenue	Corydon Avenue
Sherbrook Street	Maryland Bridge	Logan Avenue
Silver Avenue	Sturgeon Road	Hamilton Avenue
Silver Avenue	Century Street	St. James Street
Slaw Rebchuk Bridge		
Smith Street	Midtown Bridge	Notre Dame Avenue
Spence Street	St. Mary Avenue	Portage Avenue
St. Anne's Road	St. Mary's Road	Forbes Road
St. James Bridges and Interchange		
St. James Street	Portage Avenue	Notre Dame Avenue
St. John Ambulance Way	Portage Avenue	Empress Street E.
St. Mary Avenue	Main Street	Spence Street
St. Mary's Road	Red River	Red River Floodway
St. Matthews Avenue	Century Street	Empress Street
St. Vital Bridges		
Stadacona Street	Louise Bridge	Talbot Avenue
Stafford Street	Pembina Highway	Academy Road
Sterling Lyon Parkway	Wilkes Avenue/ Victor Lewis Drive	McCreary Road/Shaftesbury Blvd
Stradbrook Avenue	Wellington Crescent	Queen Elizabeth Way
Sturgeon Access	Sturgeon Road	CentrePort Canada Way
Sturgeon Road	Portage Avenue	Sturgeon Access
Sturgeon Road Crossing of Sturgeon Creek		
Tache Avenue	St. Mary's Road	Provencher Blvd
Talbot Avenue	Riverton Avenue	Stadacona Street
Taylor Avenue	Pembina Highway	Kenaston Blvd
Tuxedo Avenue	Kenaston Blvd	Corydon Avenue
University Crescent	Pembina Highway	Chancellor Matheson Road
Vaughan Street	York Avenue	Ellice Avenue
Wall Street	Portage Avenue	Notre Dame Avenue
Warde Avenue	St. Mary's Road	St. Anne's Road
Watt Street	CPR Keewatin Subdivision	Munroe Avenue
Waverley Street	Grant Avenue	Kenaston Blvd
Wellington Avenue	Winnipeg International Airport	Empress Street
Wellington Crescent	Academy Road	River Avenue

LIST OF REGIONAL STREETS (CONTINUED)

Street	From	To
Westbrook Street	William Stephenson Way	Portage Avenue E.
Weston Street	Notre Dame Avenue	Logan Avenue
Westway	Empress Street	Empress Street E.
Wilkes Avenue	Waverley Street	Sterling Lyon Parkway
Wilkes Avenue	McCreary Road/ Shaftesbury Blvd	P.T.H. 100
William Avenue	Main Street	McPhillips Street
William R. Clement Parkway	North Bank of the Assiniboine River	Grant Avenue
William Stephenson Way	Main Street	Provencher Bridge
York Avenue	Colony Street	Israel Asper Way
Youville Street	Goulet Street	Marion Street


Winnipeg