

MANUAL OF TEMPORARY TRAFFIC CONTROL IN WORK AREAS ON CITY STREETS

Winnipeg

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PUBLIC WORKS DEPARTMENT
2008

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FOREWORD

The Manual of Temporary Traffic Control in Work Areas on City Streets is a schedule in both The City of Winnipeg Streets By-Law 1481/77 and The City of Winnipeg Traffic By-Law 1573/77 and is therefore mandated for use when work takes place on City streets. The 2008 edition contains the following substantial changes as compared to the 2003 edition:

1. The definition for "Construction Agency" has been revised to indicate explicitly that City Departments, utility companiies and private contractors are included within the definition (Section 1.03).

2. Signs and devices contained in the Fourth Edition of the Manual of Uniform Traffic Control Devices for Canada have been approved by The Highway Traffic Board of Manitoba for use on streets in Winnipeg.The Manual reflects this approval (Section 1.05).

3. As of January 1, 2012 all retroreflective sheeting on temporary traffic signs, barricades and devices must be a minimum Type VIII retroreflective sheeting (ASTM D4956) (Section 1.05).

4. As of January 1, 2012 all orange retroreflective sheeting on temporary traffic signs, barricades and devices must be fluorescent orange retroreflective sheeting (Section 1.05).

5. Information regarding seminars conducted by the Public Works Department for use of this Manual is provided (Section 1.06).

6. Responsibilities of the Traffic Management Section of the Public Works Department are outlined (Section 2.02).

7. Circumstances under which the Traffic Services Branch of the Public Works Department is responsible for all traffic control are specifically outlined (Section 2.03).

8. Short term sign setups on streets with 70 km/h posted speed limits must be supplemented with advance warning signs TC-2 and TC-5 (Section 3.01.B).

9. Moving work sites on streets with a 70 km/h posted speed will require a truck with a flashing or sequential arrow traffic control device (Section 3.01.C).

10. New figures showing use of flashing or sequential arrow traffic control devices for long term and short term sign setups have been added (Figures 5b and 21b).

11. “Double Arrow with Left Turn Lane” and “Double Arrow with Right Turn Lane” signs have been added to this Manual with figures illustrating their usage (Figures 4b and 4c)

12. Design of the rectangular “Road Closed” sign has been modified (Section 5.02).

13. The Workplace Health and Safety Regulation, Manitoba Regulation 217/2006, reference for covered walkways is an update to reflect the change in the Provincial Regulation (Figure 34).

CITY OF WINNIPEG
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MANUAL OF TEMPORARY TRAFFIC CONTROL IN WORK AREAS ON CITY STREETS

1.00 INTRODUCTION

1.01 Purpose of Manual

This Manual is intended to provide guidelines to maintain safe conditions for motorists, cyclists, pedestrians and workers where unusual and temporary conditions exist when work is being undertaken within a public right-of-way in The City of Winnipeg. This is achieved through effective traffic control and the application of the guidelines of work site enclosure provided herein.

1.02 Scope

This Manual contains general principles and detailed methods of temporary traffic control 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) "**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.

(2) "**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 approved herein for use within a public right-of-way in The City of Winnipeg for this purpose.

(3) **"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.

(4) "**Regulatory Signs**" shall mean those signs that require motorists to take certain action, and, which are enforceable.

1.04 Revisions

This Manual will be revised from time to time as the need arises. Any suggestions for revision or improvement should be forwarded to the Traffic Studies Engineer, Traffic Management Section of The City of Winnipeg at 101-1155 Pacific Avenue, R3E 3P1.

1.05 Specifications for Traffic Control Devices

Many of the signs and standard practices of signing that apply to construction and maintenance activities are to be found in the *Manual of Uniform Traffic Control Devices for Canada (M.U.T.C.D.C.)*, Fourth Edition published by the Transportation Association of Canada, 2323 St. Laurent Boulevard, Ottawa, Ontario, K1G 4J8. The Highway Traffic Board of Manitoba has approved all traffic control devices, and signs contained in the Fourth Edition of the M.U.T.C.D.C. (with the exception of the devices set out in section D2.4.1, D2.5.2, D2.5.3 and D2.10.4), for use on streets in Winnipeg (Manitoba Regulation 300/89 & 149/2007). Additionally, there are other signs not contained in the M.U.T.C.D.C. that have been approved by The Highway Traffic Board for use in Manitoba under the Traffic Control Devices Order, Manitoba Regulation 264/88.

It is illegal to use signs within the City's public right-of-ways that are not approved by The Highway Traffic Board.

Full-scale drawings of all traffic signs described in this Manual are available from The City of Winnipeg Public Works Department, Transportation 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 Sections 5.02, 5.03 and 5.04. It should be noted that these dimensions are minimum and in some cases larger signs may be required. All signs shall be fully reflectorized in order to show the same colour and shape by night as by day.

All temporary traffic signs, traffic barricades and other temporary traffic control devices must have a

minimum Type III (High Intensity) retroreflective sheeting (ASTM D4956). Under no circumstances will hand painted lettering, diagrams, or symbols be permitted. As of January 1, 2012 all retroreflective sheeting on temporary traffic signs, barricades and devices must be a minimum Type VIII retroreflective sheeting (ASTM D4956). Futhermore, as of January 1, 2012 all orange retroreflective sheeting on temporary traffic signs, barricades and devices must be fluorescent orange retroreflective sheeting.

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 (section 16) and Streets By-law No. 1481/77 (Section 4.13.02 and 4.13.03) mandates the use of this *Manual of Temporary Traffic Control In Work Areas on City Streets* (Manual) and the devices contained herein for use in work areas on City streets. **Consequently, all temporary traffic control and work site enclosures must be undertaken in conformance with this Manual.**

1.06 Certification of Personnel

The Public Works Department conducts information seminars annually in the spring (or by request) to review the requirements outlined in this Manual. For more information call the Traffic Services Branch at 986-5178.

Effective January 1, 2010, Construction Agencies undertaking work on any section of The City of Winnipeg right-of-way will be required to have a designated supervisory contact person responsible for the placement of temporary traffic control devices at the worksite. The City of Winnipeg Public Works Department is currently developing requirements for educating and testing the designated supervisory contact as to their knowledge of this Manual.

1.07 Enforcement

Requirements identified in this Manual are subject to enforcement by City of Winnipeg Streets Constables.

2.00 GENERAL RESPONSIBILITY

2.01 Responsibilities of all City Departments, Consultants and Utility Companies

Despite the responsibility of a Construction Agency imposed under Section 2.04, a City Department, consultant, utility company or other body 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 by the Construction Agency.

2.02 Responsibilities of the Public Works Department, Traffic Management Section

The Public Works Department, Traffic Management Section will:

(1) Review all submitted plans for construction work on Regional Streets prior to the commencement of the work. This review will determine the required number of traffic lanes, sidewalks and crosswalks to be maintained and identify any adjustments to intersection traffic control in consultation with the Construction Agency. In some instances the review will identify the need for a traffic detour.

(2) Review the following permits:

- Street Cuts Permits on Regional Streets (all Street Cut Permits are approved by the Technology Services Branch of the Public Works Department) where there is reason to expect significant traffic impact.
- Use of Street Permits on Regional Streets. Use of Street Permits are issued for use of any portion of the street right-of-way for purposes other than street work. Examples include road closures for special events or lane closures to permit a crane to hoist equipment onto a building.

2.03 Responsibilities of the Public Works Department, Traffic Services Branch

The Public Works Department, Traffic Services Branch will:

(1) Upon request by the Transportation Engineering Division, provide assistance in selecting the appropriate traffic control and work site enclosure schemes;

(2) Be responsible for placing and maintaining all regulatory signs and traffic control devices, except the “KEEP RIGHT/KEEP LEFT” and the “MAXIMUM 60 km/h WHEN PASSING WORKERS”;

(3) Be responsible for the placement, maintenance and removal of warning, guidance and information signs for traffic control purposes in the following situations:

(a) Full closure of one or both directions of travel on a Regional Street.

(b) Traffic routed across a median on a divided street.

(c) Full closure of a non-regional street where the requirements for regulatory signs (turn restrictions, bus stop relocations) to implement the closure is significant. In this situation the need for Traffic Services involvement will be at the discretion of the Traffic Services Branch or Traffic Management Section.

(4) Attend a preconstruction meeting for City of Winnipeg Capital Projects to advise on traffic control requirements.

2.04 Construction Agency Responsibilities

Excepting items (2) and (3) noted in section 2.03, the Construction Agency will be responsible for the placement, maintenance and removal of warning, guidance and information signing for traffic control purposes, and for the placement of devices to ensure work site enclosure, in conformance with the provisions of this Manual. These responsibilities shall include but may not be limited to the following:

2.04.A All Streets

(i) Secure the necessary Street Cut Permit (ph. 986-3184) or Use of Street Permit (ph. 986-6006).

(ii) Place, maintain and remove the appropriate temporary traffic control devices as specified in this Manual and/or in the Permit issued by the City.

(iii) Provide for the safety and convenience of motorists, cyclists and pedestrians.

(iv) Provide for the safety of the worker.

(v) Ensure that all temporary traffic control devices are not displayed on the street whenever they are no longer appropriate.

(vi) Reimburse the City for all costs incurred arising from placement of traffic control

devices by The City of Winnipeg in connection with works undertaken by the Construction Agency.

(vii) Excepting emergencies, provide not less than 24 hour advance notice of the time and date of implementing detours by contacting the Customer Services Division (986-5640).

2.04.B ***Regional Streets***

Note: For the most current list of Regional Streets, please refer to Schedule E of The City of Winnipeg Streets By-law No. 1481/77. See Appendix for a list of Regional Streets current to January 2007.

In addition to the requirements listed in Section 2.04.A, when working on Regional Streets, Construction Agencies shall:

(i) Discuss the scope, schedule, procedures and street use associated with construction work with the Traffic Management Section (ph. 986-5079) of the Transportation Engineering Division prior to commencement.

(ii) Review with the Traffic Management Section (ph. 986-5079) the necessary measures of traffic control, warning, guidance and information signing required by this Manual, and any special measures necessary for the safety and convenience of motorists, cyclists and pedestrians including, where deemed feasible by the Construction Agency, use of steel plates to cover excavations and make the roadway or sidewalk available to traffic.

(iii) Review with the Traffic Management Section (ph. 986-5079) the necessary work site enclosure techniques in construction areas.

(iv) Provide advance notice to the Traffic Management Section (ph. 986-5079) in respect to all changes in traffic control to ensure that the Section is aware of the progress of the work.

2.05 Emergency Work

In emergency situations that include potential hazard to the public, the Construction Agency responsible for the repair function is authorized to immediately implement the lane closures necessary to commence work to eliminate the hazard. However, the following authorities must be notified immediately:

Police Service Dispatch - 986-6222
Fire Paramedic Service Dispatch - 986-6366
Emergency Services - 986-2626

During normal working hours (08:30 to 16:30, Monday to Friday) the Traffic Management Section (ph. 986-5079) and Customer Services Division (986-5640) must also be notified if the work is to take place on a Regional Street, and Winnipeg Transit (986-5745) if the work affects a transit route. It will be sufficent to contact the Transit Department's Communication Centre at 986-5787 outside normal working hours. In all other respects, the intent and requirements of the Manual shall apply.

2.06 Work Undertaken at Night, on Sundays, or on Public Holidays

Under certain circumstances it may be necessary to undertake non-emergency work during night hours, on Sunday, or on a public holiday. Such a requirement would normally occur only where the work would cause extreme disruption of vehicular or pedestrian traffic during normal working hours as identified by the Traffic Management Section (ph. 986-5079).

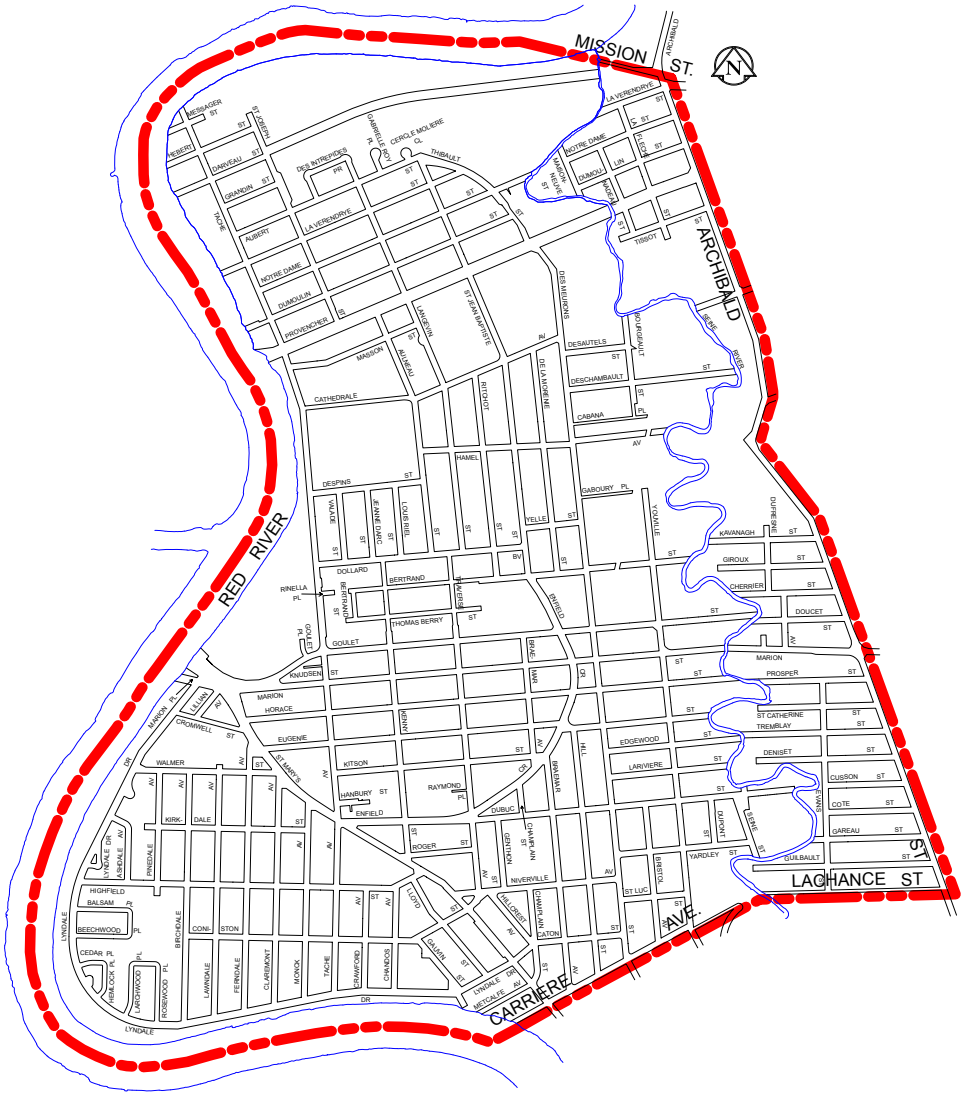
2.07 Work Restrictions During Peak Traffic Hours (07:00-09:00 and 15:30-17:30 Monday through Friday)

Many Regional Streets operate at or above capacity at least in one direction during either or both of the weekday peak periods, 07:00 to 09:00 and 15:30 to 17:30. Any lane blockages during these periods in the direction(s) of peak travel would significantly increase congestion and delay, negatively impacting the public. Congestion and delay on Regional Streets is of particular concern in the vicinity of an intersection controlled with traffic control signals, in the vicinity of river crossings and on streets with limited access where alternative routes are not readily available.

As a consequence of the foregoing, excepting emergencies, traffic lanes on Regional Streets may only be closed during peak periods when pre-approved by the Traffic Management Section. Peak periods on Regional Streets are 07:00 to 09:00 and 15:30 to 17:30 Monday to Friday.

2.08 Bilingual Signing Area

All traffic control signs in the portion of St. Boniface defined below must be in both official languages, English and French. The majority of signs presently used are symbolic. However, some signs have a written message. It is those signs that must be in both languages. This includes all temporary construction signs. Those construction signs that have a written bilingual message are shown in this Manual, and a map outlining the boundaries is shown below.



Bilingual Portion of St. Boniface

3.00 APPLICATION

3.01 General

Everyone who undertakes work within a street is responsible for the safety of the public and the workers involved. This Manual contains guidelines that will assist in achieving this objective. Once in place, temporary traffic control devices must be regularly inspected to ensure that they are fully visible to the motorist at all times. Signs with conflicting messages must be removed from view. Obstructions such as shrubbery, construction materials or parked vehicles, must not obscure the visibilty of temporary traffic control devices. Nighttime inspections are also required to ensure that signs and barricades are clean, properly oriented and adequately reflective to be visible to approaching motorists. It is essential that all the devices be either removed or otherwise hidden from the motorist's view when not required.

To facilitate a lane change by motorists, chevrons or traffic cones may need to be supplemented with barrels or delineators. The Traffic Services Branch will identify the need for such additional devices. To be effective, these devices must be installed in a manner that will achieve a smooth transition from one offset to another to avoid an abrupt change in traffic lane alignment. Guidance in such a matter will minimize the potential for road users to otherwise be misguided by other features such as construction joints, changes in colour or texture of the roadway surface, varying roadway widths, etc.

Under unusual circumstances, the Traffic Services Branch may specify a variety of traffic control devices to enhance the standard temporary traffic control strategy, some of which may include the following:

a) Oversized signs;
b) Flashers on barricades;
c) High level red or orange warning flags;
d) Flashing or sequential arrow traffic control devices;
e) Illumination of work area;
f) Reflectorized road marking tape or 450 mm traffic cones;
g) Reflectorized Impact Recovery System devices;
h) Orange plastic snow fencing; and
i) Yellow caution tape;

In general, to provide motorists, cyclists and pedestrians with sufficient information to safely and effectively pass through a work zone, the following provisions are required:

a) Advance warning that work is being undertaken on the street ahead;
b) Advance warning of the specific hazard;
c) Information respecting the path to follow;
d) Confirmation that the motorist is following the desired path; and
e) Any other information required by the Traffic Services Branch to safely guide motorists, cyclists and pedestrians through or around the work site;

The name and emergency telephone number of the Construction Agency undertaking the work shall be prominently placed by the Construction Agency at the work site.

Figures 1 through 34 in Section 5.05 show illustrations of traffic control details for typical situations. A distance table is provided for each figure that contains the dimensions that are to be used in the placement of signs and barricades for each typical situation.

3.01.A Long Term Sign Setups (Lane closure for more than two hours)

Use of long term signs as shown in Figures 1 through 18 in Section 5.05 is required in the following circumstances:

- The lane(s) is closed for more than two hours;
- The posted speed limit is more than 70 km/h; or
- The lane closure is on a bridge, overpass or underpass.

Channelization Barrels or Tall Cones shown in Section 5.03 may be used to replace chevrons and construction markers in long term sign setups. Use of these types of devices is illustrated in Section 5.05 Figure 1b. Note that Traffic Cones are not permitted in long term sign setups.

3.01.B Short Term Sign Setups (Lane closure for fifteen minutes to two hours)

Lane closures that are in place for a period longer than fifteen minutes but less than two hours may be closed using a modified signing approach, as shown in Section 5.05 Figures 19 to 24, if the closure meets the following guidelines:

- No more than two lanes are closed at any one time;
- May not be used on bridges, overpasses or underpasses;
- May not be used if the posted speed is more than 70 km/h;
- Must be supplemented with advance warning signs TC-2 (Construction) and TC-5 (Lane Ends) when used on streets with a 70 km/h posted speed; and
- May not be used at night without written consent from the Traffic Management Section (ph. 986-5079).

Closures that do not meet the above guidelines must be signed using long term setups.

3.01.C Moving Worksites (Lane closure for less than fifteen minutes)

Lane closures that are in place for less than fifteen minutes may be closed using a truck suitably equipped to function as a traffic control vehicle for moving worksites, as shown in Section 5.05 Figures 25 to 28, if the closure meets the following guidelines:

- No more than one lane is closed at any one time;
- May not be used on bridges, overpasses, underpasses or within 50 metres of a curve in the roadway;
- May not be used if the posted speed is more than 70 km/h;
- On streets with a 70 km/h posted speed, a truck with the flashing or sequential arrow traffic control device is required; and
- A truck with the flashing or sequential arrow traffic control device is required at night.

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

3.02 High Speed Streets

3.02.A General

Streets with speed limits of 70 km/h or more require additional advanced warning of construction sites than those streets with lower speed limits. Signs 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.

3.02.B Temporary Speed Limits

In situations where the speed limit is more than 60 km/h and workers are in close proximity to traffic "MAXIMUM 60 km/h WHEN PASSING WORKERS" (MR-96) signs may be used, subject to the following conditions:

a) Never to be used in a speed zone that is less than or equal to the temporary construction speed limit. e.g. Never use a "MAXIMUM 60 km/h WHEN PASSING WORKERS" in a 50 km/h or 60 km/h zone.

b) Not to be in view when workers are not present. Even though the message is conditional upon workers being present, its effect will be diminished when displayed if workers are not present.

c) Be kept in close proximity to the workers to achieve maximum effect (preferably 100 m in advance of where workers are present).

d) Never to be the first sign encountered by a motorist in a signing sequence. In general, construction and maintenance signs are arranged in the following sequence with the MR-96 sign inserted in the group of signs that requires action on the part of a motorist:

   (i) General warning (construction ahead)
   (ii) Specific hazards (lane ends)
   (iii) Motorist action (keep right/ keep left, chevrons, maximum 60 km/h when passing workers).

3.03 Work Site Illumination/Definition

3.03.A Delineation

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. This device delineates the edges of the usable roadway for motorists. Their use is illustrated in Section 5.03.

3.03.B Illumination

Illumination must be installed in the work area for safety reasons if there is no street lighting or if the level of street lighting is low, or when large objects or items of equipment are left on the street during hours of darkness. In such cases, the Construction Agency shall adequately illuminate the object or equipment and the immediate surrounding area. The light sources shall be suitably shielded to overcome glare so that vision for the approaching motorists is not impaired.

3.03.C Reflectorization

To be effective at night, 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. All signs, barricades, delineators, and other similar devices shall have minimum Type lll (High Intensity) retroreflective sheeting (ASTM D4956) and all barricade panels shall be vertically striped in accordance with with provisions contained in the M.U.T.C.D.C. As of January 1, 2012 all retroreflective sheeting on temporary traffic signs, barricades and devices must be a minimum Type VIII retroreflective sheeting (ASTM D4956). Futhermore, as of January 1, 2012 all orange retroreflective sheeting on temporary traffic signs, barricades and devices must be fluorescent orange retroreflective sheeting.

3.03.D Flashing or Sequential Arrow Traffic Control Devices (Arrow Boards)

Use of arrow boards is not limited to moving worksites. As illustrated in Figure 5b and 21b, arrow boards can also be used in a supplementary manner for long term and short term setups.

Use of arrow boards in these circumstances is encouraged in situations which require higher than normal visibility. Examples of these types of situations include overnight setups, streets with posted speed limit of 70 km/h or higher and high volume locations. Arrow boards must be used for moving work sites on streets with a 70 km/h speed limit or during nighttime work on any street. Arrow boards should be less bright for nighttime applications as compared to daytime applications so as not to impair the vision of approaching motorists. Figure 26 provides specifications for arrow boards.

3.04 Barricades

The placement of barricades shall generally be in the manner indicated in the "Illustrations of Typical Situations" in Section 5.05, and the barricades must conform to the specifications set out in Section 5.03.

The enclosure of the work site using barricades must ensure that motorists, cyclists and pedestrians are adequately advised of the boundaries of the work site. When barricades are removed to allow access/egress from the work site for vehicles or equipment, the barricades shall be replaced immediately after such access/egress has occurred.

3.05 Construction Equipment

The location of equipment, material, construction vehicles, and personnel shelters within the work site must not interfere with the ability of motorists, cyclists and pedestrians to see workers or traffic control devices. Similarly, the parking of employee vehicles must not interfere with pedestrian activity and motorists' visibility of workers or traffic control devices.

The movement of vehicles and equipment into and out of the work site 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.

3.06 Regulatory Prohibitions

When on street prohibitions are required (parking, stopping, turn control, regulatory signs), the Traffic Services Branch must be notified. The exceptions to this requirement are the "KEEP RIGHT/LEFT" signs and " MAXIMUM 60 km/h WHEN PASSING WORKERS" signs, which may be installed by the Construction Agency. The Traffic Services Branch will install the necessary regulatory signs and restore normal operations when notified by the Construction Agency upon completion of the work. When parking meters or paystations are affected, the Winnipeg Parking Authority must be notified (ph. 986-3850). The Winnipeg Parking Authority will install necessary hooding and restore normal operations when notified. **No other Department or Construction Agency is authorized to install or remove regulatory traffic control devices, except "KEEP RIGHT/LEFT" signs and " MAXIMUM 60 km/h WHEN PASSING WORKERS" signs.**

3.07 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 unnecessary 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 and the section of street is 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.

3.08 Traffic Lane Clearances

A traffic lane on a major thoroughfare is normally 3.6 m wide and in no case less than 3.0 m. Placement of large objects within 1.0 m of the edge of a traffic lane effectively reduces the lane width. A motorist requires a clearance of approximately 1.5 m on each side of the vehicle to drive with a sense of safety at 50 kilometres per hour. Therefore, the placement of material and equipment within 1.0 m of either side of a traffic lane on a major thoroughfare should be avoided

wherever possible. At higher speeds, the distance should be increased proportionally, (e.g. 2.0 m at 90 kilometres per hour). In any case, the basic lane width specified above shall be completely clear of traffic control devices and equipment and the necessary lateral clearance should be provided whenever possible.

3.09 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 fully 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 the 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 consequence, these types of traffic control devices should be no further than 4.0 m from the edge of the travel lane. Similarly, the bottom of the device should be no less than 1.0 m above the roadway. This positioning relative to the roadway may require more frequent cleaning of traffic control devices in some circumstances. The vertical positioning is particularly important for those devices which are used to close a roadway (barricades and chevrons).

3.10 Traffic Channelization

In the “typical situations” illustrated in Section 5.05, a line of traffic control devices is placed to channelize and guide motorists past all roadway obstructions. This line will be tapered over the appropriate distance shown in the associated distance table. This distance must be sufficient to allow a motorist to move laterally to make a lane change or pass the obstruction safely and conveniently. The taper length shall be selected from the distance table for the speed limit under normal conditions.

This Manual also contains, four figures (1c, 2b, 6, 7) that show an alternative traffic control strategy that ensures that the remaining traffic lanes are able to carry the maximum volume of vehicular traffic. These alternative arrangements involve the realignment of two adjoining traffic lanes simultaneously. This special arrangement is an alternative that may be requested by the Traffic Services Branch and/or Traffic Management Section.

3.11 Warning Flags

As illustrated in Section 5.05, warning flags shall be installed on the first warning or regulatory 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 demarcate obstructions on the roadway, thereby assisting motorists in selecting the proper traffic lane in which to bypass the obstruction. Flags shall be either red or orange in colour and 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 plate.

If deemed necessary by the Traffic Services Branch and/or Traffic Management Section, high level warning flags may be utilized in place of the standard warning flags described above. The term 'high level' denotes the requirement that the top of the flag be a minimum of 1.0 m above the top of the sign plate.

3.12 Flagpersons & Practices

Flagpersons shall be used when it is necessary to stop and give a verbal message to approaching motorists or to stop them momentarily. 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 area 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 shall be placed between 90 m and 120 m in advance of the flagperson. In the majority of work areas, the flagperson shall be stationed 60 m in advance of the work area. Flagpersons must always be visible to the motorists for a distance of at least 150 m.

Flagpersons shall follow these procedures:

(i) The flagperson must face approaching traffic when signaling motorists to stop or proceed. While doing so, a flagperson must stand either on the edge of the shoulder or in the closed traffic lane.

Under no circumstances shall the flagperson stand in the traffic lane that is being controlled or on the centre line of a two-lane roadway.

(ii) To stop traffic, the flagperson shall stand in a stationary position and extend the paddle or flag horizontally across the traffic lane. The paddle shall be held still so the message may be read and understood from a safe distance. For greater emphasis, the flagperson’s free arm shall be raised with the palm towards approaching traffic.

(iii) When it is safe for traffic to proceed, the flagperson shall stand parallel to the traffic movement and, with paddle or flag lowered from the view of the driver, motion traffic ahead with his/her free arm. The paddle or flag is never to be used or waved to signal traffic to proceed.

Under The Highway Traffic Act of Manitoba, a flagperson is given the authority to control traffic. To be recognized by the motorist as having that authority, the flagperson must wear a C.S.A. approved reflectorized vest and safety helmet (where appropriate) while using a paddle, flag or red flashlight (at night). All flagpersons must be trained. Training material, including the Flagperson Training Workbook, is available from Manitoba Infrastructure and Transportation.

3.13 Work Site Enclosure

Work site enclosure devices are utilized to indicate the location and extent of a work site to motorists, cyclists and pedestrians to prohibit their entry into the work site that is generally unsuitable or unsafe for their passage, and to protect workers within the work site from the unanticipated and possible dangerous entry of vehicles. These devices include reflectorized barricades and portable construction markers. Other devices, such as traffic cones, high level flags, and portable signs are used to assist in guiding and informing motorists when approaching and bypassing a work area. Under certain circumstances, plastic orange snow fencing may be specified by Traffic Services to enclose a work area.

4.00 MAINTENANCE OF TRAFFIC CONTROL DEVICES

4.01 General

It is the responsibility of the Construction Agency to inspect and undertake the necessary maintenance or replacement of all warning and information signs as well as all other devices, and to ensure that they are legible and in their proper place at all times, particularly at night. All signs and devices must be regularly reviewed to ensure that legibility and colour (day time or night time) is approximately that of equivalent 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.

5.00 ILLUSTRATIONS

5.01 General

Figures 1 through 34 in section 5.05 show typical traffic control details for many circumstances.

5.02 Warning, Regulatory and Information Signs



TC-2
ROADWORK



TC-3
SURVEY CREW



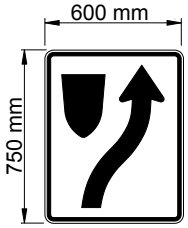
TC-21
TRAFFIC CONTROL PERSON AHEAD



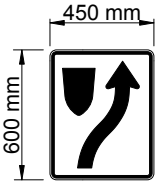
TC-5R
TEMPORARY LANE CLOSED AHEAD
(RIGHT VERSION)



TC-5R
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)



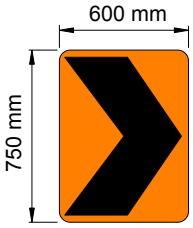
WD-A17
DOUBLE ARROW



WD-A17
DOUBLE ARROW
REDUCED WIDTH



WD-A17R
DOUBLE ARROW
WITH RIGHT TURN LANE

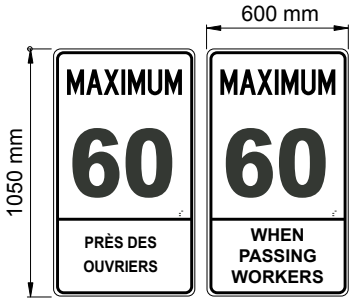


TC-31
CHEVRON

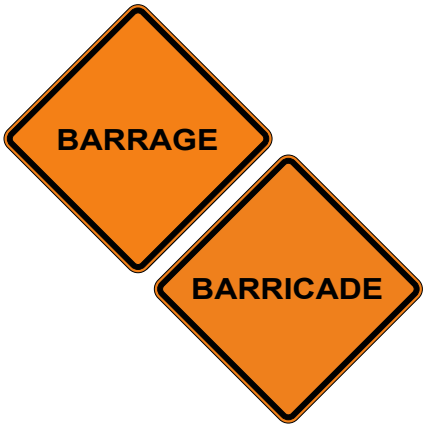


TC-62
CONSTRUCTION MARKER

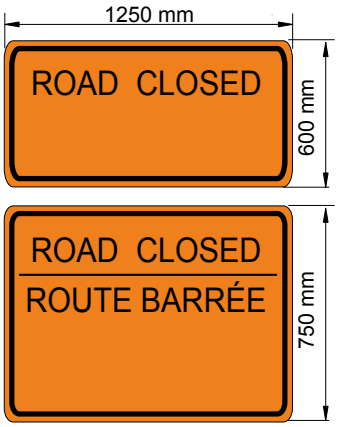
NOTE:
Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange. Tabs shall be 300mm x 600mm reflectorized orange. Reduced size signs are only permitted when the sign is placed on a lane line marking and traffic is allowed to operate on the adjoining traffic lanes.



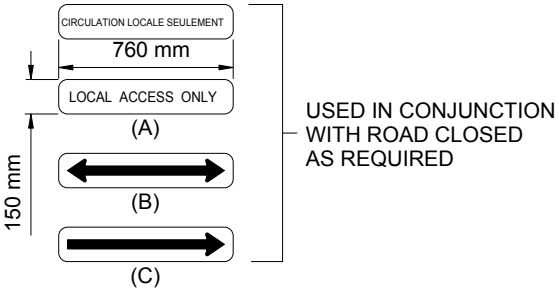
MR-96
MAXIMUM 60 km/h WHEN PASSING WORKERS

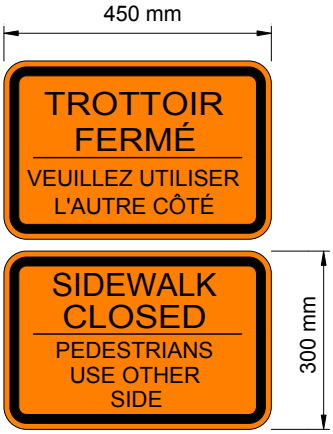


WD-A50
BARRICADE



C9
ROAD CLOSED





C-46
SIDEWALK CLOSED



TC-49
PAVEMENT DROP-OFF



TC-51
BUMP



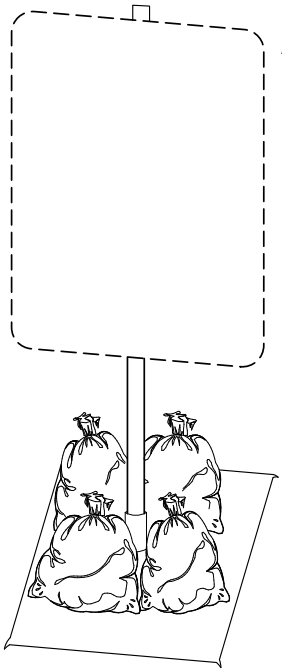
WD-A65
FRESH OIL



WD-A69
LOOSE GRAVEL

5.03 Work Area Enclosures and other Devices

PORTABLE SIGN SUPPORT

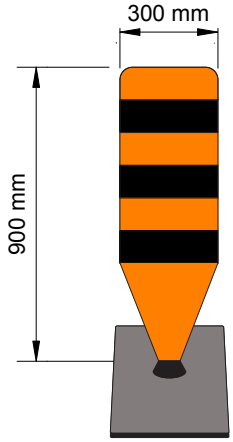


A) Bottom edge of sign shall be not less than 1.0 m and not more than 1.5 m above the roadway.

B) Portable signs shall be adequately stabilized with sandbags

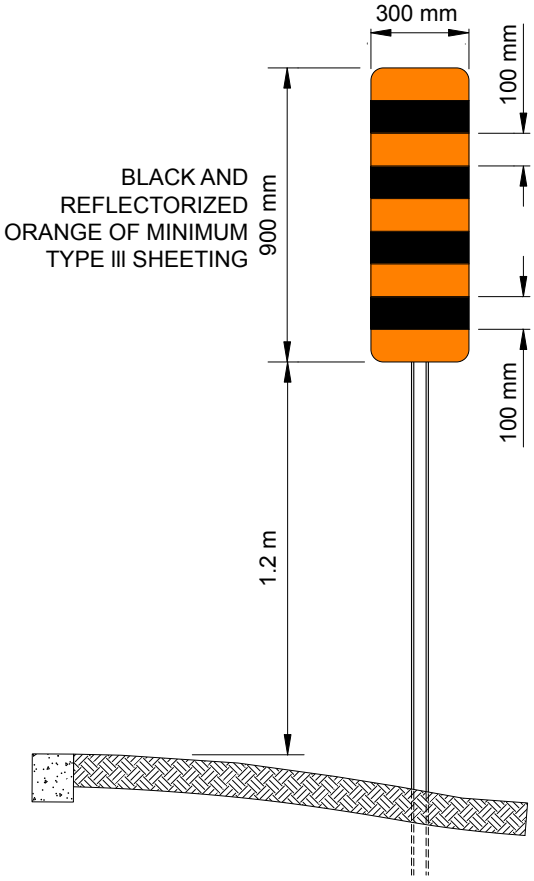
C) All Portable sign bases must be rectangular. Portables signs with round bases (i.e. tire rims) are not permitted for use on City streets.

CONSTRUCTION PANEL

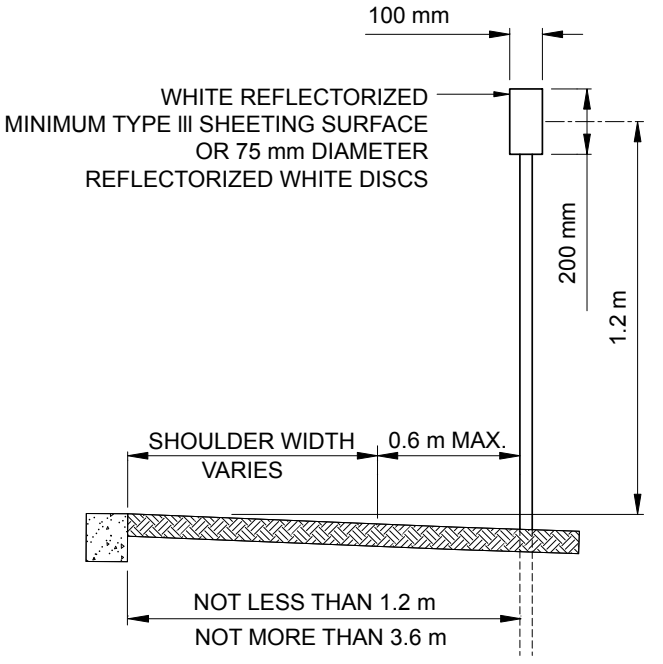


BLACK AND
REFLECTORIZED ORANGE
OF MINIMUM TYPE III SHEETING

CONSTRUCTION MARKER
TC-62

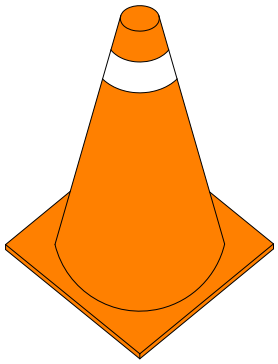


ROAD EDGE DELINEATOR



TRAFFIC CONES

TC-61

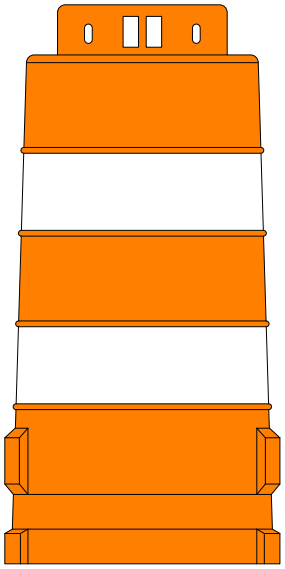


Traffic cones shall be fluorescent orange plastic or rubber with a 100 mm white minimum Type III (High Intensity) retroreflective stripe 80 to 100 mm from top of cone. Cones shall be not less than 600 mm in height.

CHANNELIZATION BARREL

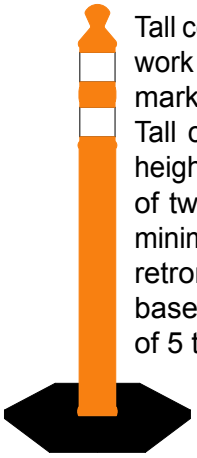
TC-63

Barrels may be used in tapers and along worksites in place of construction markers and chevrons.



The barrel shall have a minimum of two 150 mm white stripes of minimum Type III (High Intensity) retroreflective sheeting and shall be not less than 900 mm in height and not less than 300 mm in width.

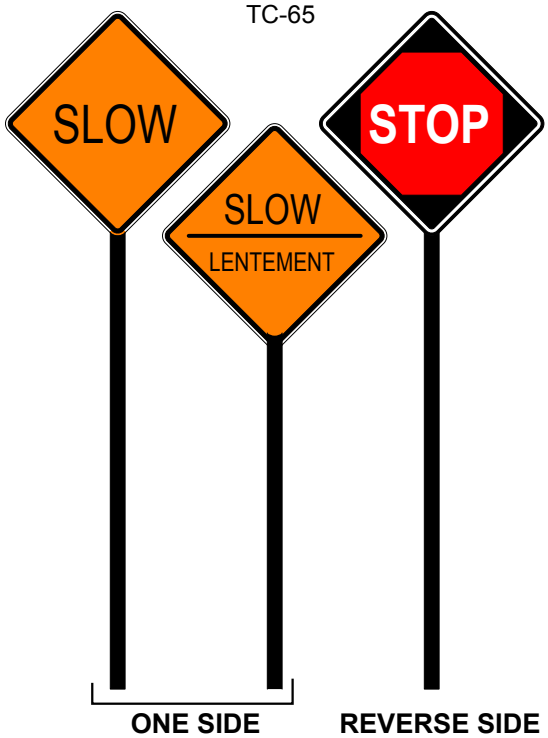
TALL CONE

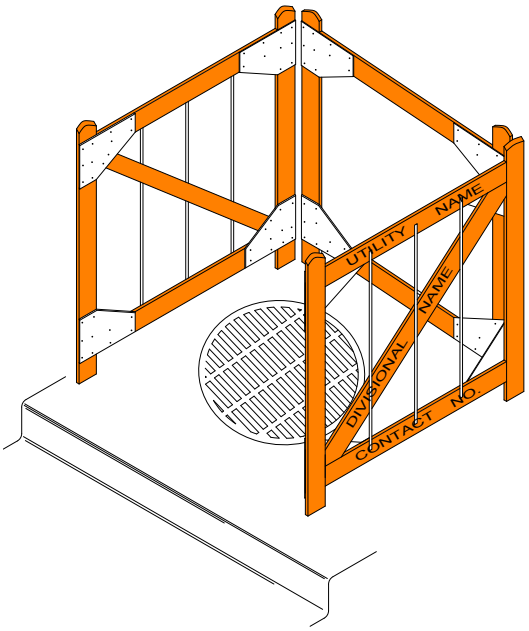


Tall cones may be used along the work site in place of construction markers and traffic cones only. Tall cones are at least 1.0 m in height and shall have a minimum of two 150 mm white stripes of minimum Type III (High Intensity) retroreflective sheeting. The base should weigh a minimum of 5 to 6 kgs.

FLAGPERSON'S PADDLE

TC-65





SIDEWALK BARRICADE

(used around manholes only)

A) The overall height of the barricade shall be approximately 900 mm.

B) The overall width of the set up barricade shall be 900 mm.

C) Open side of the barricade shall face the roadway.

D) Barricade shall be of a wood material including cross braces, orange in colour.

E) Vertical bars shall be of a metal tubing material to transmit sound to the visually impaired using a white cane. The vertical bars shall be flattened at both ends.

REFLECTORIZED BARRICADE

TC-64A

A) The overall length of “L” shall be approximately 2.5 m.

B) The overall height of “T” shall be approximately 1.0 m.

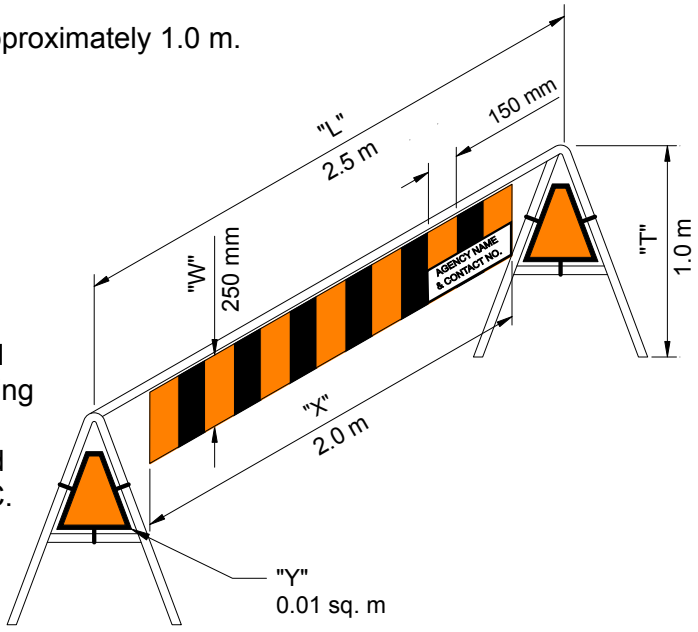
C) “W” shall not be less than 250 mm.

D) “X” shall not be less than 2.0 m.

E) “Y” shall not be less than 0.01 square metres.

F) All sides must have minimum Type III (High Intensity) retroreflective sheeting and further all barricade panels (“W” x “X”) shall be vertically striped in accordance with the M.U.T.C.D.C.

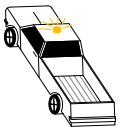
G) The Agency’s name and telephone number shall be shown on the barricade in the location shown. (Maximum size 450 mm wide x 120 mm high).



5.04 ILLUSTRATION SYMBOLS



WARNING SIGN



CONSTRUCTION VEHICLE

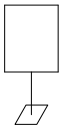


TRAFFIC CONE
SPACED AT 4.0 m INTERVALS.

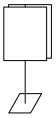


CONSTRUCTION MARKER

DELINEATOR



DIRECTIONAL REGULATORY SIGN



BI- DIRECTIONAL REGULATORY SIGN



REFLECTORIZED BARRICADE



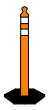
CHEVRON



CHANNELIZATION BARREL



FLAGPERSON



TALL CONE



DIRECTION OF TRAVEL
(PLAN VIEW)



WARNING FLAGS

5.05 ILLUSTRATIONS OF TYPICAL SITUATIONS

LONG TERM BLOCKAGE OF EITHER ONE OR BOTH RIGHT HAND LANES OF A MULTI-LANE HIGHWAY

(Figure 1a)

Figure 1a depicts the typical situation where the right hand lanes (outside lanes of the highway) of a multi-lane highway are blocked due to construction or repair. The Construction Agency shall place and maintain, on a 24 hour per day basis, the devices as indicated in Figure 1a. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 1a shall be selected from the table below for the permanent posted speed limit on the highway at that point.

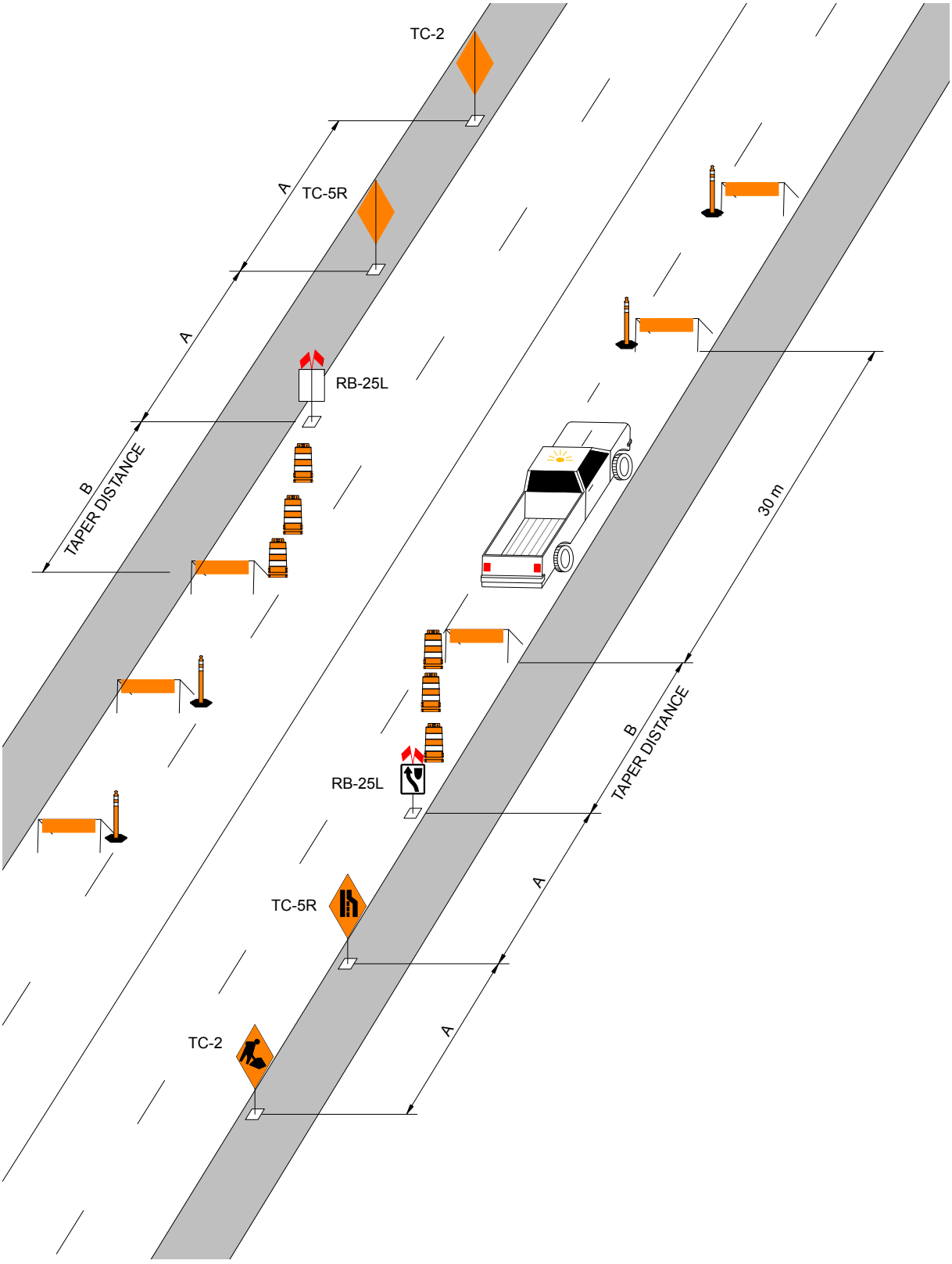
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 1a

LONG TERM BLOCKAGE OF EITHER ONE OR BOTH RIGHT HAND LANES OF A MULTI-LANE HIGHWAY



LONG TERM BLOCKAGE OF EITHER ONE OR BOTH RIGHT HAND LANES OF A MULTI-LANE HIGHWAY
(using barrels and tall cones)

(Figure 1b)

Figure 1b depicts the typical situation where the right hand lanes (outside lanes of the highway) of a multi-lane highway, are blocked due to construction or repair. In this option, traffic control barrels may replace chevron markers and tall cones may replace construction markers. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 1b. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 1b shall be selected from the table below for the permanent posted speed limit on the highway at that point.

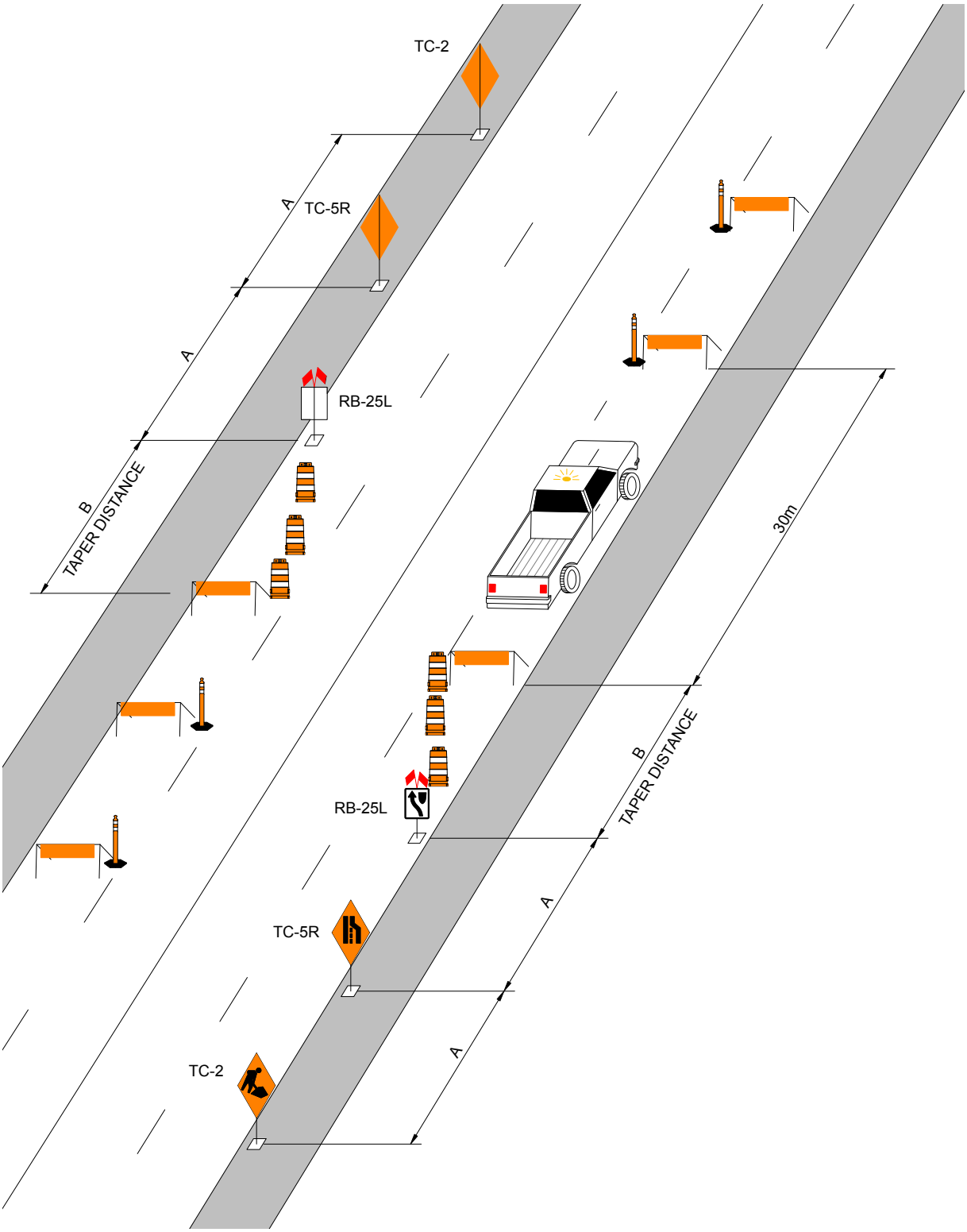
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.
"B" Taper length

FIGURE 1b

LONG TERM BLOCKAGE OF EITHER ONE OR BOTH RIGHT HAND LANES OF A MULTI-LANE HIGHWAY

(using barrels and tall cones)



LONG TERM BLOCKAGE OF RIGHT HAND LANE OF A FOUR LANE UNDIVIDED HIGHWAY (TWO LANE REALIGNMENT ALTERNATIVE)

(Figure 1c)

Figure 1c depicts an alternative arrangement where the right hand lane of a four lane undivided highway, is blocked due to construction or repair. This alternative may be requested by Traffic Management or Traffic Services to maximize the vehicular capacity on a route. The Construction Agency shall place and maintain, on a 24 hour per day basis, the devices as indicated in Figures 1c. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 1c shall be selected from the table below for the permanent posted speed limit on the highway at that point.

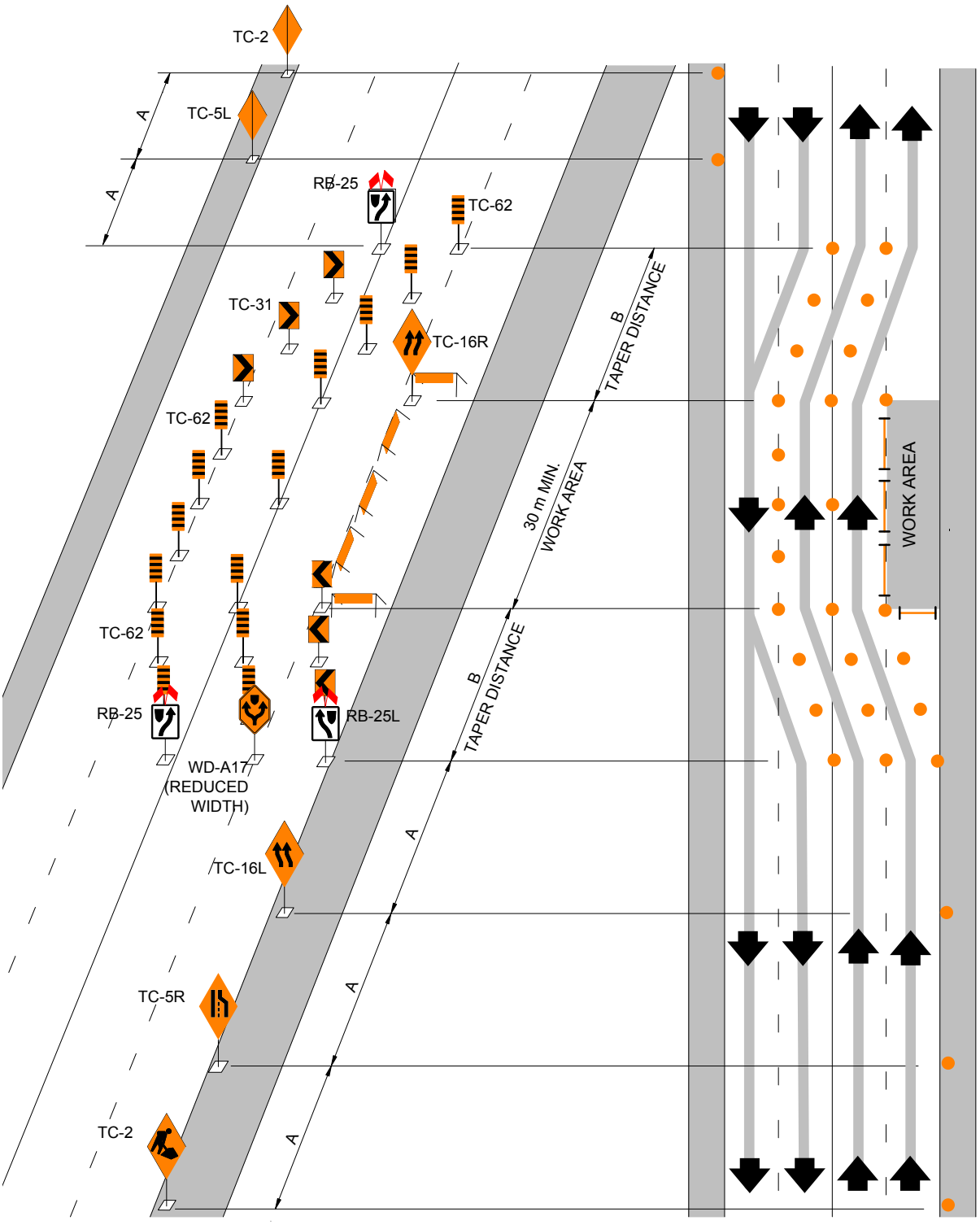
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 1c

LONG TERM BLOCKAGE OF RIGHT HAND LANE OF A FOUR LANE UNDIVIDED HIGHWAY (TWO LANE REALIGNMENT ALTERNATIVE)



LONG TERM BLOCKAGE OF LEFT HAND LANE OF A DIVIDED HIGHWAY

(Figure 2a)

Figure 2a depicts the typical situation where one or both left hand lanes on a divided highway are blocked due to construction or repair. This setup is also applicable to a multi-lane one way highway. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 2a. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 2a shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

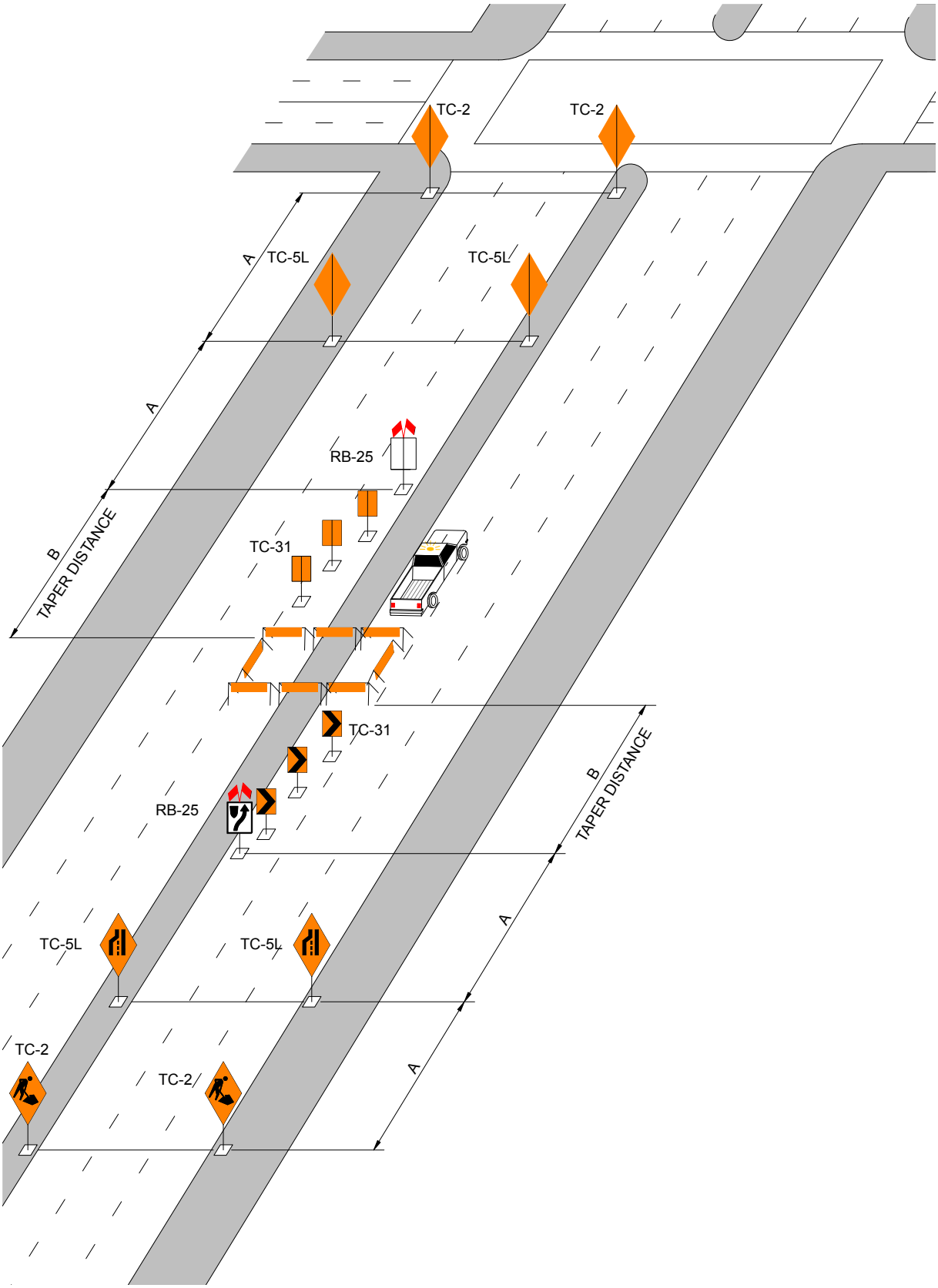
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 2a

LONG TERM BLOCKAGE OF LEFT HAND LANE OF A DIVIDED HIGHWAY



LONG TERM BLOCKAGE OF LEFT HAND LANE OF A DIVIDED HIGHWAY
(TWO LANE REALIGNMENT ALTERNATIVE)
(Figure 2b)

Figure 2b depicts an alternative arrangement where the left hand lane of an six lane divided highway or a three lane one-way roadway is blocked due to construction or repair. This setup may be requested by Traffic Management or Traffic Services to maximize the vehicular capacity on a route.The Construction Agency shall place and maintain on a 24 hour per day basis the devices as indicated in Figure 2b. The devices shall conform to the requirements of section 5.00 and shall be kept clean and in proper working order.

Distances A and B represented in Figure 2b shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

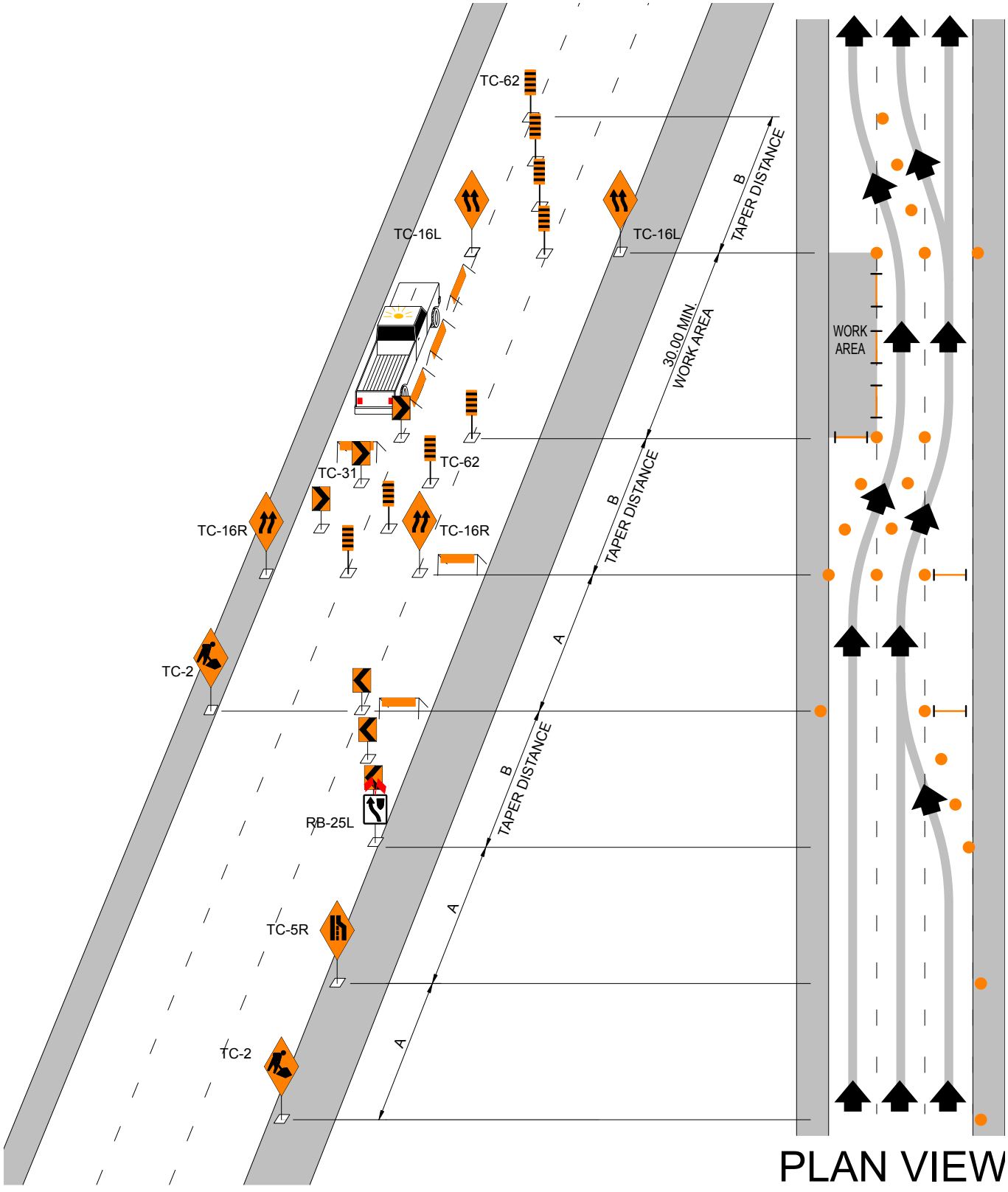
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.
"B" Taper length

FIGURE 2b

LONG TERM BLOCKAGE OF LEFT HAND LANE OF A DIVIDED HIGHWAY

(TWO LANE REALIGNMENT ALTERNATIVE)



LONG TERM BLOCKAGE OF NON-ADJACENT LANES ON A ROADWAY
(Figure 3)

Figure 3 depicts the typical situation where a number of non-adjacent lanes on a roadway are blocked due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 3. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 3 shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

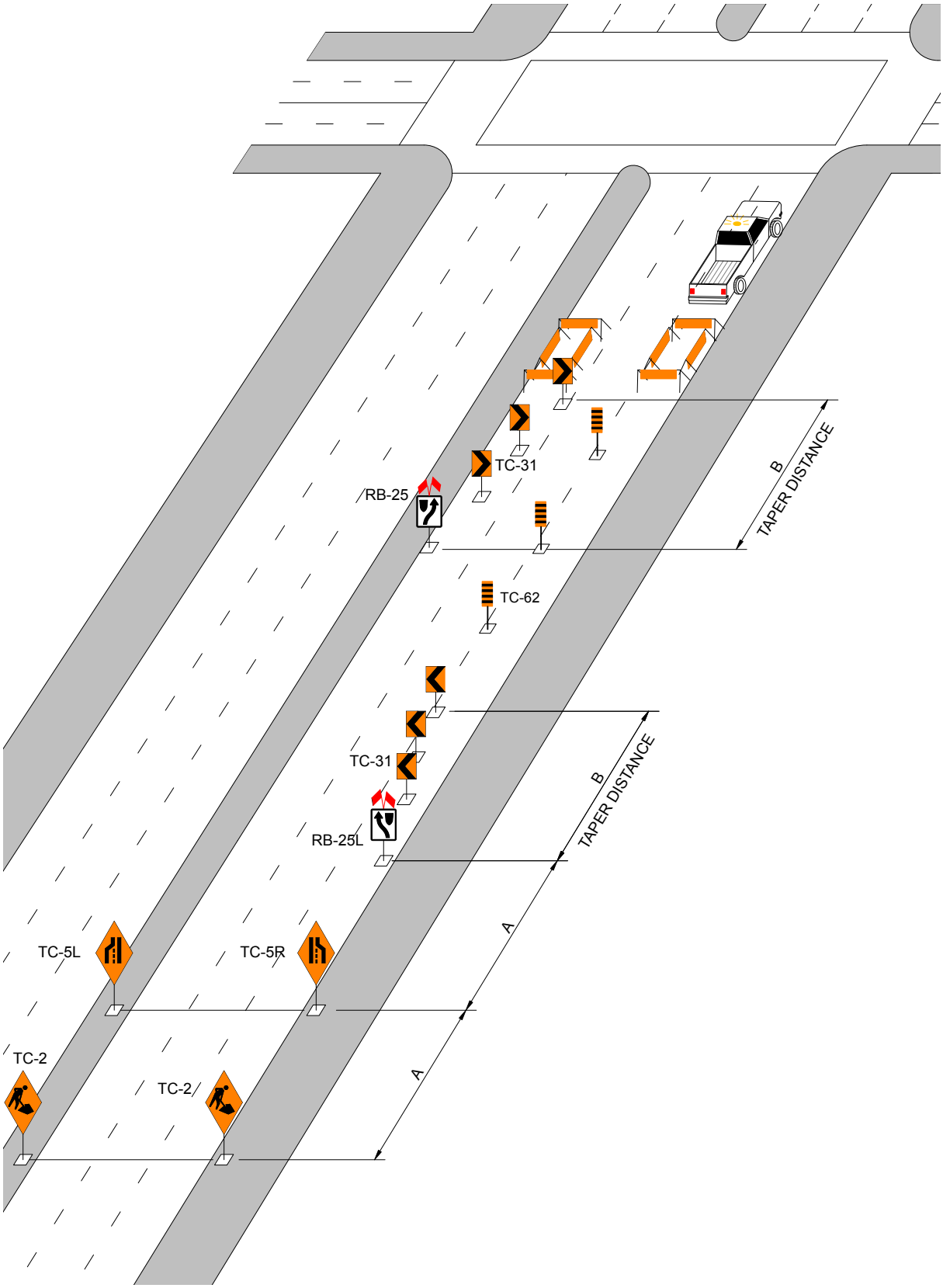
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 3

LONG TERM BLOCKAGE OF NON-ADJACENT LANES ON A ROADWAY



LONG TERM BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY

(Figure 4a)

Figure 4a depicts the typical situation where the centre lane, or lanes, of a divided highway are blocked due to construction or repair. This setup is also applicable to a one way highway with three or more lanes. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 4a. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 4a shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

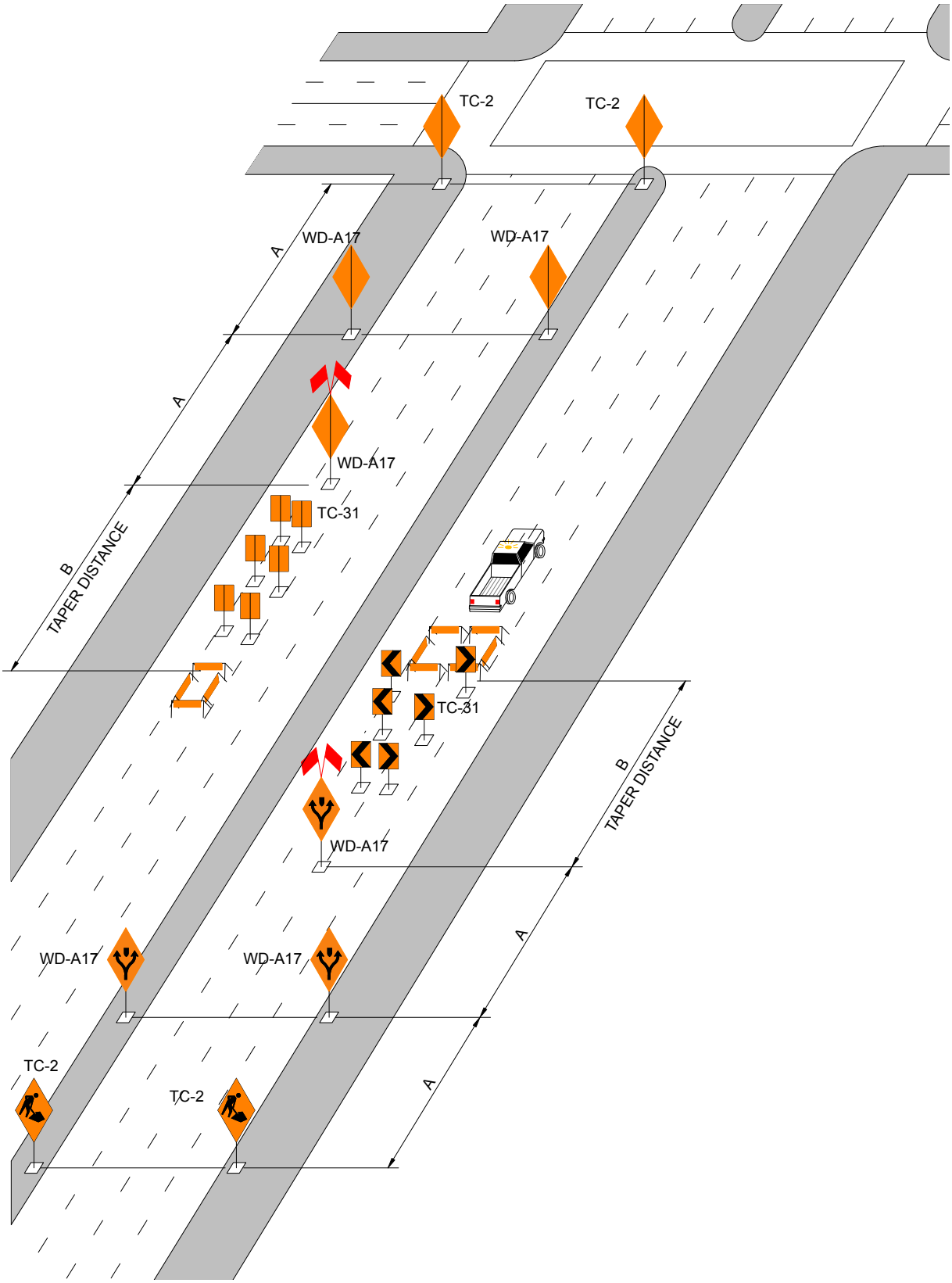
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 4a

LONG TERM BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY



LONG TERM BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY (LEFT TURN LANE ALTERNATIVE)

(Figure 4b)

Figure 4b depicts an alternative arrangement where the centre lane of a divided highway is blocked due to construction or repair and traffic passing to the left of the obstruction is required to make a left turn at the downstream intersection. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 4b. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 4b shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

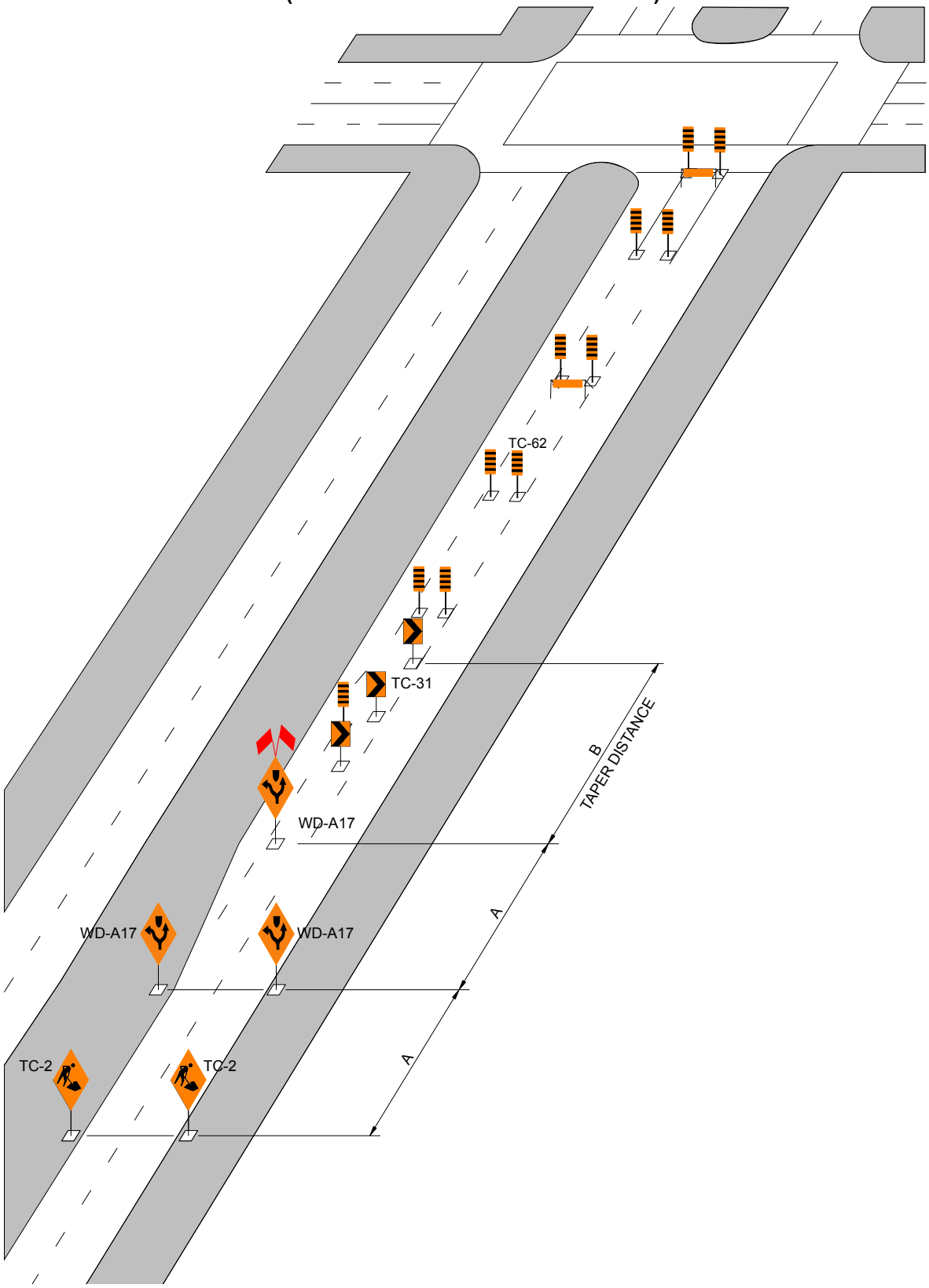
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 4b

LONG TERM BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY
(LEFT TURN LANE ALTERNATIVE)



LONG TERM BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY (RIGHT TURN LANE ALTERNATIVE)

(Figure 4c)

Figure 4c depicts an alternative arrangement where the centre lane of a divided highway is blocked due to construction or repair and traffic passing to the right of the obstruction is required to make a right turn at the downstream intersection. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 4c. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 4c shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

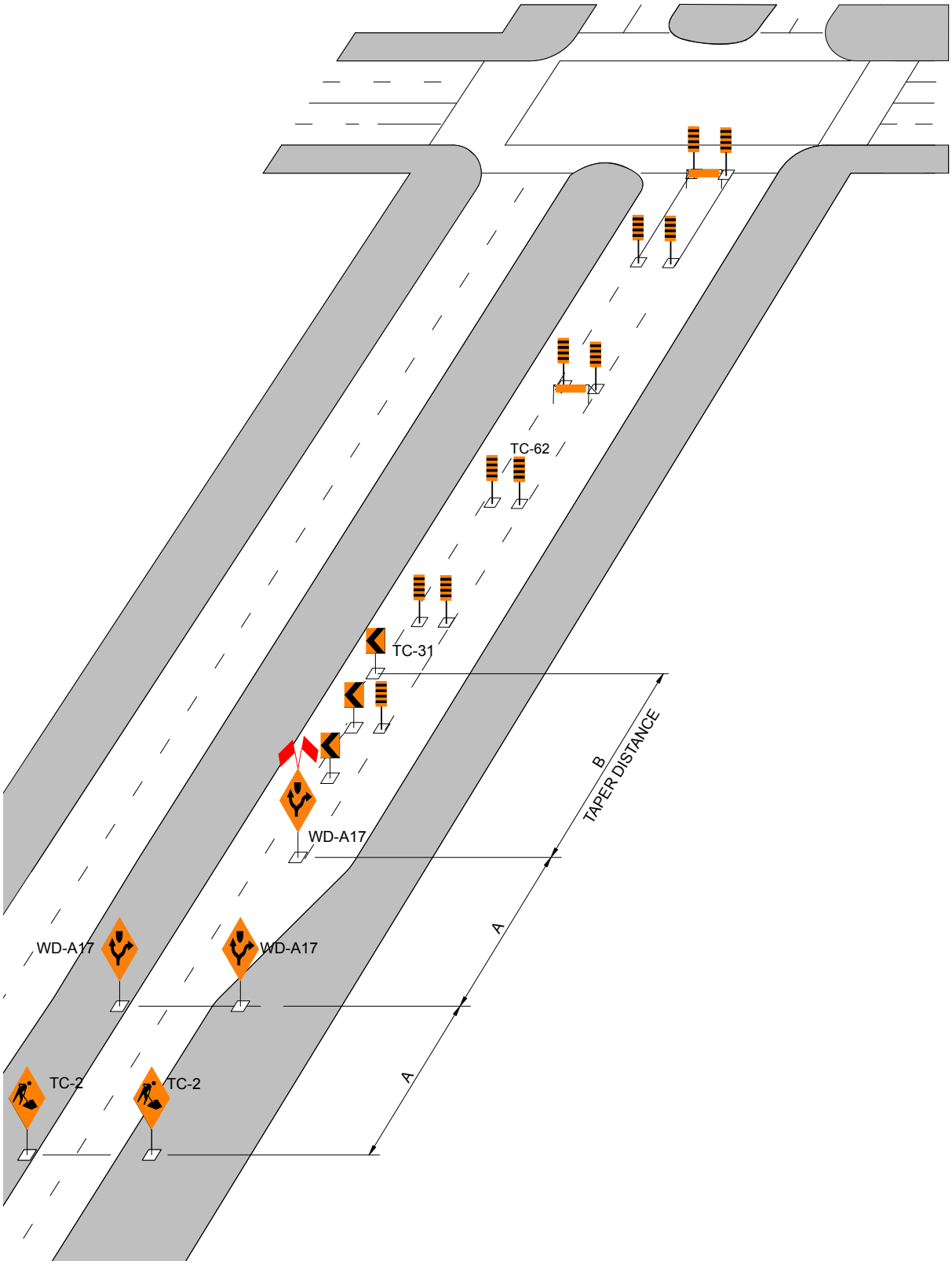
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 4c

LONG TERM BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY (RIGHT TURN LANE ALTERNATIVE)



LONG TERM BLOCKAGE OF TWO RIGHT HAND LANES OR TWO LEFT HAND LANES OF A DIVIDED HIGHWAY

(Figure 5a)

Figure 5a depicts the typical situation where two right hand lanes or two left hand lanes of a divided highway are blocked due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 5a. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and C represented in Figure 5a shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

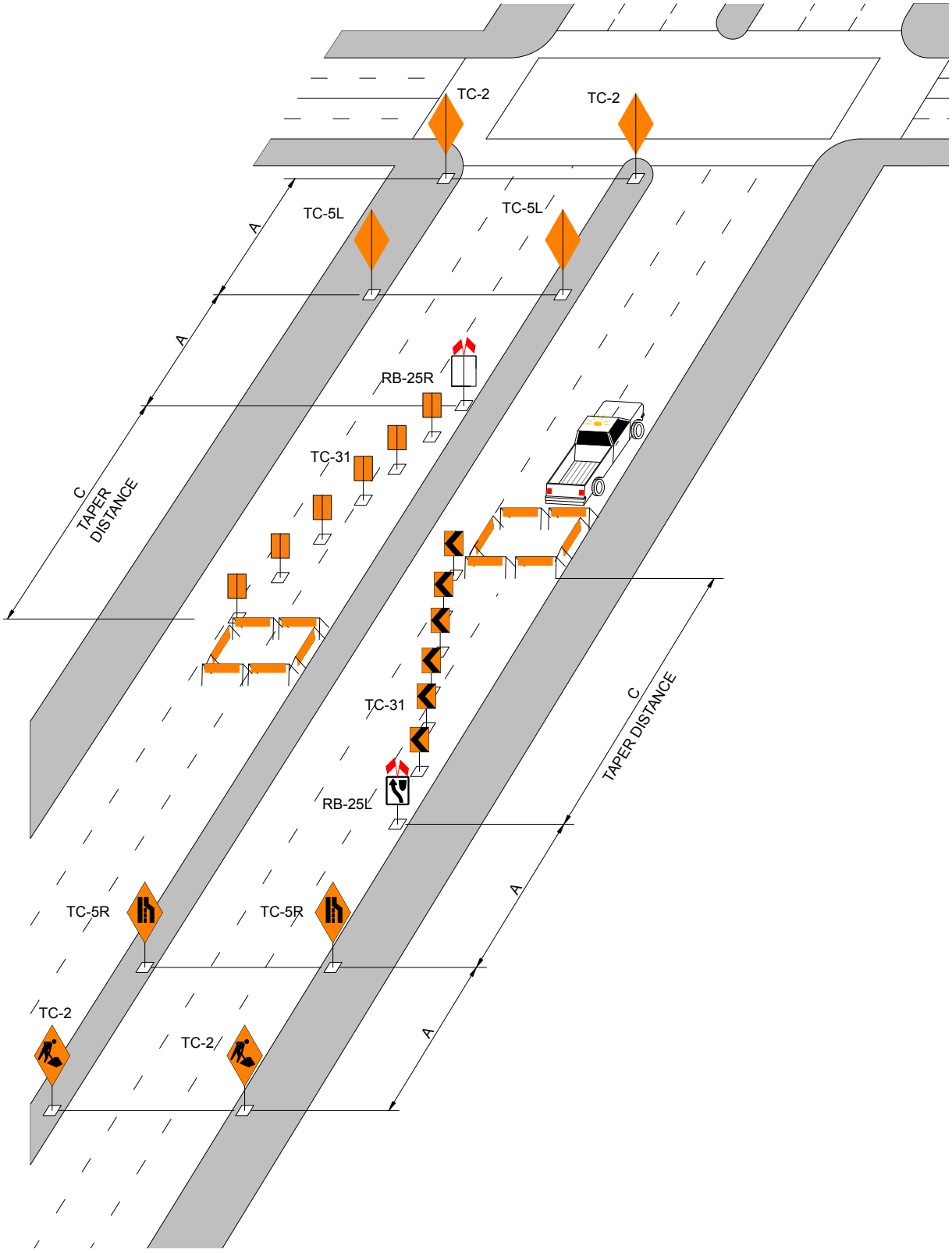
SPEED LIMIT (km/h)	"A" (m)	"C" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	100	15
60	60	120	15
70+	100	200	30

"A" Distance between temporary traffic control devices approaching the taper.

"C" Two lane taper length

FIGURE 5a

LONG TERM BLOCKAGE OF TWO RIGHT HAND LANES OR TWO LEFT HAND LANES OF A DIVIDED HIGHWAY



LONG TERM BLOCKAGE OF RIGHT HAND LANE OR LANES OF A DIVIDED HIGHWAY (WITH SUPPLEMENTARY FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICE)

(Figure 5b)

Figure 5b depicts the typical situation where the right hand lanes of a divided highway is blocked due to construction or repair and a supplementary flashing or sequential arrow traffic control device is incorporated into the setup. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 5b. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and C represented in Figure 5b shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

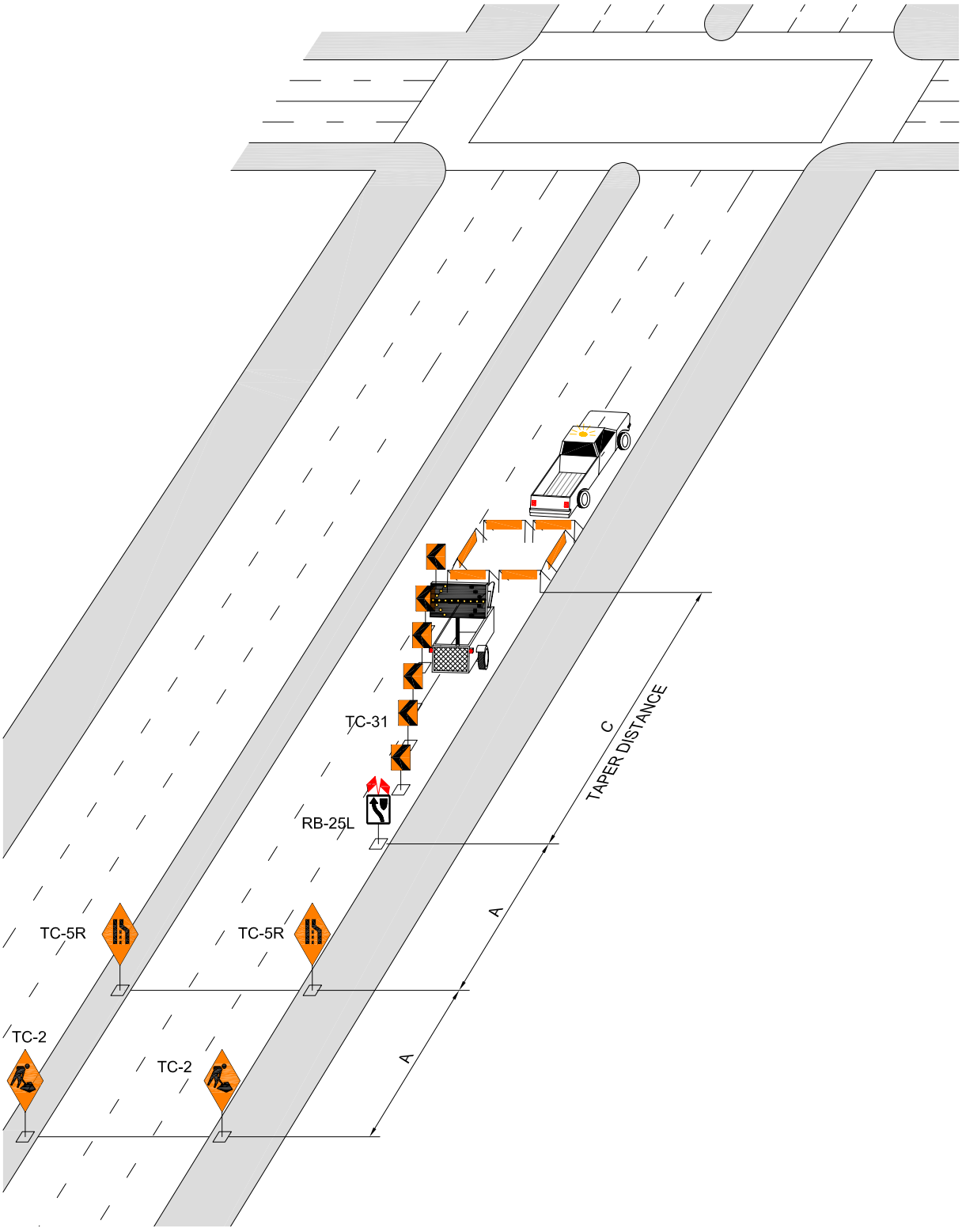
SPEED LIMIT (km/h)	"A" (m)	"C" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	100	15
60	60	120	15
70+	100	200	30

"A" Distance between temporary traffic control devices approaching the taper.

"C" Two lane taper length

FIGURE 5b

LONG TERM BLOCKAGE OF RIGHT HAND LANE OR LANES OF A DIVIDED HIGHWAY (WITH SUPPLEMENTARY FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICE)



LONG TERM BLOCKAGE OF TWO LEFT HAND LANES ON MULTILANE ROADWAY (TWO LANE REALIGNMENT ALTERNATIVE)

(Figure 6)

Figure 6 depicts an alternative arrangement where the two left hand lanes of an eight lane divided highway or a four lane one-way roadway are blocked due to construction or repair. This alternative may be requested by Traffic Management or Traffic Services to maximize the vehicular capacity on a route. The Construction Agency shall place and maintain on a 24 hour per day basis the devices as indicated in Figure 6. The devices shall conform to the requirements of section 5.00 and shall be kept clean and in proper working order.

Distances A and B represented in Figure 6 shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

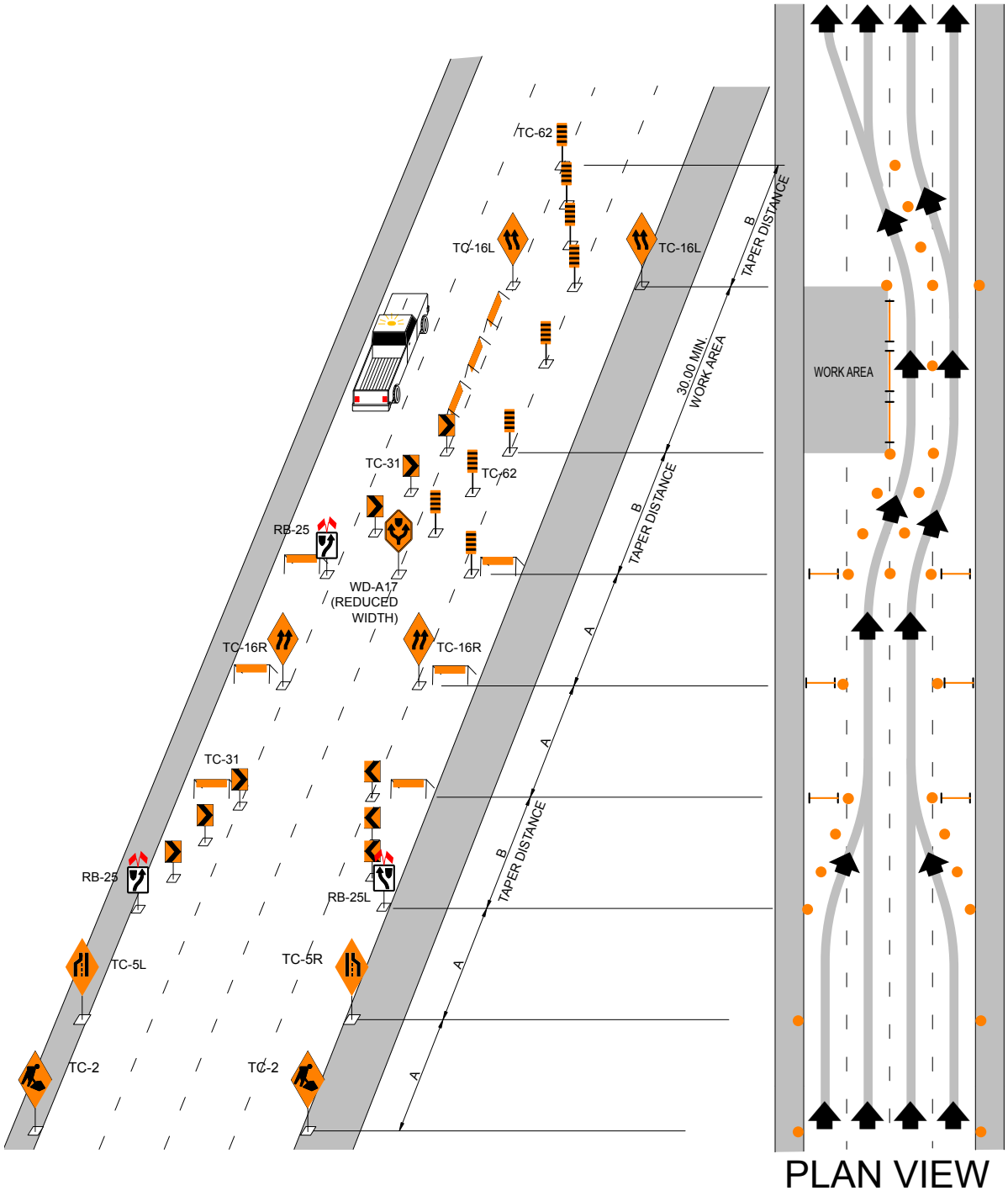
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 6

LONG TERM BLOCKAGE OF TWO LEFT HAND LANES ON MULTILANE ROADWAY (TWO LANE REALIGNMENT ALTERNATIVE)



LONG TERM BLOCKAGE OF TWO RIGHT HAND LANES ON A MULTILANE ROADWAY (TWO LANE REALIGNMENT ALTERNATIVE)

(Figure 7)

Figure 7 depicts an alternative arrangement where the two right hand lanes of an eight lane divided highway or a four lane one-way roadway due to construction or repair. This alternative may be requested by Traffic Management or Traffic Services to maximize the vehicular capacity on a route. The Construction Agency shall place and maintain on a 24 hour per day basis the devices as indicated in Figure 7. The devices shall conform to the requirements of Section 5.00 and shall be kept clean and in proper working order.

Distances A and B represented in Figure 7 shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

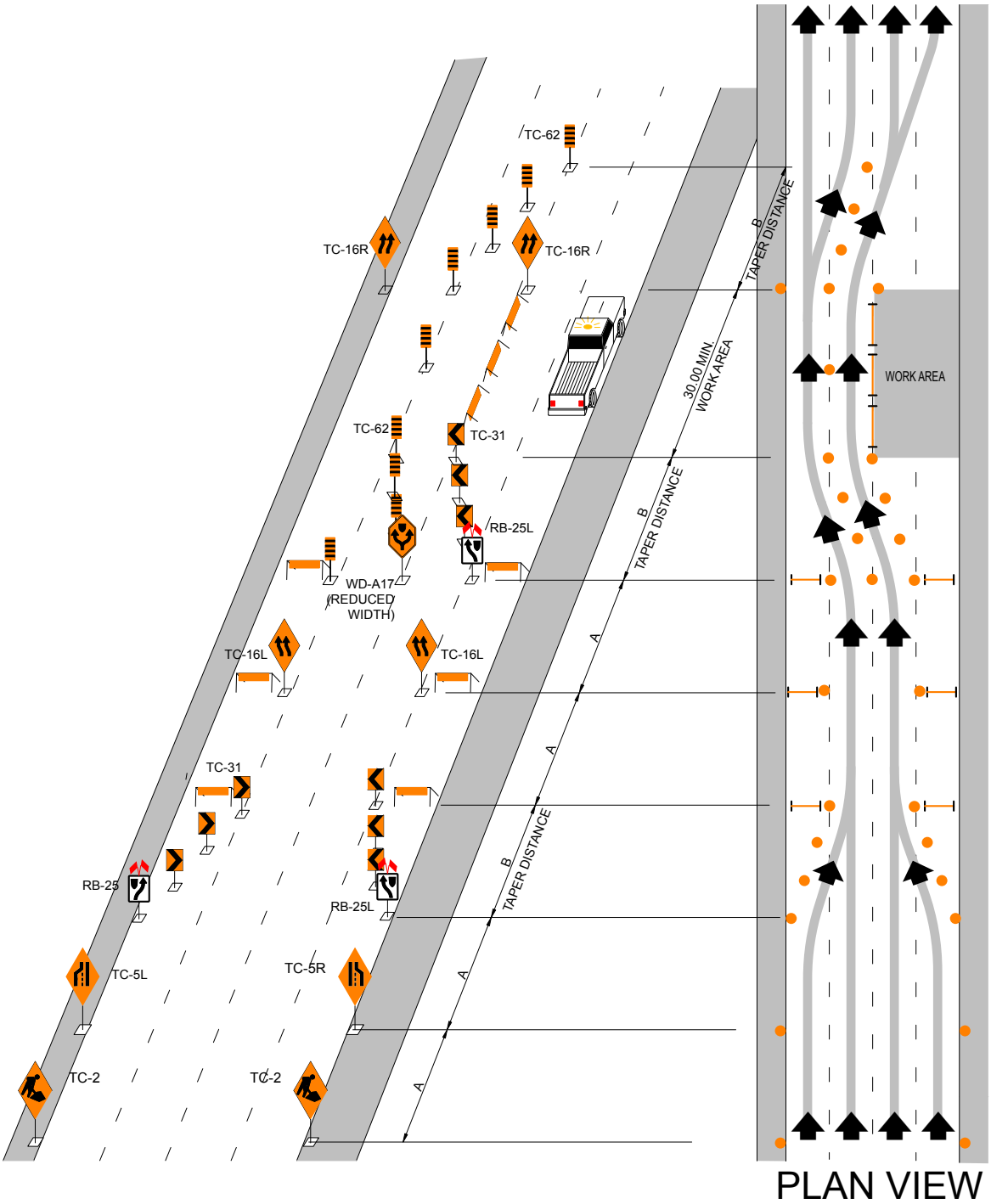
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 7

LONG TERM BLOCKAGE OF TWO RIGHT HAND LANES ON A MULTILANE ROADWAY (TWO LANE REALIGNMENT ALTERNATIVE)



LONG TERM BLOCKAGE ON A HORIZONTAL HIGHWAY CURVATURE
(ON A CURVE)
(Figure 8)

Figure 8 depicts the typical situation on a horizontal highway curve and indicates that the commencement of traffic control must occur on the street section of highway prior to the horizontal curve. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 8. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 8 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

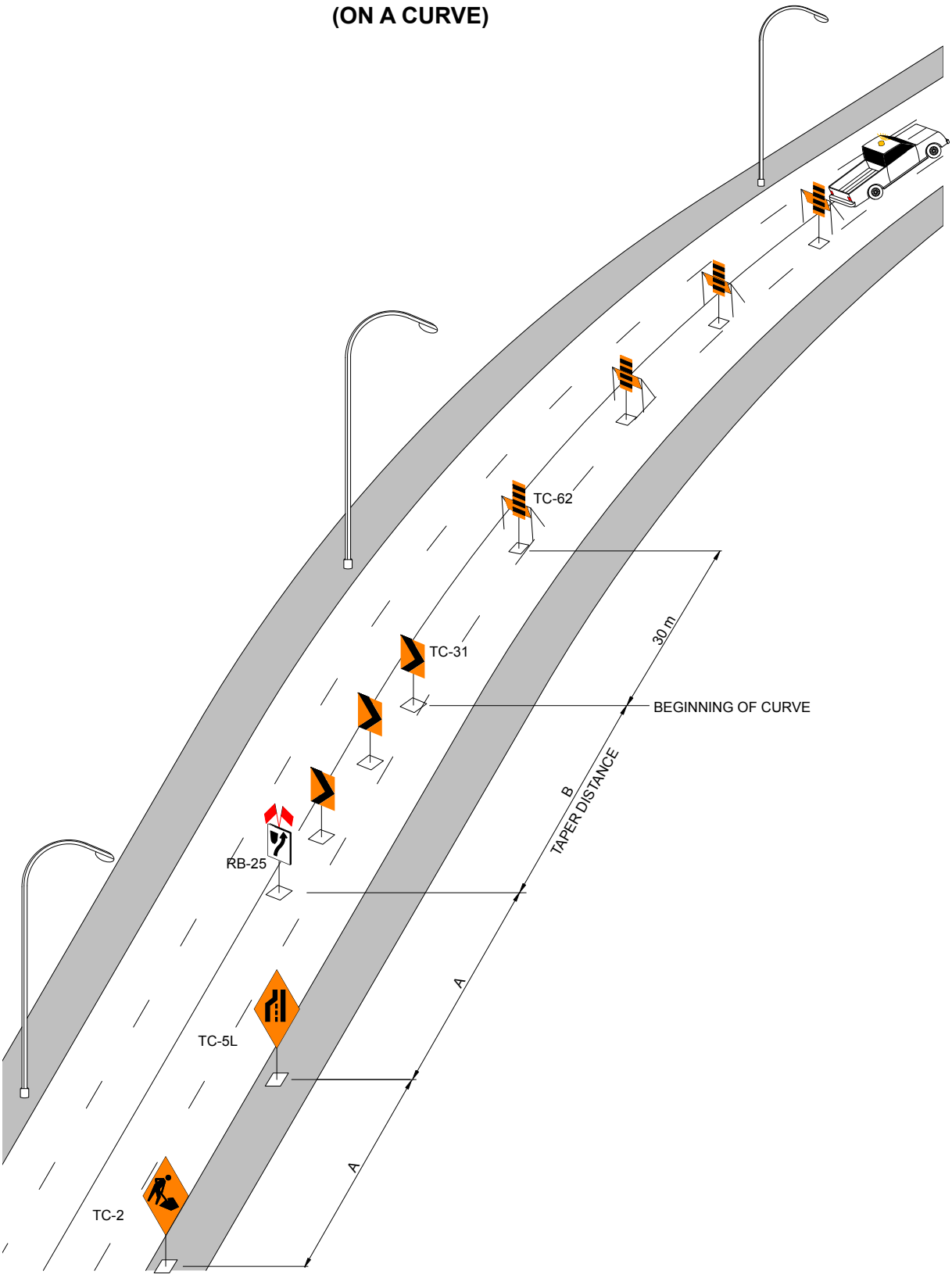
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 8

LONG TERM BLOCKAGE ON A HORIZONTAL HIGHWAY CURVATURE (ON A CURVE)



LONG TERM BLOCKAGE ON A VERTICAL HIGHWAY CURVATURE (APPROACHING AN UNDERPASS) (Figure 9)

Figure 9 depicts the typical situation on a vertical highway curve and indicates that the commencement of traffic control must occur on the level section of highway prior to the vertical curve. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 9. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 9 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

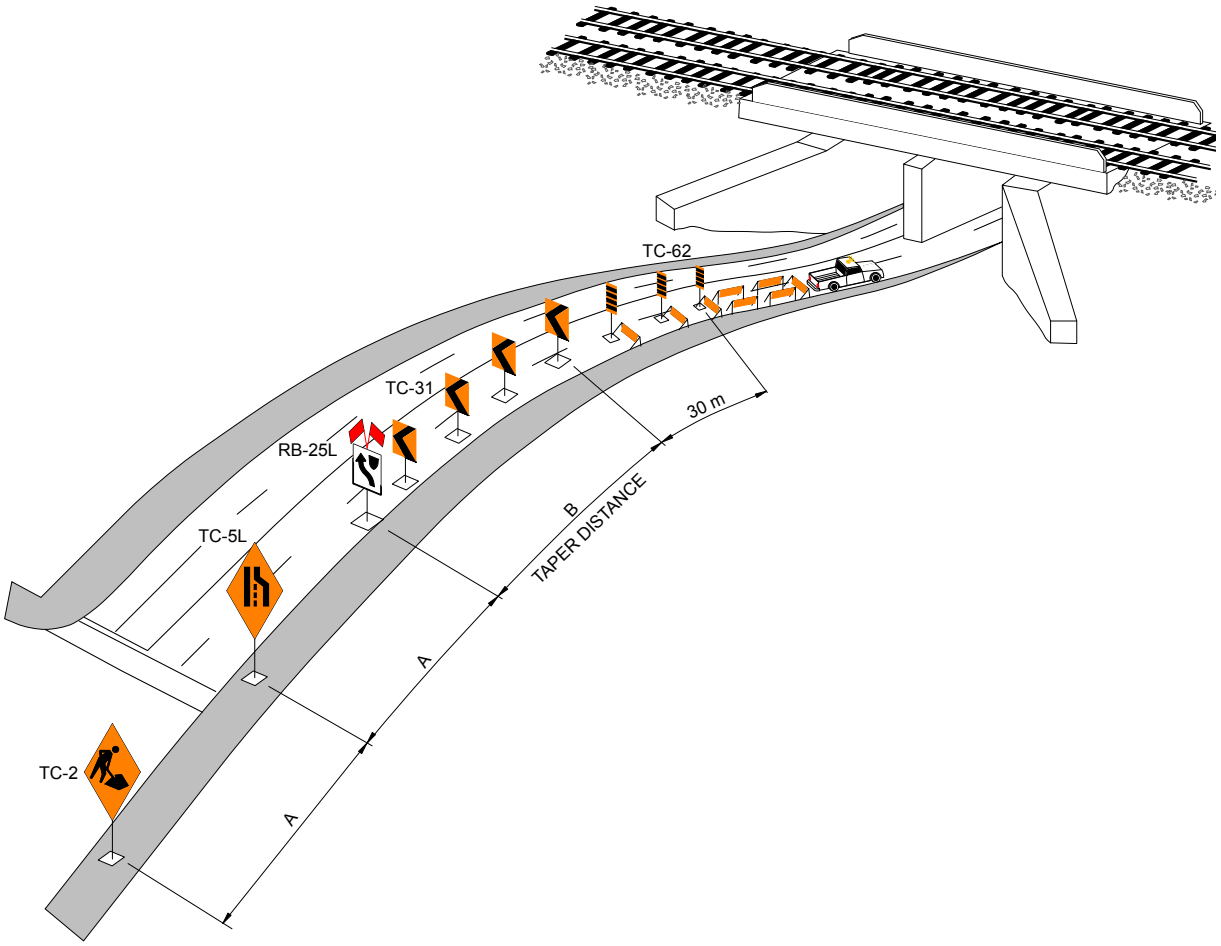
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 9

LONG TERM BLOCKAGE ON A VERTICAL HIGHWAY CURVATURE (APPROACHING AN UNDERPASS)



LONG TERM DIVERSION AROUND A HIGHWAY BLOCKAGE USING SHOULDER (Figure 10)

Figure 10 depicts a typical situation of local diversion around a partial or complete highway blockage due to construction or repair. The diversion is created by temporary improvement and widening of the highway shoulder. The minimum acceptable design of the diversion is shown in Figure 10. The widening is to be well maintained for smooth traffic flow. The Construction Agency shall place and maintain on a 24 hour per day basis,the devices as indicated in Figure 10. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 10 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

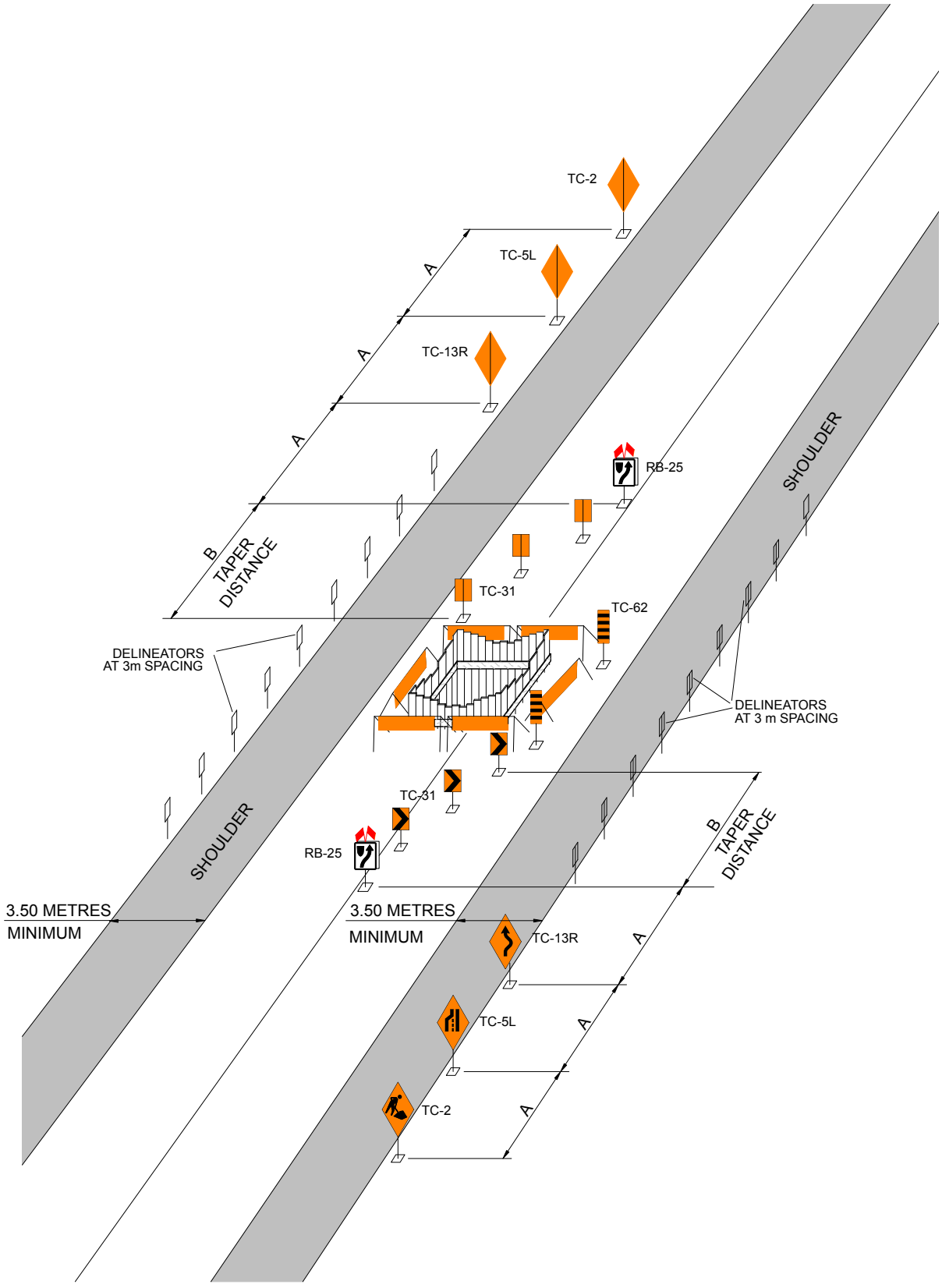
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 10

LONG TERM DIVERSION AROUND A HIGHWAY BLOCKAGE USING SHOULDER



LONG TERM BLOCKAGE OF HALF OF A FOUR LANE ROADWAY
(Figure 11)

Figure 11 depicts the typical situation where two adjacent lanes making up one half of a four lane roadway are blocked due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 11. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A, B and C represented in Figure 11 shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

SPEED LIMIT (km/h)	"A" (m)	B" (m)	"C" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	100	15
60	60	60	120	15
70+	100	100	200	30

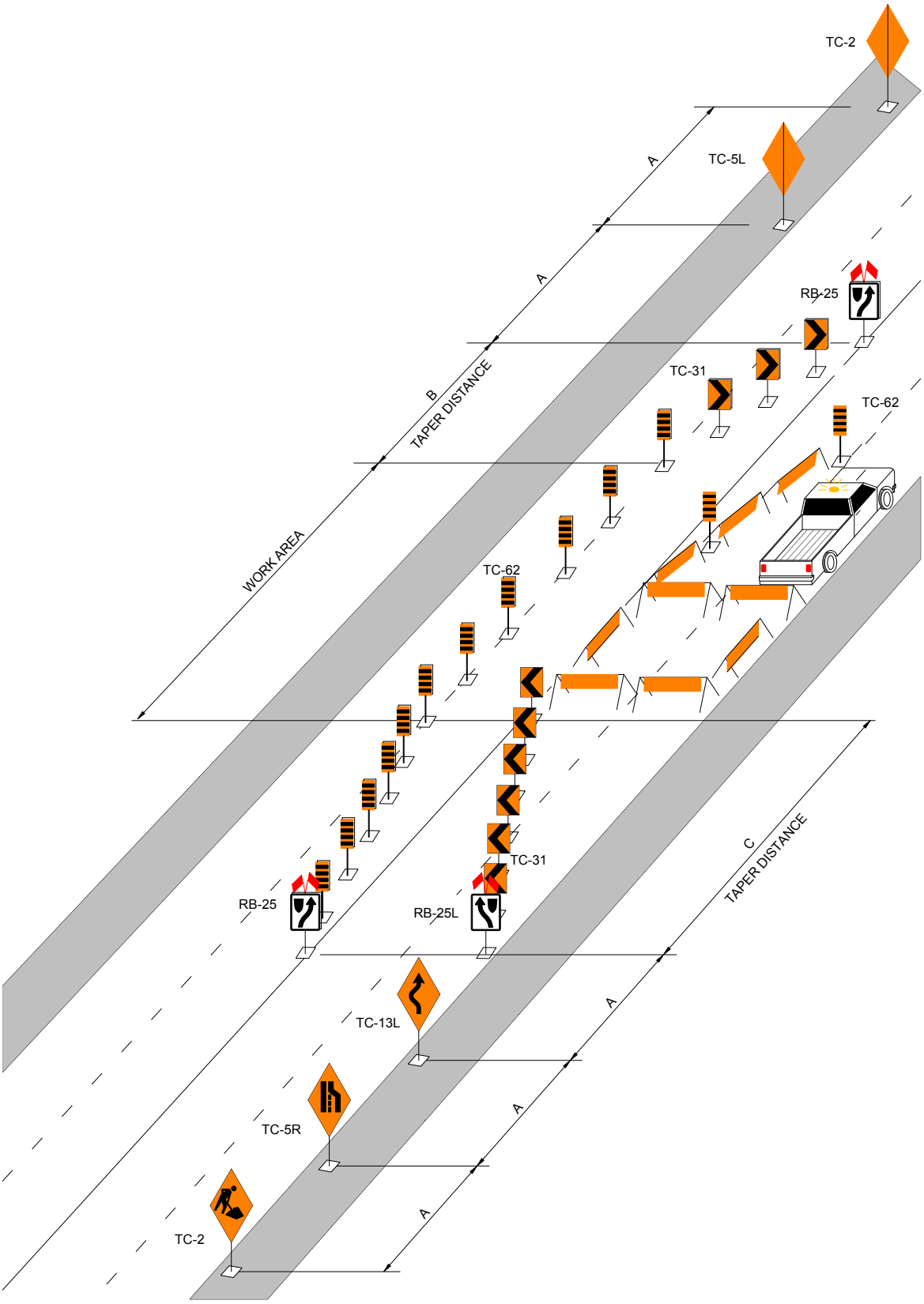
"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

"C" Two lane taper length

FIGURE 11

LONG TERM BLOCKAGE OF HALF OF A FOUR LANE ROADWAY



LONG TERM BLOCKAGE REQUIRING FLAGPERSONS
(Figure 12)

Figure 12 depicts the typical situation where blockage of a non-divided highway is so extensive that only one lane remains for two-way traffic. Under such a circumstance, the Construction Agency is mandated to provide flagpersons. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices and flagpersons as indicated in Figure 12. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A, B and C represented in Figure 12 shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

SPEED LIMIT (km/h)	"A" (m)	B" (m)	"C" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	100	15
60	60	60	120	15
70+	100	100	200	30

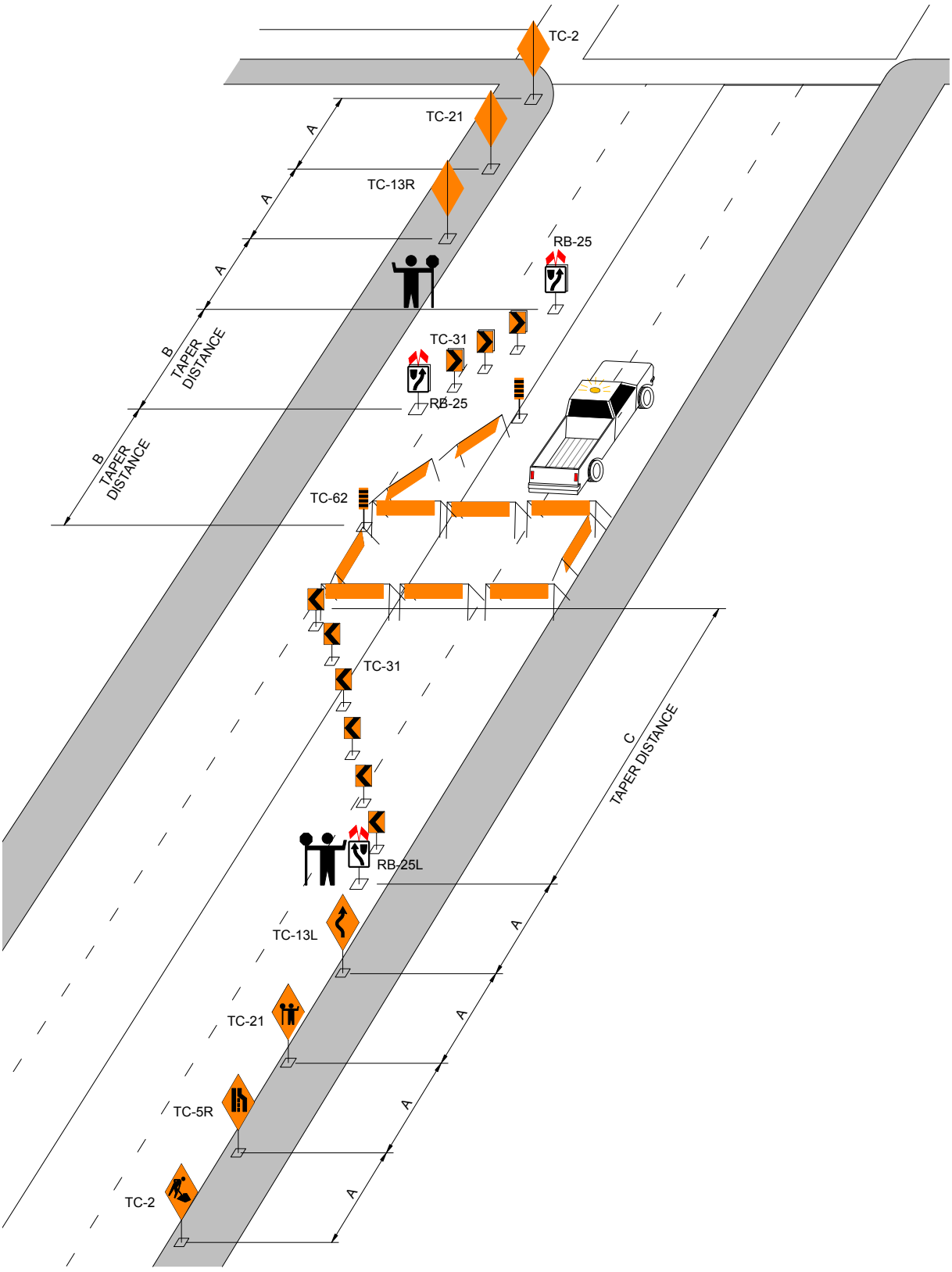
"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

"C" Multi-lane taper length

FIGURE 12

LONG TERM BLOCKAGE REQUIRING FLAGPERSONS



TEMPORARY LONG TERM ONE-WAY OPERATION OF A NON-REGIONAL COLLECTOR STREET (Figure 13)

Figure 13 depicts a typical situation where blockage of a non-regional collector street results in the implementation of temporary one-way operation. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 13. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order. Traffic Services will be responsible for the installation of the necesary regulatory signs to give effect to the one-way operation.

Distance A represented in Figure 13 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

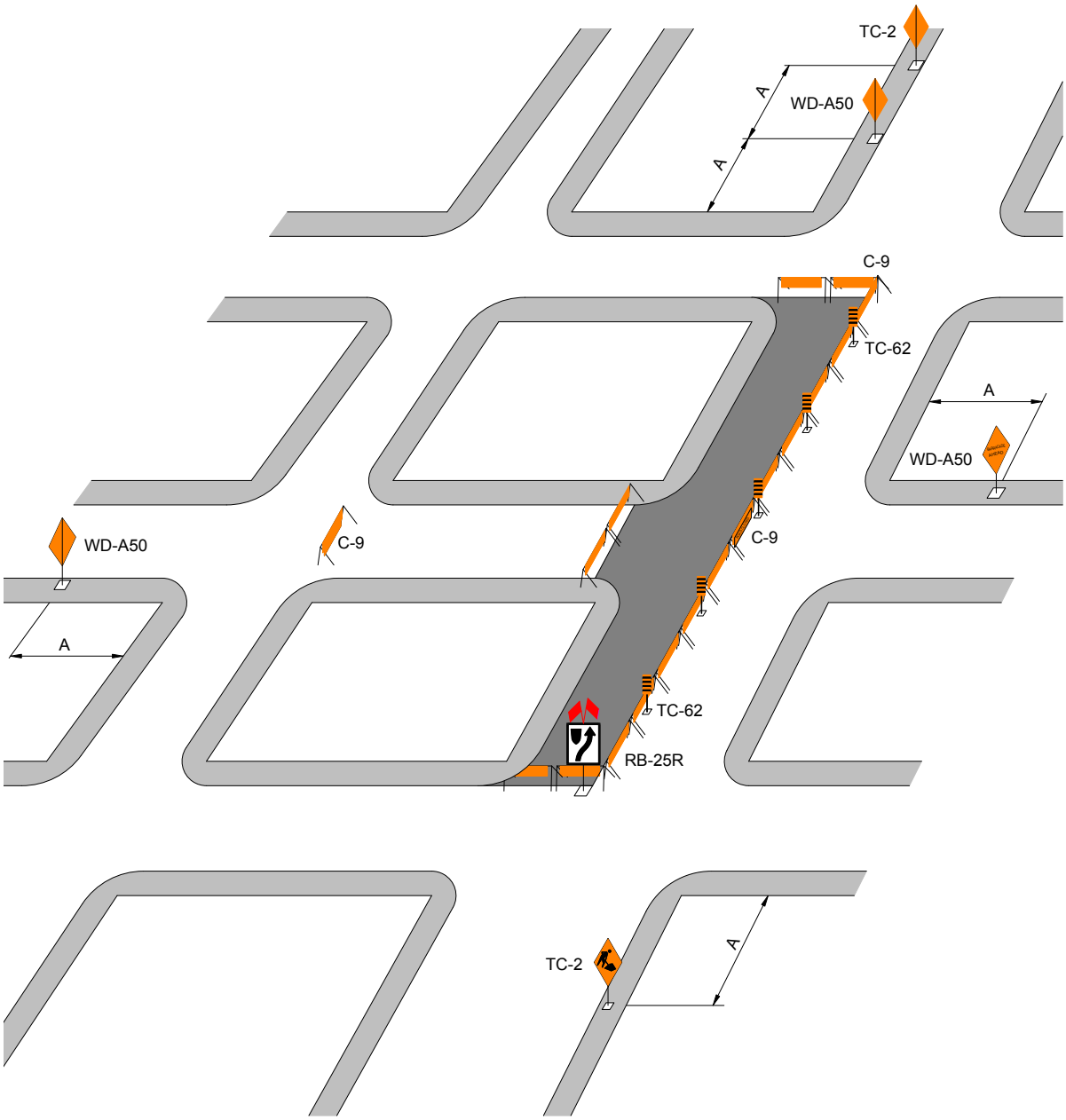
Note: A list of Regional Streets is contained in Schedule E of The City of Winnipeg Streets By-law #1481/77 (all other streets are classified as non-regional streets, some of which are non-regional collector streets and some of which are non-regional local streets).

SPEED LIMIT (km/h)	"A" (m)
50	50
60	60
70+	100

"A" Distance between temporary traffic control devices approaching the taper.

FIGURE 13

TEMPORARY LONG TERM ONE-WAY OPERATION OF A NON-REGIONAL COLLECTOR STREET



Note: Required regulatory signs to be placed by Traffic Services are not shown in the illustration.

LONG TERM BLOCKAGE OF ONE HALF OF A NON-REGIONAL LOCAL STREET (Figure 14)

Figure 14 depicts the typical situation of blockage of one half of a non-regional local street due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 14. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 14 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

Note: This situation may be used on other streets subject to the approval of Transportation Engineering or Traffic Services and subject to the use of supplementary signing.

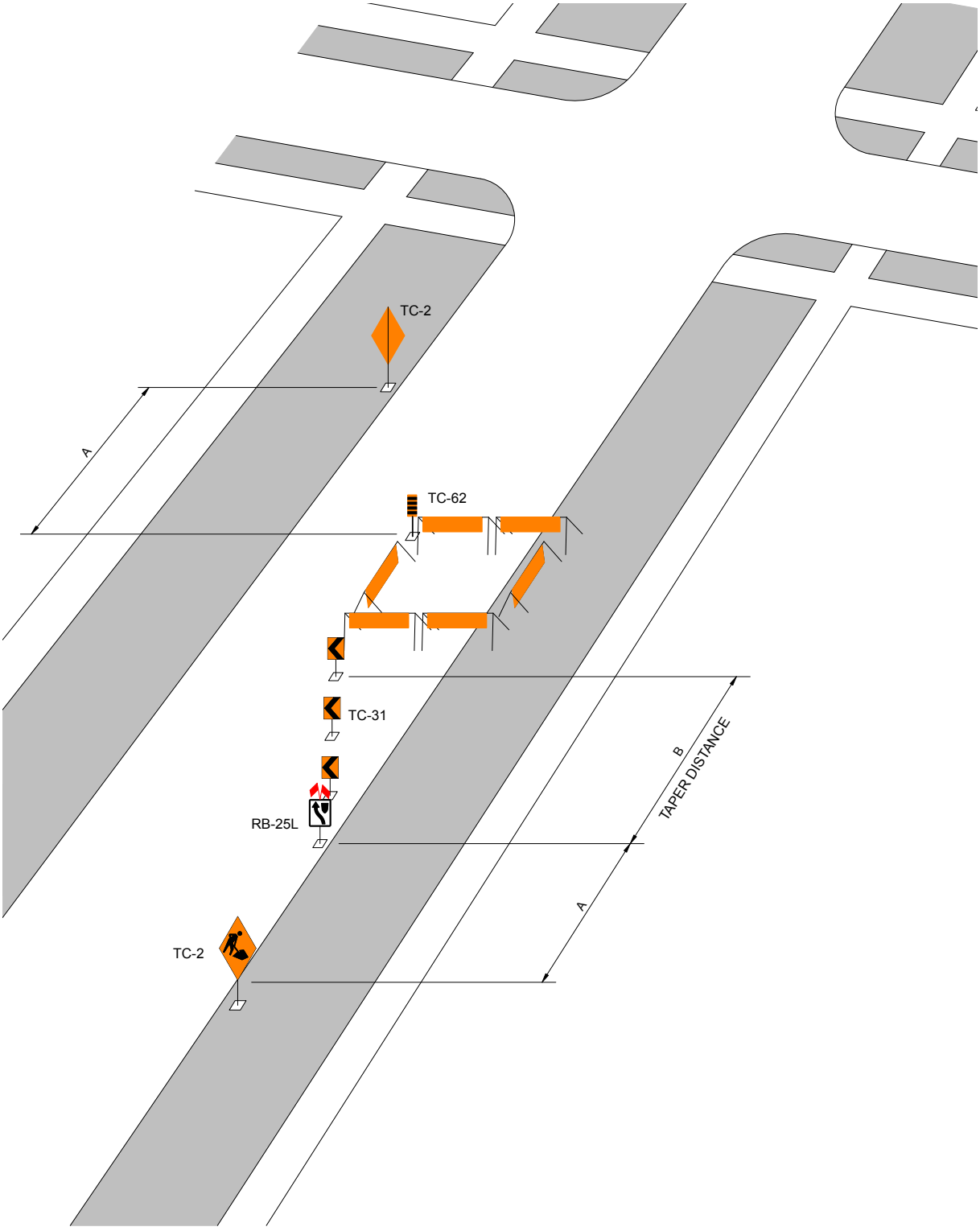
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 14

LONG TERM BLOCKAGE OF HALF OF A NON-REGIONAL LOCAL STREET



LONG TERM CLOSURE OF ONE BLOCK OF A NON-REGIONAL STREET
(Figure 15)

Figure 15 depicts the closure of one block of a non-regional street due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 15. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 15 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

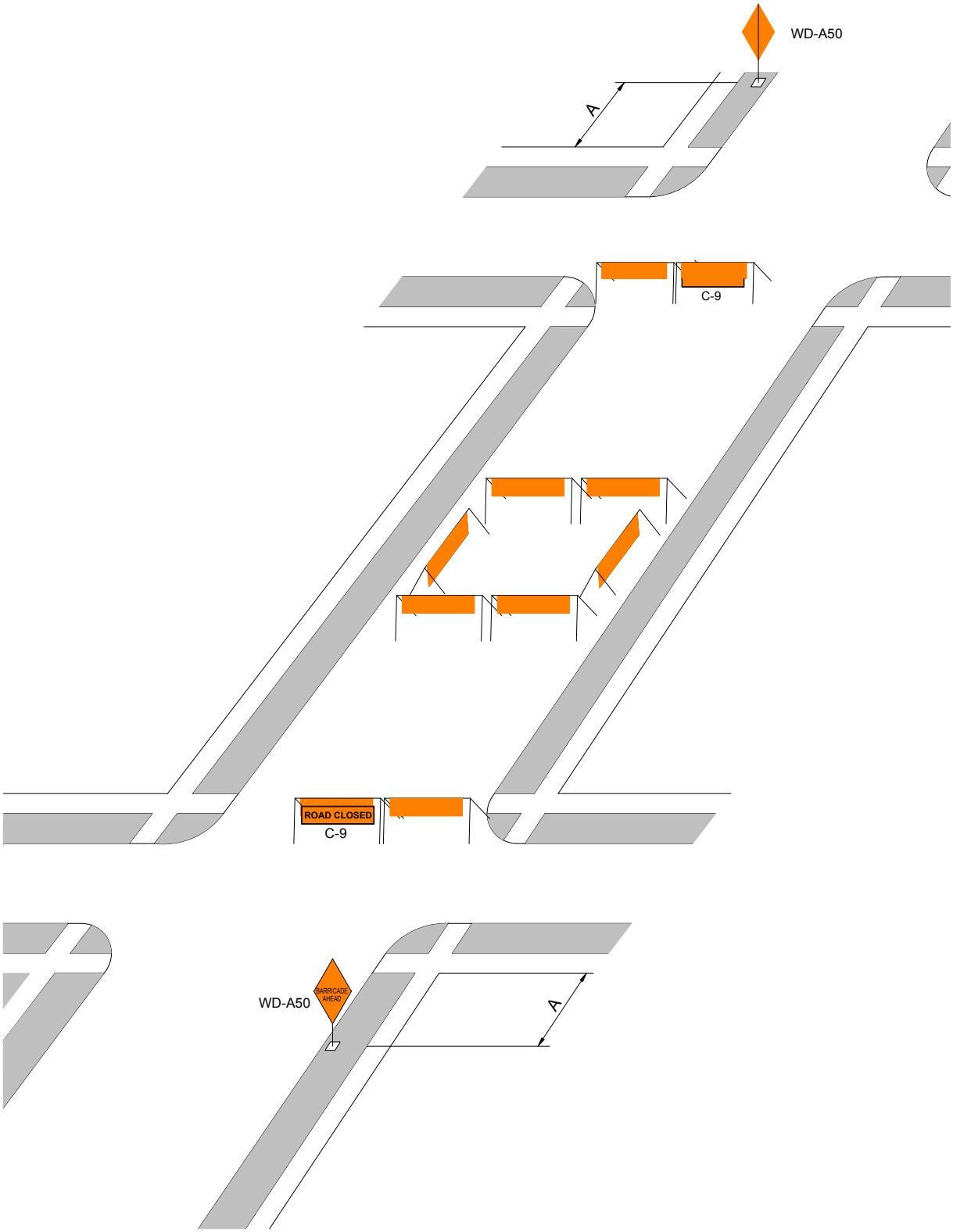
NOTE: Closures of this type on collector streets must be done in coordination with the Traffic Services Branch.

SPEED LIMIT (km/h)	"A" (m)
50	50
60	60
70+	100

"A" Distance between temporary traffic control devices approaching the taper.

FIGURE 15

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



NOTE: Regulatory signs that may potentially be required are not shown

LONG TERM COMPLETE CLOSURE OF SEVERAL BLOCKS OF A NON-REGIONAL STREET (Figure 16)

Figure 16 depicts a typical situation of complete closure of several blocks of a non-regional street due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 16. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 16 shall be selected from the table below for the permanent posted speed limit on the highway at the construction site.

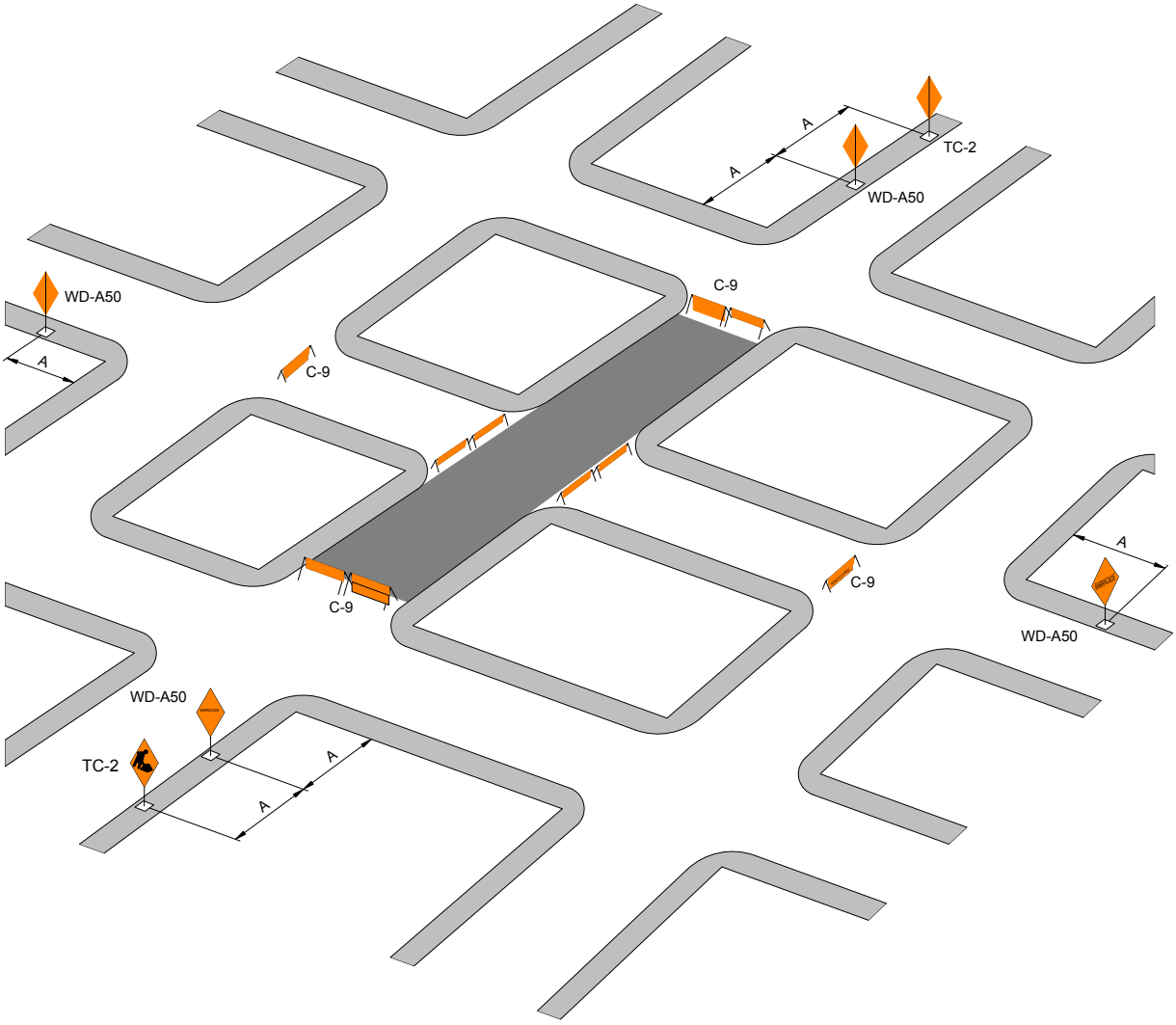
NOTE: Closures of this type must be done in coordination with the Traffic Services Branch.

SPEED LIMIT (km/h)	"A" (m)
50	50
60	60
70+	100

"A" Distance between temporary traffic control devices approaching the taper.

FIGURE 16

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



NOTE: Regulatory signs that may potentially be required are not shown

LONG TERM CONSTRUCTION ADJACENT TO AN INTERSECTION OF A FOUR LANE UNDIVIDED HIGHWAY (Figure 17)

Figure 17 depicts two typical situations of partial blockages of a four lane undivided highway, adjacent to an intersection, due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 17. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 17 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

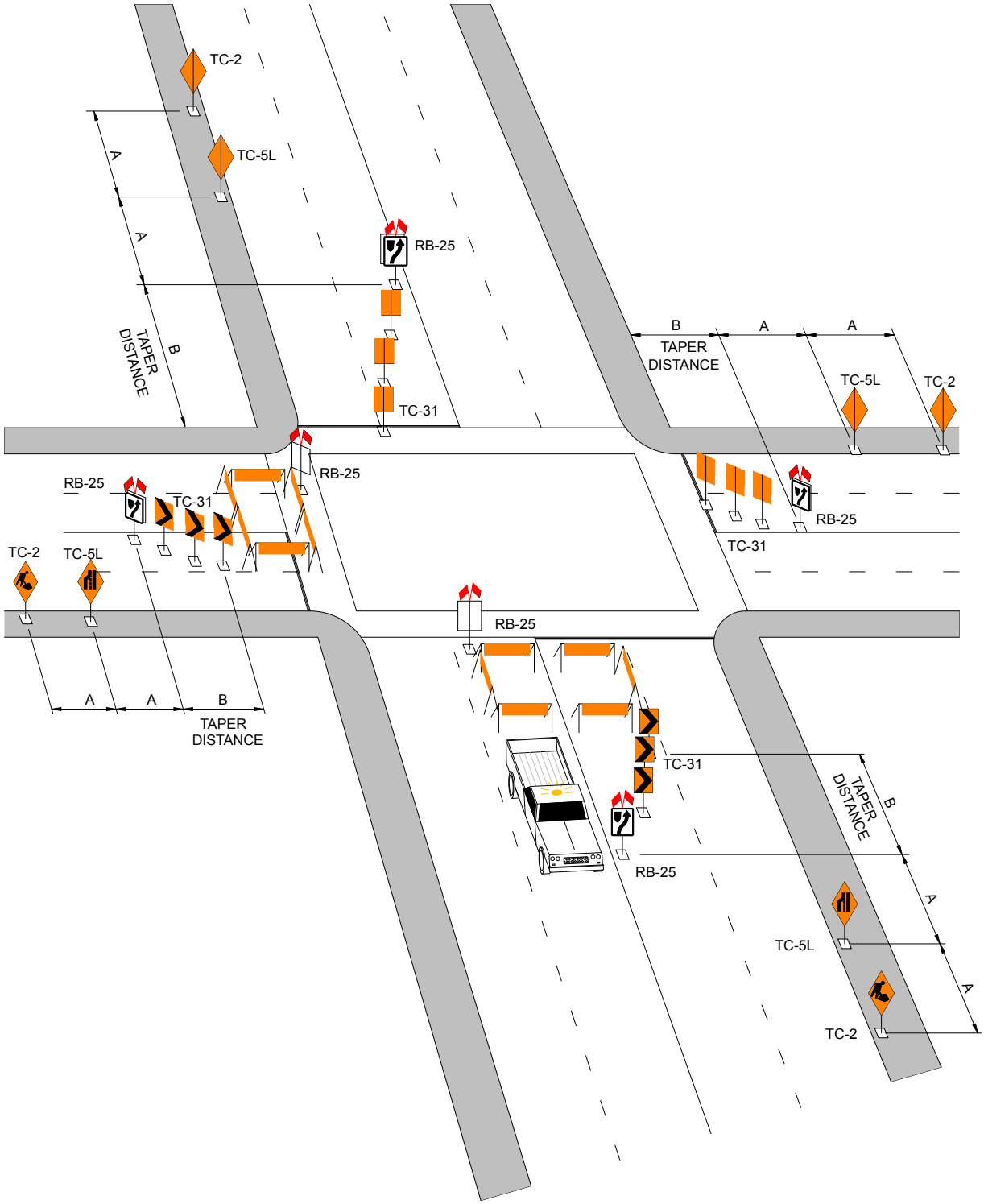
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 17

LONG TERM CONSTRUCTION ADJACENT TO AN INTERSECTION OF A FOUR LANE UNDIVIDED HIGHWAY



LONG TERM CONSTRUCTION WITHIN AN INTERSECTION OF A FOUR LANE UNDIVIDED HIGHWAY (Figure 18)

Figure 18 depicts a typical situation of partial blockage of an intersection of two four lane roadways, due to construction or repair. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 18. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 18 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

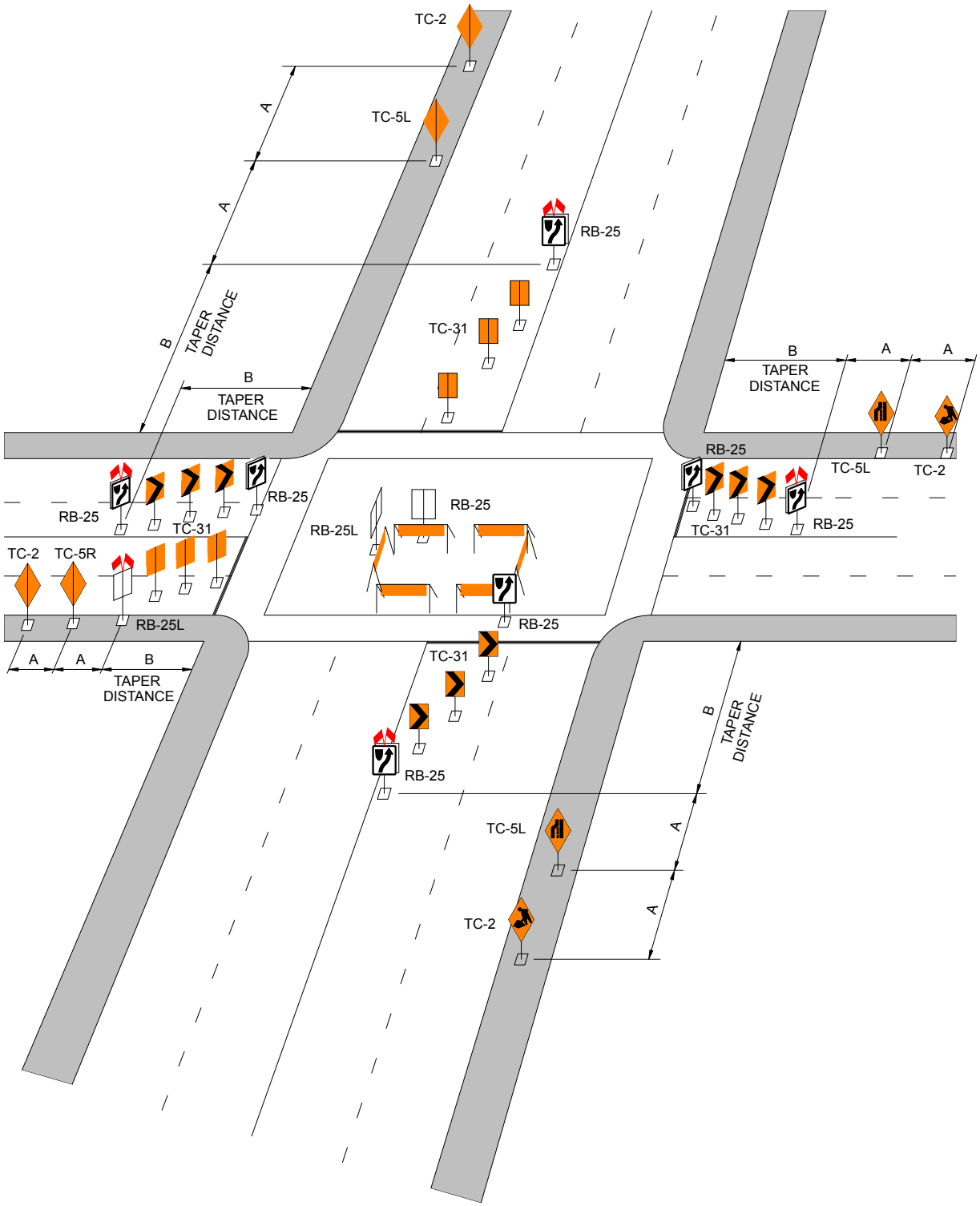
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 18

LONG TERM CONSTRUCTION WITHIN AN INTERSECTION OF A FOUR LANE UNDIVIDED HIGHWAY



SHORT TERM BLOCKAGE OF CURB LANE OR LANES
(Figure 19)

Figure 19 depicts a typical situation where a curb lane, or lanes, of a highway is blocked for a period longer than 15 minutes but less than two hours. The devices shall conform to the requirement of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must be used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the RB-25L traffic sign in each blocked lane.
10. All construction vehicles and large construction equipment shall have a flashing amber beacon in operation and visible from all directions.

Distances B and C represented in Figure 19 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

SPEED LIMIT (km/h)	"B" (m)	"C" (m)
50	50	100
60	60	120
70	100	200

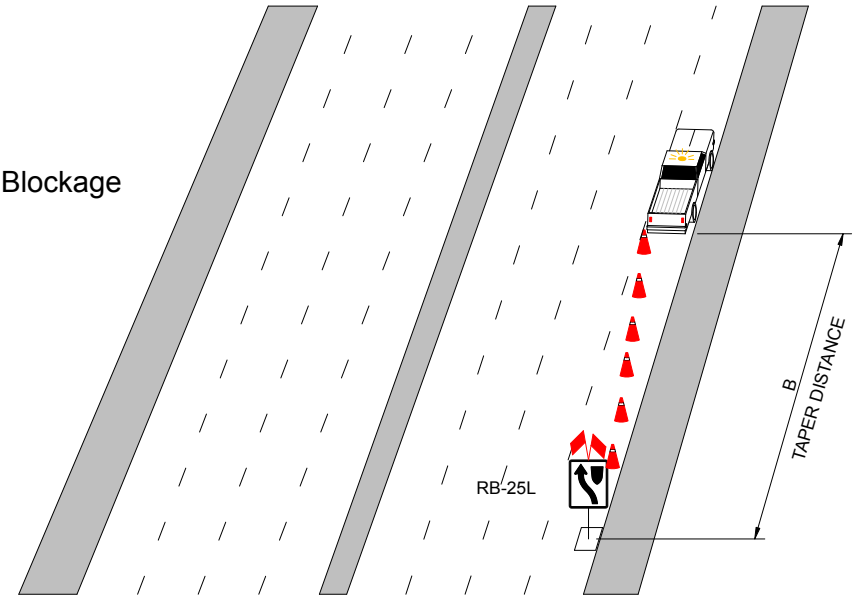
"B" Single lane taper length.

"C" Two lane taper length.

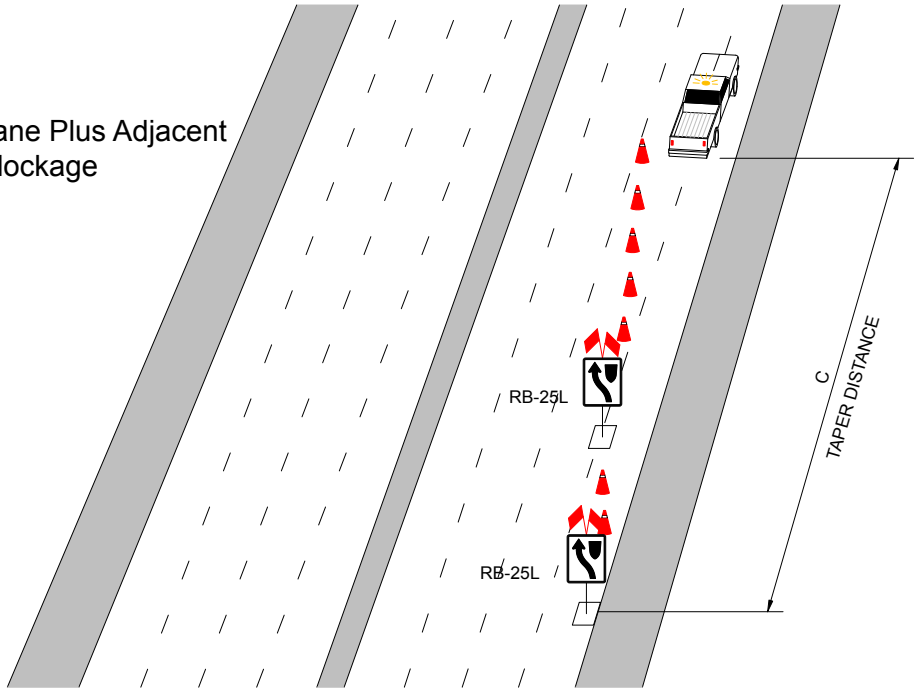
FIGURE 19

SHORT TERM BLOCKAGE OF CURB LANE OR LANES

Curb Lane Blockage



Curb Lane Plus Adjacent Lane Blockage



SHORT TERM BLOCKAGE OF MEDIAN LANE OR LANES
(Figure 20)

Figure 20 depicts a typical situation where a median lane, or lanes, of a highway is blocked for a period longer than 15 minutes but less than two hours. The devices shall conform to the requirement of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must be used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the RB-25 traffic sign in each blocked lane.
10. All construction vehicles and large construction equipment shall have a flashing amber beacon in operation and visible from all directions.

Distances B and C represented in Figure 20 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

SPEED LIMIT (km/h)	"B" (m)	"C" (m)
50	50	100
60	60	120
70	100	200

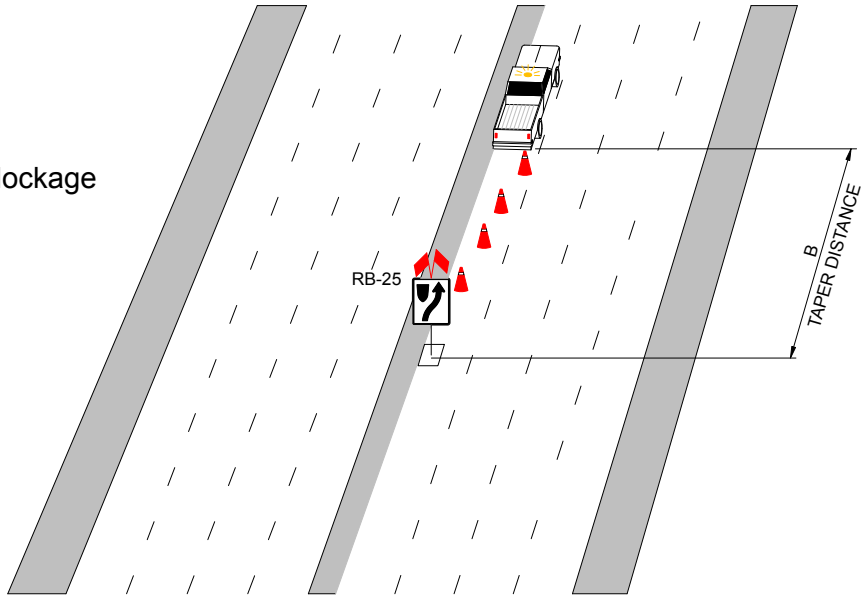
"B" Single lane taper length.

"C" Two lane taper length.

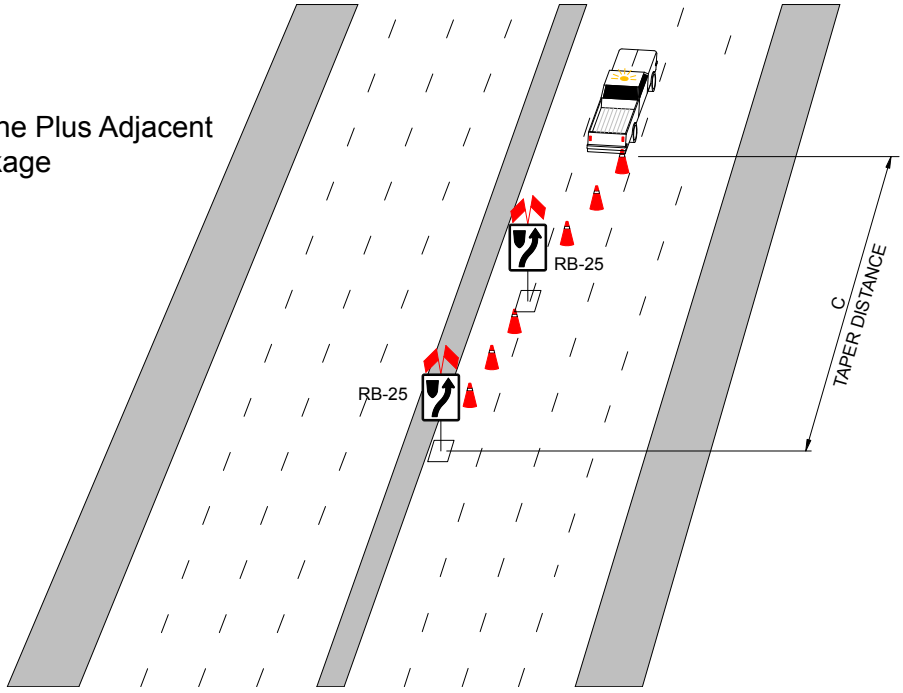
FIGURE 20

SHORT TERM BLOCKAGE OF MEDIAN LANE OR LANES

Median Lane Blockage



Median Lane Plus Adjacent Lane Blockage



SHORT TERM BLOCKAGE OF CENTRE LANE OR LANES
(Figure 21a)

Figure 21a depicts a typical situation where a centre lane, or lanes, of a highway is blocked for a period longer than 15 minutes but less than two hours. The devices shall conform to the requirement of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must be used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the WD-A17 traffic sign in the blocked lane(s).
10. All construction vehicles and large construction equipment shall have a flashing amber beacon in operation and visible from all directions.

Distance B represented in Figure 21a shall be selected from the table below for the permanent posted speed limit on the highway at that point.

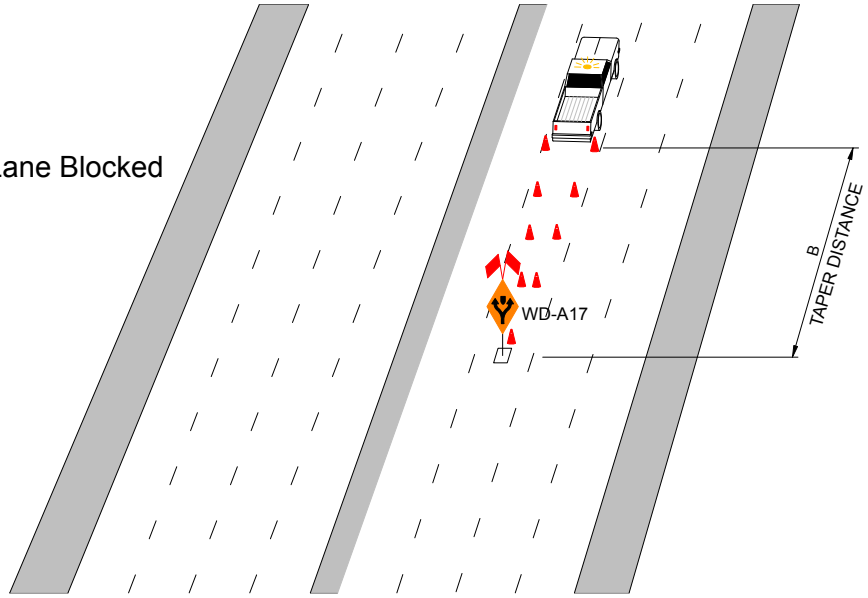
SPEED LIMIT (km/h)	"B" (m)
50	50
60	60
70	100

"B" Taper length.

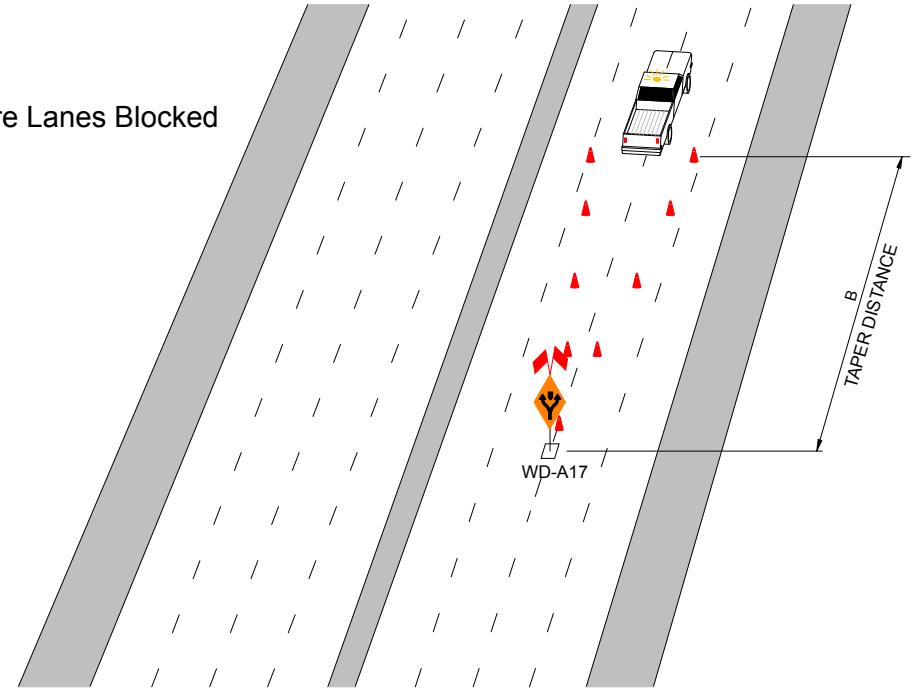
FIGURE 21a

SHORT TERM BLOCKAGE OF CENTRE LANE OR LANES

Single Centre Lane Blocked



Two Centre Lanes Blocked



SHORT TERM BLOCKAGE OF CENTRE LANE OR LANES (WITH SUPPLEMENTARY FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICE) (Figure 21b)

Figure 21b depicts a typical situation where a centre lane, or lanes, of a highway is blocked for a period longer than 15 minutes but less than two hours and a supplementary flashing or sequential arrow traffic control device is incorporated into the setup. The devices shall conform to the requirement of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must be used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the WD-A17 traffic sign in the blocked lane.
10. All construction vehicles and large construction equipment shall have a flashing amber beacon in operation and visible from all directions.

Distance B represented in Figure 21b shall be selected from the table below for the permanent posted speed limit on the highway at that point.

SPEED LIMIT (km/h)	"B" (m)
50	50
60	60
70	100

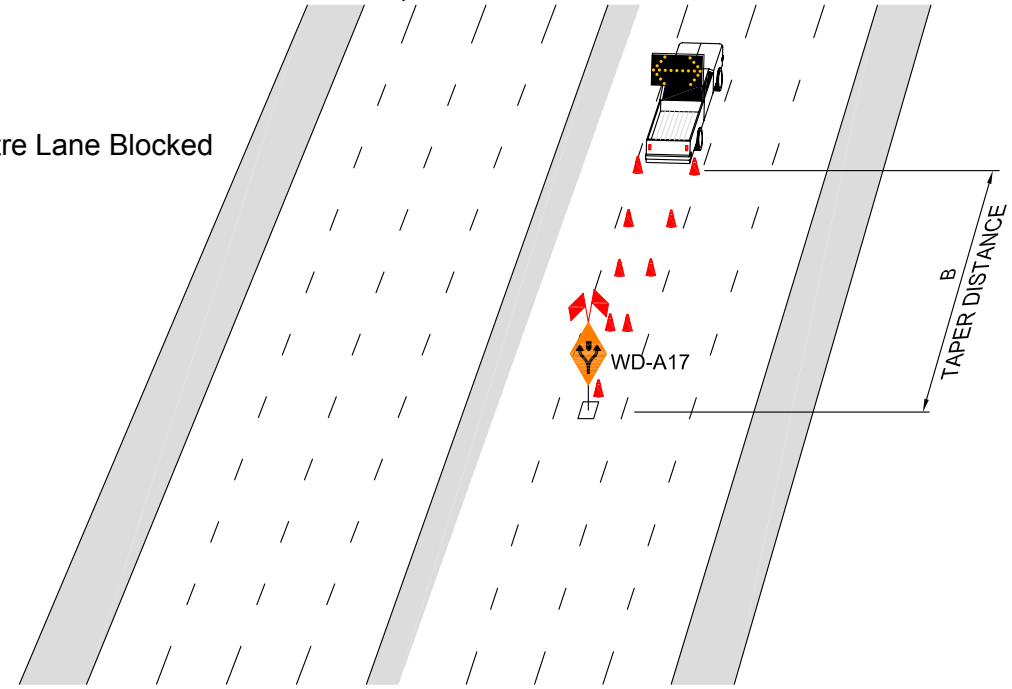
"B" Taper length.

FIGURE 21b

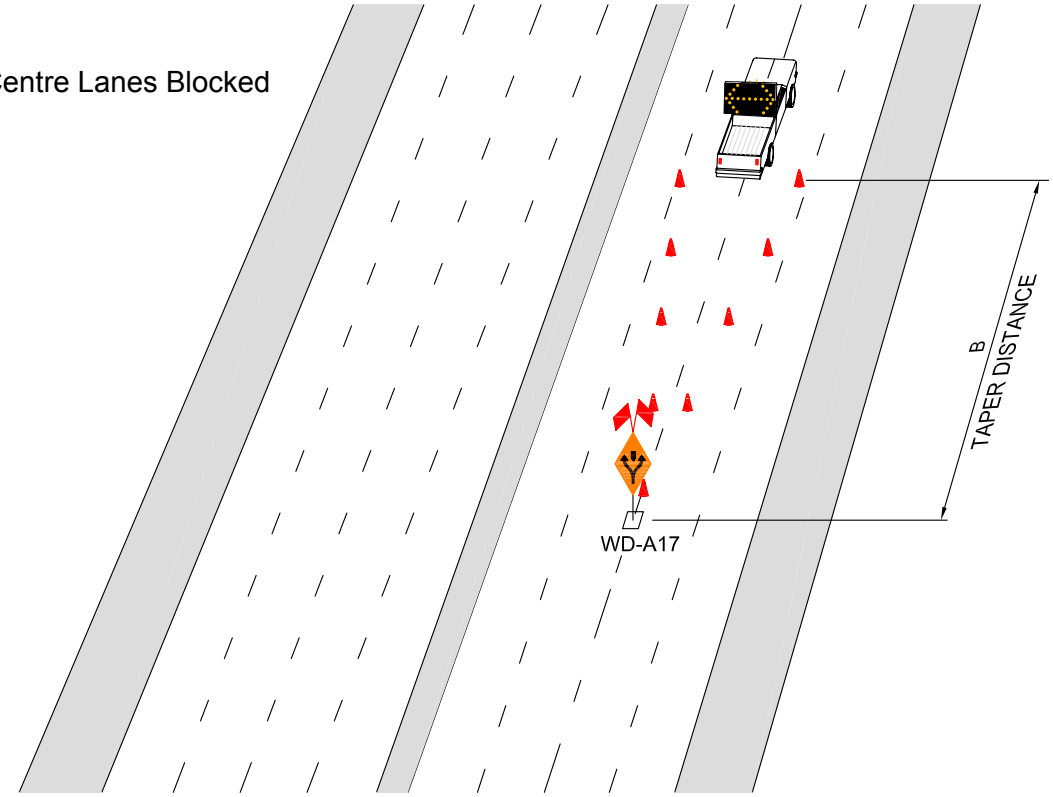
SHORT TERM BLOCKAGE OF CENTRE LANE OR LANES

(WITH SUPPLEMENTARY FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICE)

Single Centre Lane Blocked



Two Centre Lanes Blocked



SHORT TERM BLOCKAGE OF A CURB OR MEDIAN LANE ADJACENT TO AN INTERSECTION (Figure 22)

Figure 22 depicts a typical situation where a curb or median lane adjacent to an intersection is blocked for a period longer than 15 minutes but less than two hours. The devices shall conform to the requirement of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must be used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the RB-25 or RB-25L traffic sign in the blocked lane.
10. All construction vehicles and large construction equipment shall have a flashing amber

Distance B represented in Figure 22 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

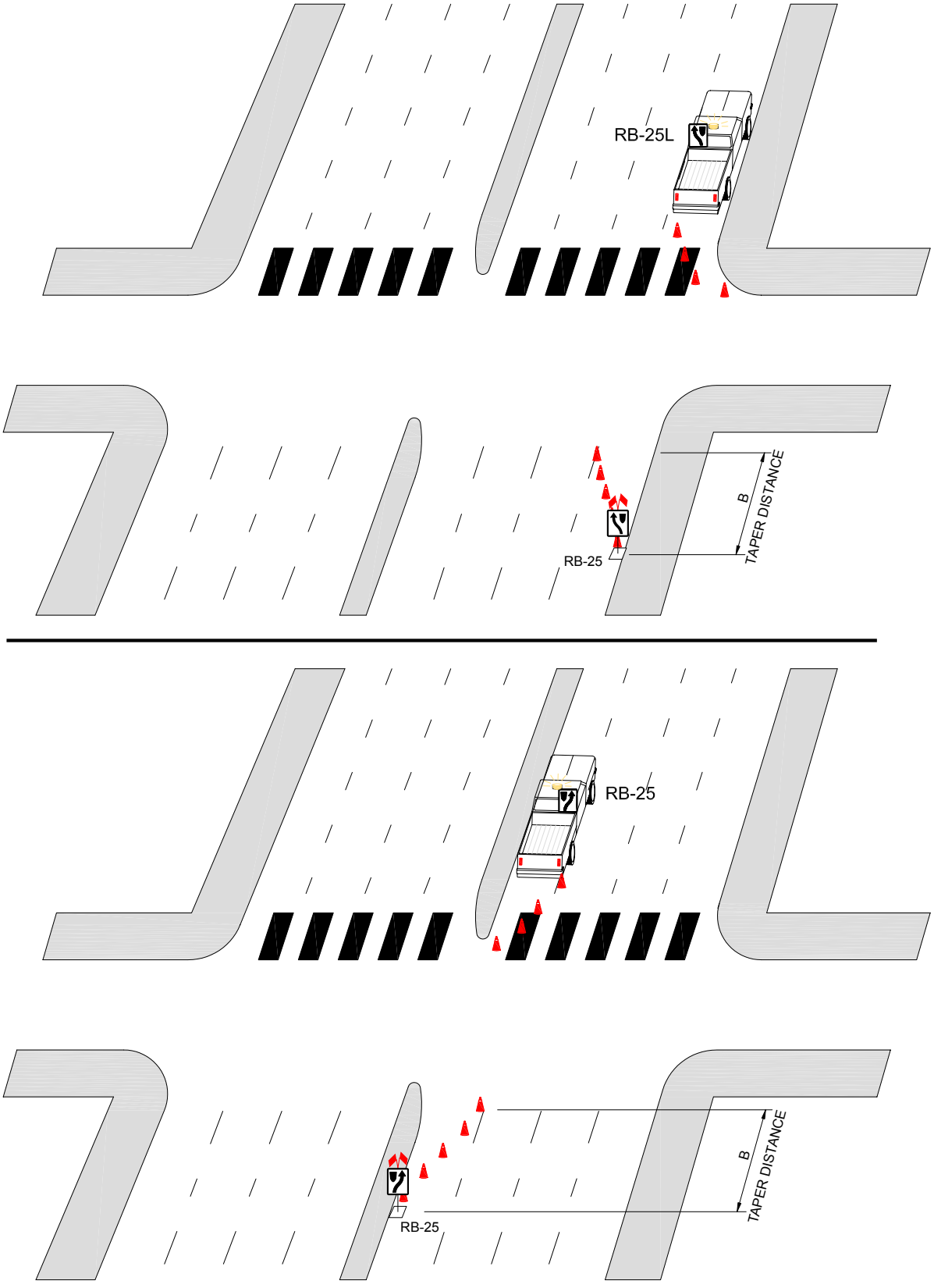
.

SPEED LIMIT (km/h)	"B" (m)
50	50
60	60
70	100

"B" Taper length.

FIGURE 22

SHORT TERM BLOCKAGE OF A CURB OR MEDIAN LANE ADJACENT TO AN INTERSECTION



SHORT TERM BLOCKAGE WITHIN AN INTERSECTION
EIGHT LANE DIVIDED AND SIX LANE DIVIDED HIGHWAY
(Figure 23)

Figure 23 depicts a short term partial blockage of an intersection of an eight lane divided highway and a six lane divided highway due to construction or repair. The devices shall conform with the requirements of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must be used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the WD-A17 and RB-25L traffic signs in the blocked lane(s).
10. All construction vehicles and large construction equipment shall have a flashing amber beacon in operation and visible from all directions.

Distances B and C represented in Figure 23 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

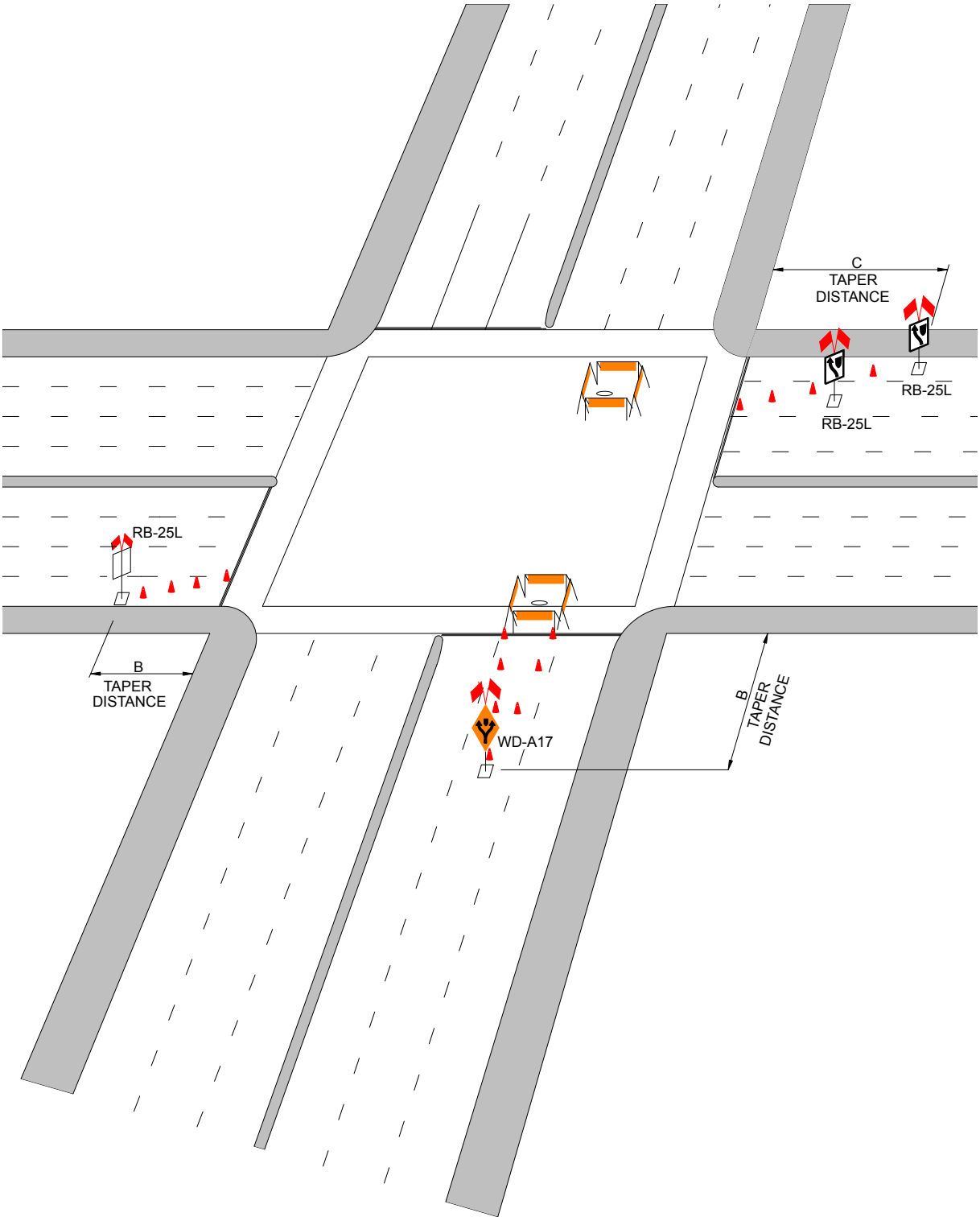
SPEED LIMIT (km/h)	"B" (m)	"C" (m)
50	50	100
60	60	120
70	100	200

"B" Single lane taper length.

"C" Two lane taper length.

FIGURE 23

SHORT TERM BLOCKAGE WITHIN AN INTERSECTION
EIGHT LANE DIVIDED AND SIX LANE DIVIDED HIGHWAY



SHORT TERM BLOCKAGE WITHIN AN INTERSECTION
EIGHT LANE DIVIDED AND FOUR LANE ONE-WAY HIGHWAY
(Figure 24)

Figure 24 depicts a short-term partial blockage of an intersection of an eight lane divided highway and a four lane one-way highway due to construction or repair. The devices shall conform with the requirements of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable on bridges, on overpasses or in underpasses.
3. Long term setups must used if the posted speed is more than 70 km/h.
4. Must be supplemented with advance warning signs TC-2 (construction) and TC-5 (lane ends) when used on streets with a 70 km/h posted speed.
5. The short term blockages must be set up 100 m in advance of a curve and a line of cones extended around the curve to the work site.
6. The short term situation does not apply to nighttime work except with written consent from the Traffic Management Section (ph. 986-5079).
7. Not more than two traffic lanes may be blocked at any one time and there must be at least one other traffic lane available for that direction of travel.
8. The reflectorized cones shall be not less than 600 mm in height. Chevrons may be used in place of cones.
9. Warning flags shall be mounted above the RB-25, RB-25L and WD-A17 traffic signs in the blocked lane.
10. All construction vehicles and large construction equipment shall have a flashing amber beacon in operation and visible from all directions.

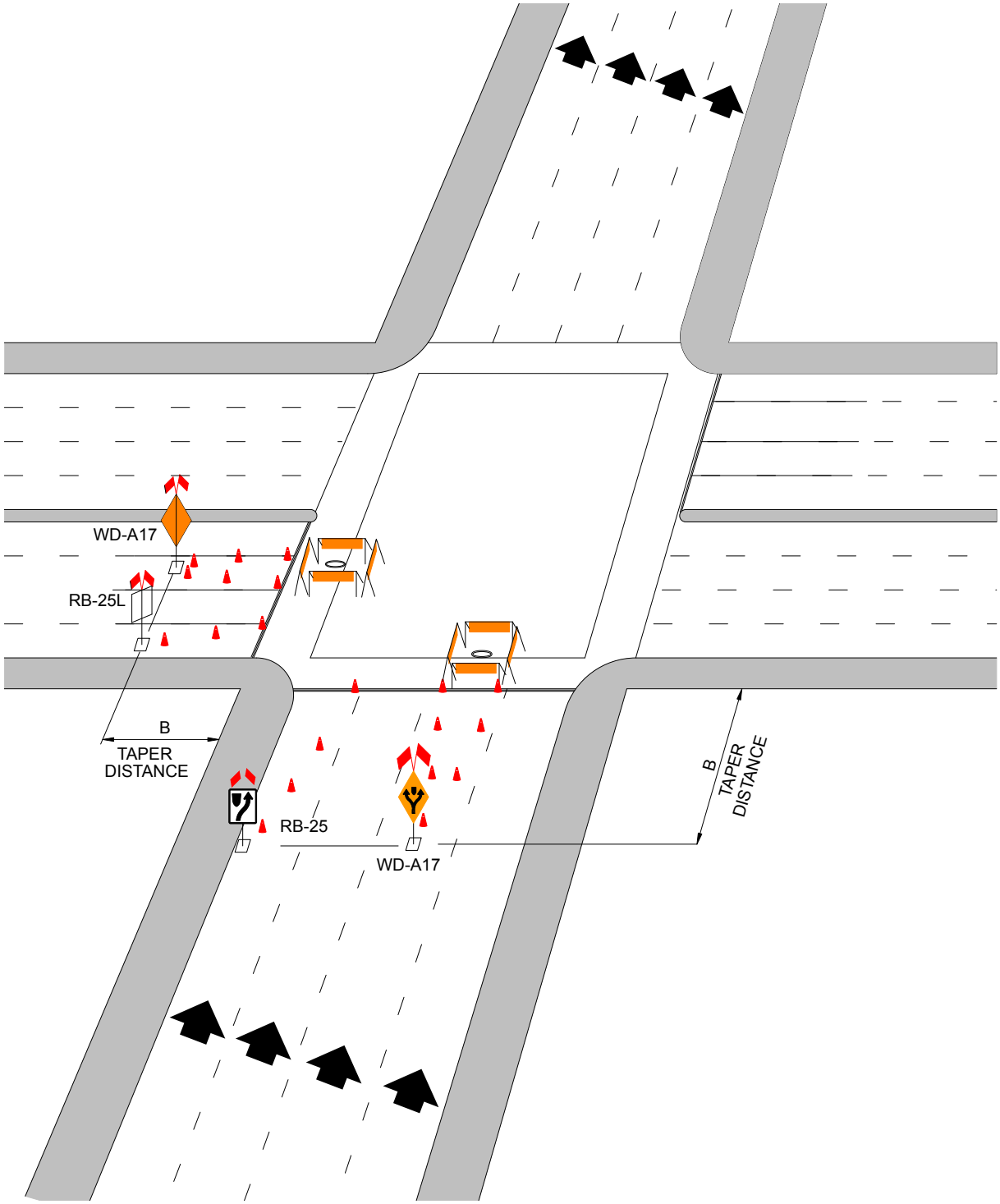
Distance B represented in Figure 24 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

SPEED LIMIT (km/h)	"B" (m)
50	50
60	60
70	100

"B" Single lane taper length.

FIGURE 24

SHORT TERM BLOCKAGE WITHIN AN INTERSECTION
EIGHT LANE DIVIDED AND FOUR LANE ONE-WAY HIGHWAY



MOVING WORK SITES
(Figure 25)

Figure 25 depicts a truck suitably equipped to act as a traffic control vehicle for moving work sites. The devices shall conform to the requirements of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. The blockages shall not exceed 15 minutes duration.
2. The moving work site situation is not applicable, on bridges, on overpasses, in underpasses or within 50 metres of a curve.
3. Long term setups must used if the posted speed is more than 70 km/h.
4. No more than one lane may be blocked at any one time and there must be at least one other lane available for that direction of travel.
5. The truck shall be stationed not more than 15 metres in advance of the work site.
6. 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.
7. The “Keep Right” and/or “Keep Left” signs mounted on the vehicle must be removed or otherwise concealed from view of approaching motorists when not in use.
8. A flashing or sequential arrow traffic control device (see Figures 26, 27 and 28) may be used in place of the following requirements at anytime and must be used on streets with a 70 km/h posted speed limit or during nighttime work on any street.

REQUIREMENTS FOR TRAFFIC CONTROL VEHICLES

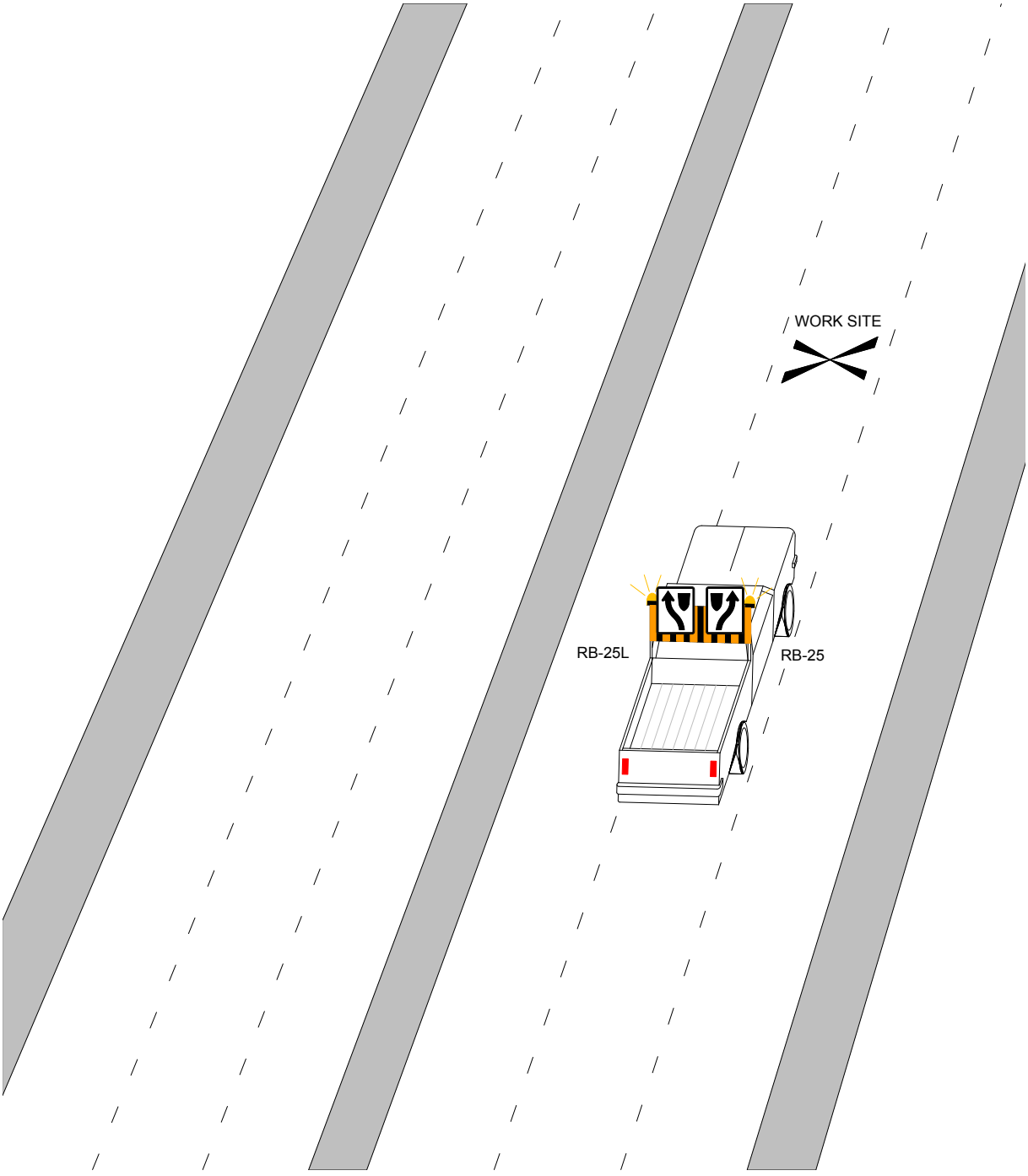
1. Two flashing amber beacons at least 2.0 m from ground level.

2. 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.

3. Two 600 mm x 750 mm reflectorized black on white “Keep Right” and/or “Keep Left” regulatory signs.

FIGURE 25

MOVING WORK SITES



REQUIREMENTS OF FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICES

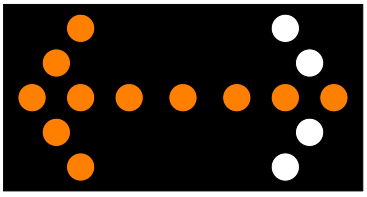
Flashing or sequential arrow traffic control devices are encouraged not only for moving work sites but as noted in section 3.03D, as supplementary traffic control for any circumstance that requires higher than normal visibility. Examples include overnight setups, streets with 70 km/h or higher speed limits and high volume locations. Flashing sequential arrow traffic control devices must be used for moving work sites on streets with a 70 km/h speed limit or during nightime work on any street. Requirements for flashing or sequential arrow traffic control devices are as follows.

1. Flashing or sequential arrow devices shall be mounted on the rear of the vehicle or on a trailer and the bottom edge of the device shall be a minimum of 1.5 metres from ground level.

2. The minimum recommended size for a horizontal flashing or sequential arrow panel is 600 mm vertical and 1200 mm horizontal. The minimum recommended size for a vertical sequential arrow shall be 1100 mm vertical and 600 mm horizontal (2 required, 1 left and 1 right). The arrow panel message must be distinguishable by an approaching motorist at a distance of at least 500 metres on a sunny day.

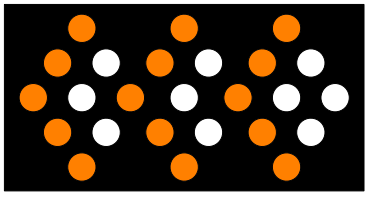
3. The visibility of the flashing or sequential arrow to approaching motorists must not be obscured by any other devices or objects on the vehicle upon which the traffic control arrow device is mounted.

4. Flashing or sequential arrow devices should be less bright for nighttime applications compared to day time applications so as not to impair the vision of approaching motorists.



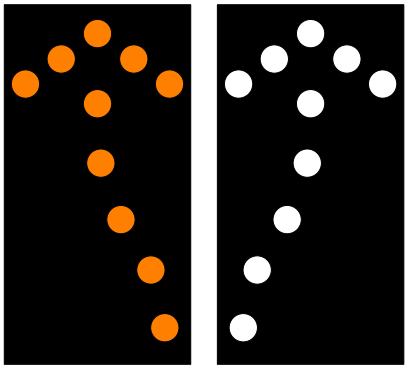
Horizontal Arrow Board
With Straight Arrow

Note: Keep-Left arrow lit
(● - lamp lit)



Horizontal Arrow Board
With Chevron Style Arrow

Note: Keep-Left arrow lit
(● - lamp lit)



Dual Vertical Arrow Boards
With "Devils Fork" Arrows

MOVING WORK SITE - VEHICLE MOUNTED
FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICES
(Figure 27 and 28)

Figures 27 and 28 depict a vehicle suitably equipped with a flashing or sequential arrow traffic control device. 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.

The on/off is the preferred mode of operation; however, sequential arrow (Bar/Arrowhead and Bar/Off) is also acceptable. The standard warning mode is for all lights on the bar (or shaft) to flash on and off. The device is to be used to direct motorists around a temporary work site. The traffic arrow device shall conform with the requirements of Section 5.00 and shall be kept clean and in proper working order. The use of this device shall be as follows:

1. A vehicle equipped in this manner may be used on any street, but it shall not be used by itself on bridges, on overpasses, in underpasses or within 50 metres of a curve or within 100 metres downstream of a curve. On curves or hills it may be used in conjunction with and to supplement, but not to replace, devices shown in Figures 8 and 9.

2. The vehicle so equipped shall be stationed not more than 15 metres in advance of the work site.

3. No more than one traffic lane may be blocked at any one time and there must be at least one other traffic lane normally available for that direction of travel.

4. 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 site to another.

FIGURE 27

MOVING WORK SITE - VEHICLE MOUNTED
FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICES

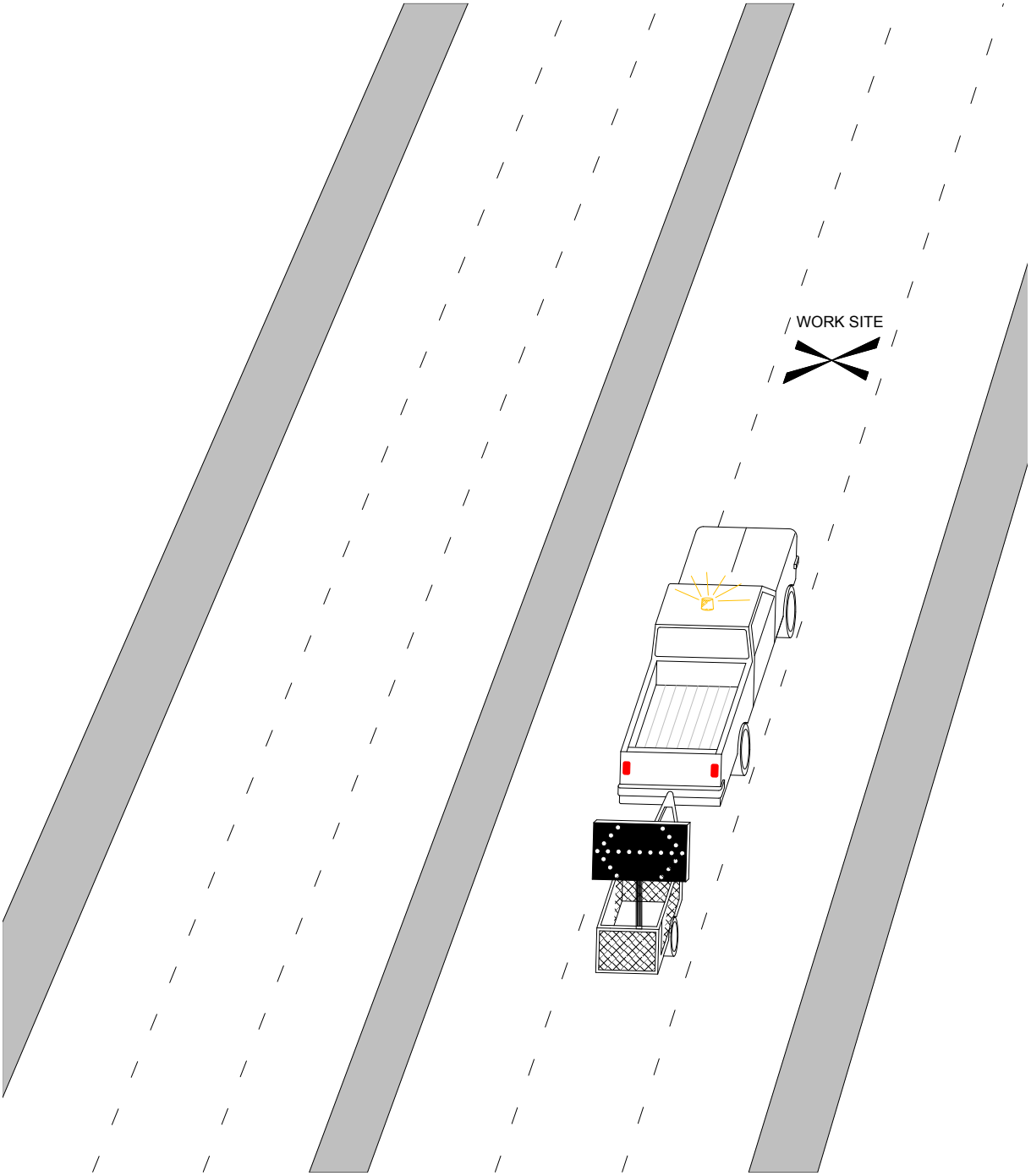
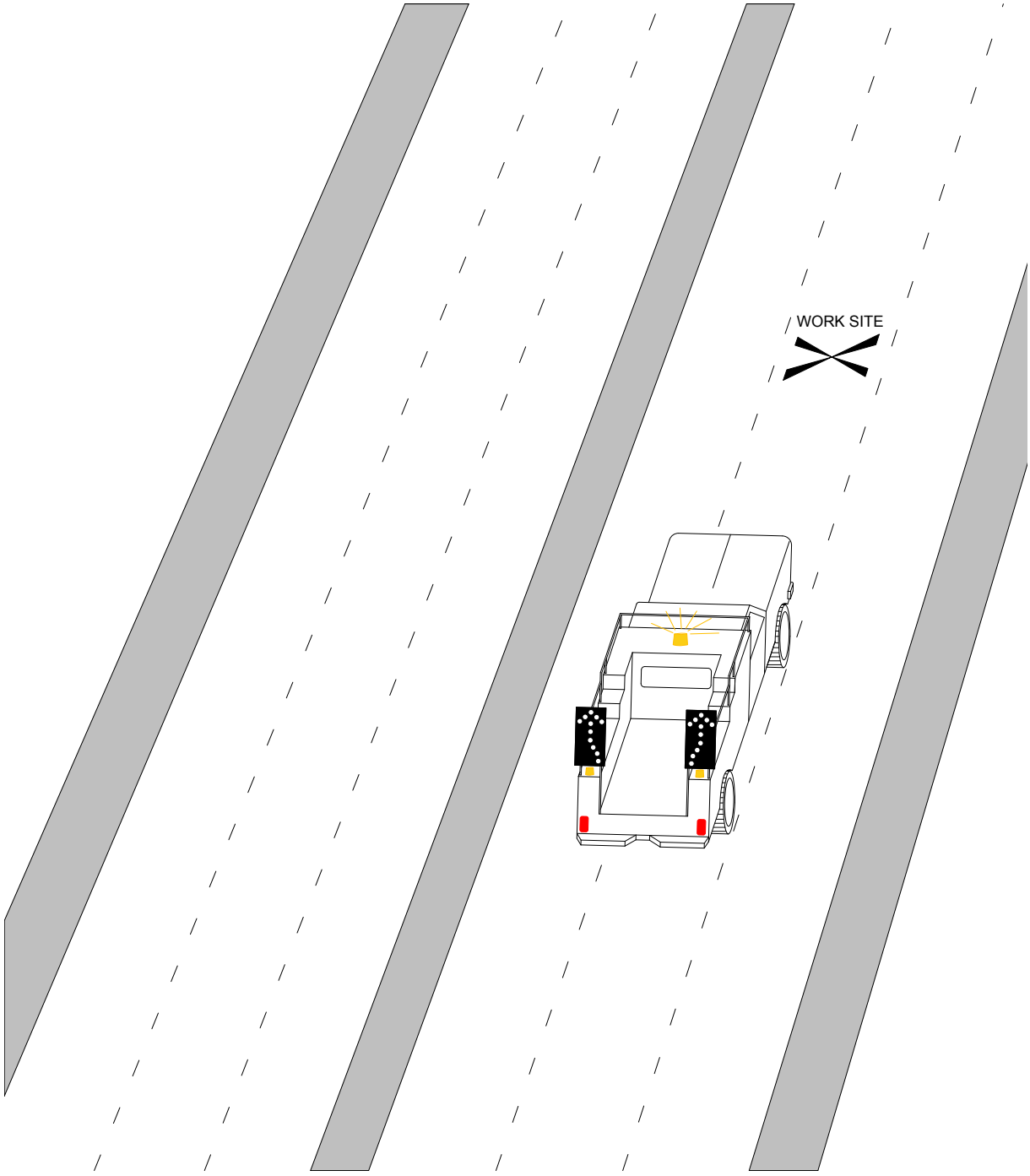


FIGURE 28

MOVING WORK SITE - VEHICLE MOUNTED
FLASHING OR SEQUENTIAL ARROW TRAFFIC CONTROL DEVICES



SHORT TERM OR MOVING WORK SITE
CLOSURE OF HALF OF A TWO LANE TWO WAY
UNDIVIDED HIGHWAY
(Figure 29)

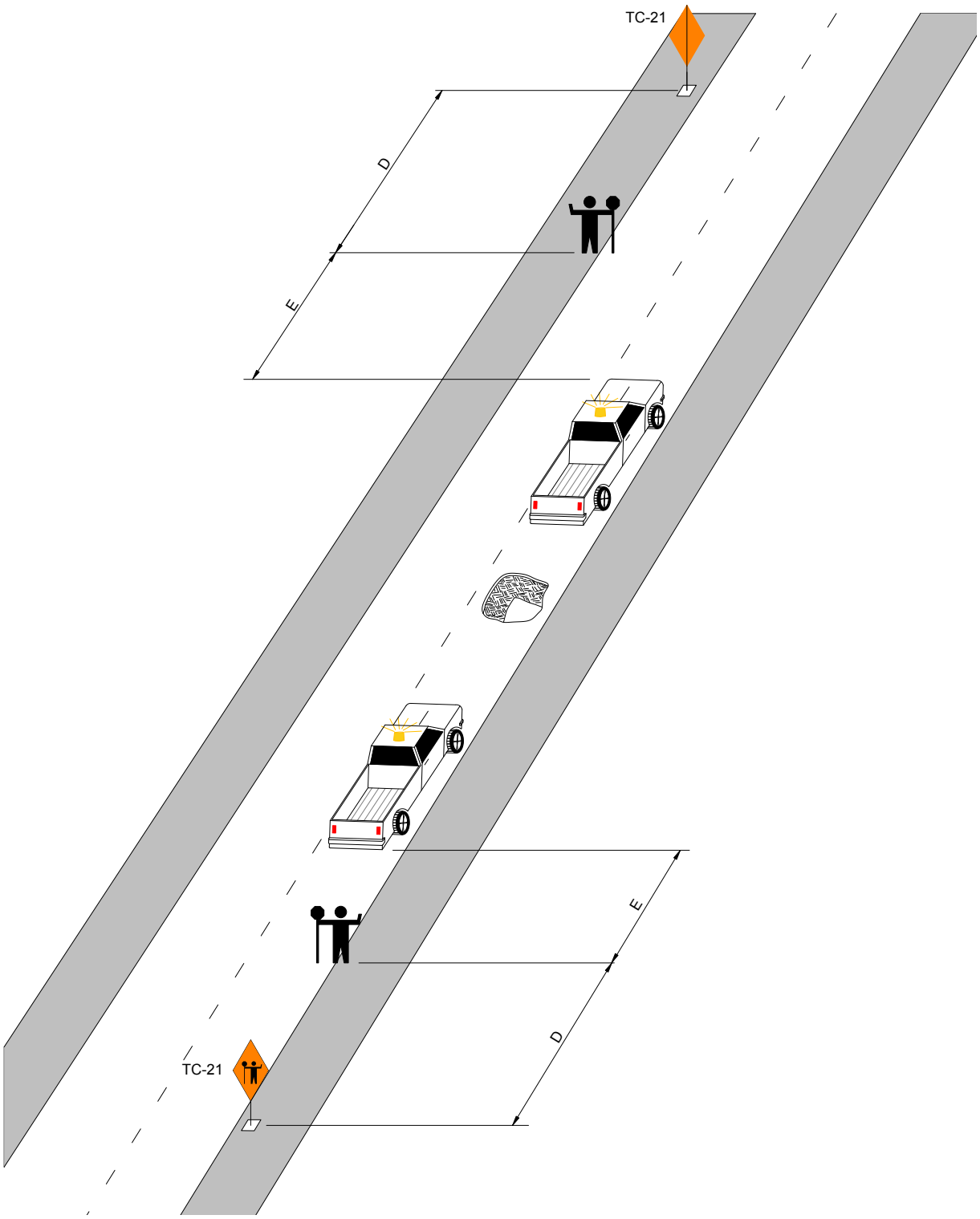
Figure 29 depicts the typical situation of a blockage of one direction on a two way highway so that only one lane remains open for two-way traffic. Under such circumstances, the Construction Agency is mandated to provide flagpersons. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices and flagpersons as indicated in Figure 29. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances D and E represented in Figure 29 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

SPEED LIMIT (km/h)	"D" SIGNS IN ADVANCE OF FLAGPERSON (m)	"E" FLAGPERSONS IN ADVANCE OF WORK SITE (m)
50	90	30
60	90	30
70+	120	60

FIGURE 29

SHORT TERM OR MOVING WORK SITE
CLOSURE OF HALF OF A TWO LANE TWO WAY
UNDIVIDED HIGHWAY



CLOSURE OF A SIDEWALK
(DIVERSION)
(Figure 30)

Figure 30 depicts a typical situation of closure of a public sidewalk due to construction or repair, and shows temporary provision for pedestrians upon the roadway.

The use of the roadway for this purpose is permitted only if no alternative is available. The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 30. The devices shall conform to the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 30 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

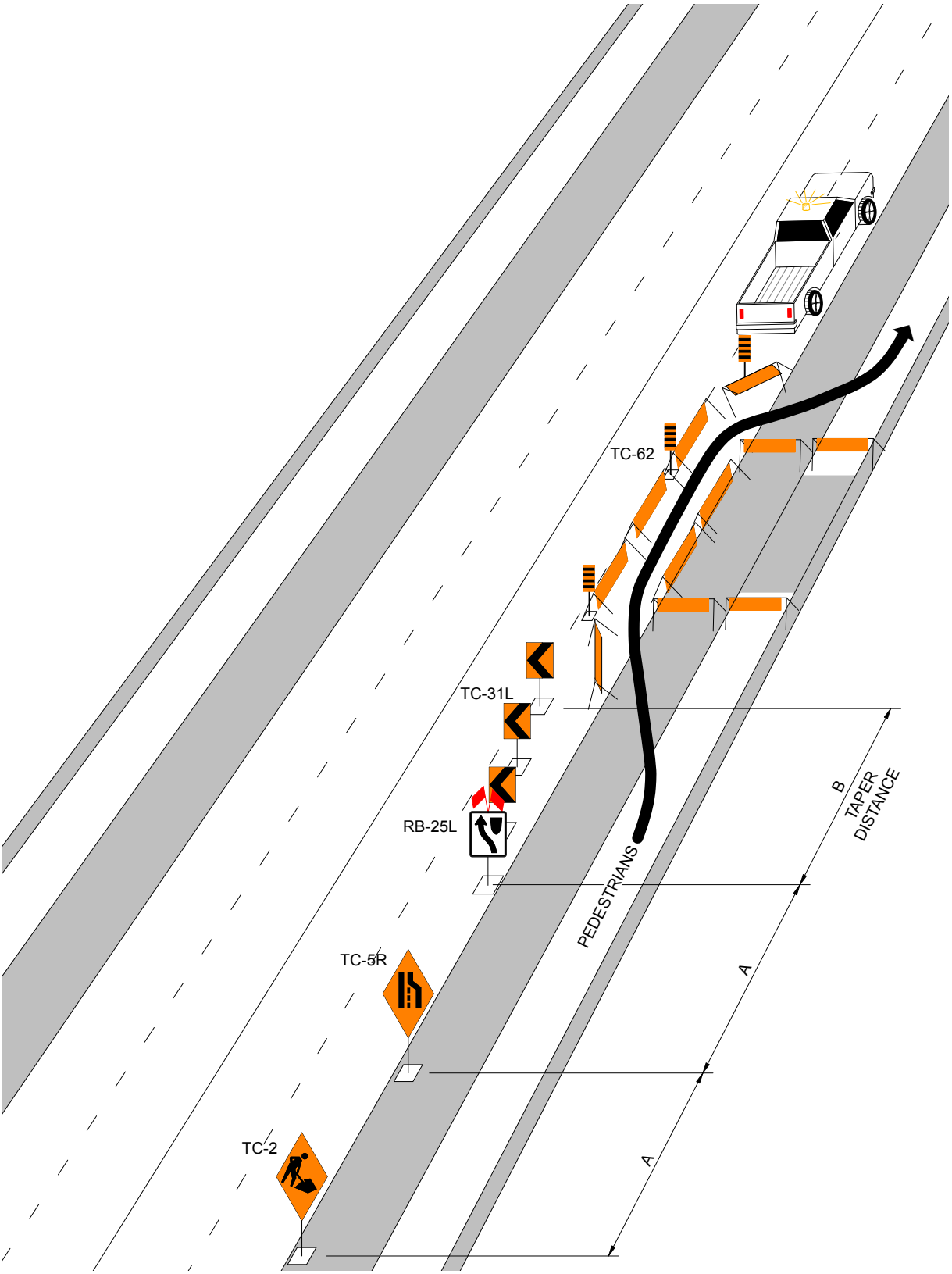
SPEED LIMIT (km/h)	"A" (m)	"B" (m)	APPROXIMATE SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
50	50	50	15
60	60	60	15
70+	100	100	30

"A" Distance between temporary traffic control devices approaching the taper.

"B" Taper length

FIGURE 30

CLOSURE OF A SIDEWALK
(DIVERSION)



CLOSURE OF A SIDEWALK
(DETOUR)
(Figure 31)

Figure 31 depicts a typical sidewalk closure due to construction or repair. Pedestrians must detour. The devices shall conform to the requirements of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

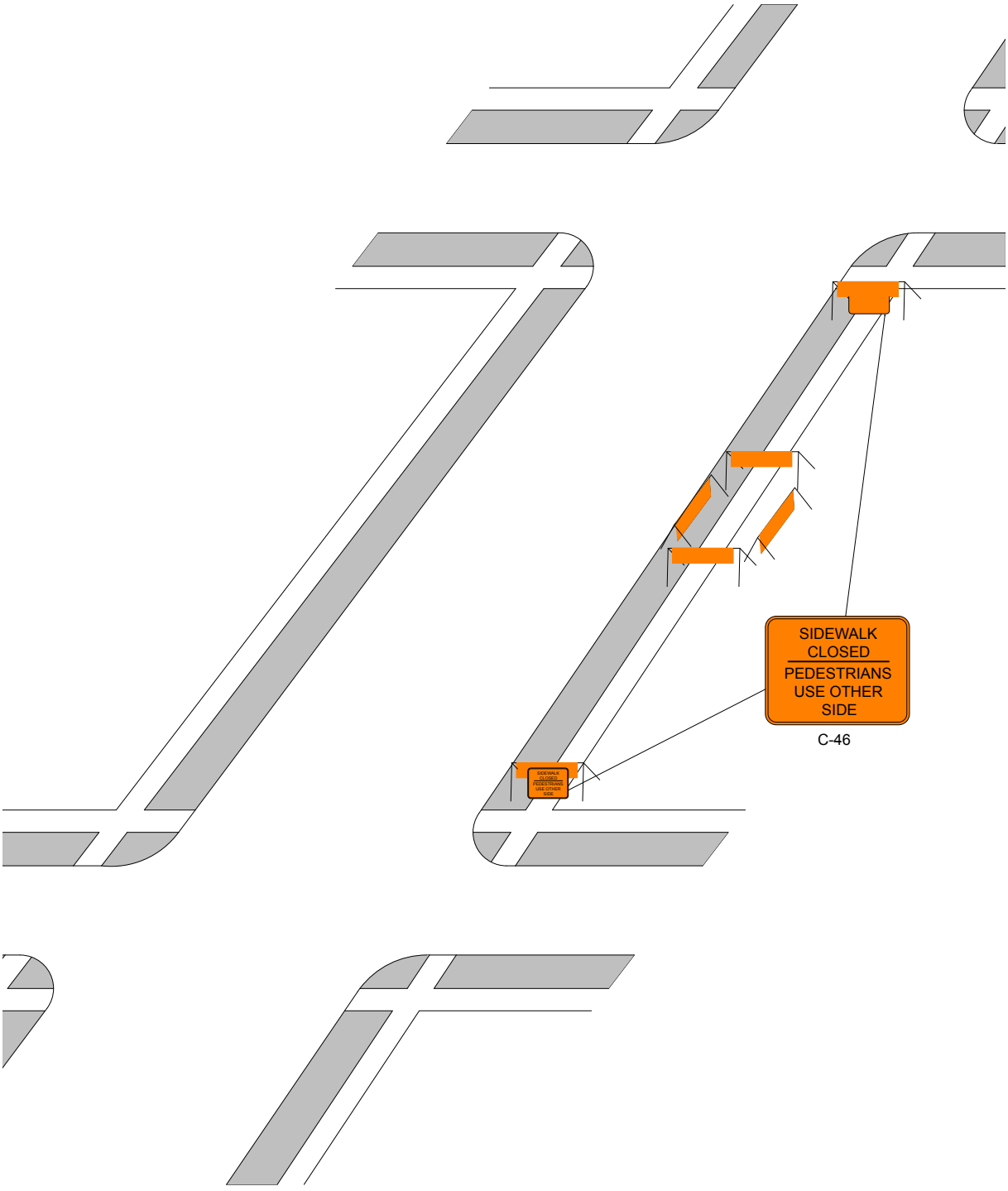
1. Barricades must be present at the work site at all times.

2. Barricades must be placed in advance of the work site at the nearest cross street in both approaching directions.

3. Signs indicating “Sidewalk Closed - Pedestrians Use Other Side” must be placed on the barricades that are placed in advance of the work site.

FIGURE 31

CLOSURE OF A SIDEWALK
(DETOUR)



PARTIAL BLOCKAGE OF A SIDEWALK
(Figure 32)

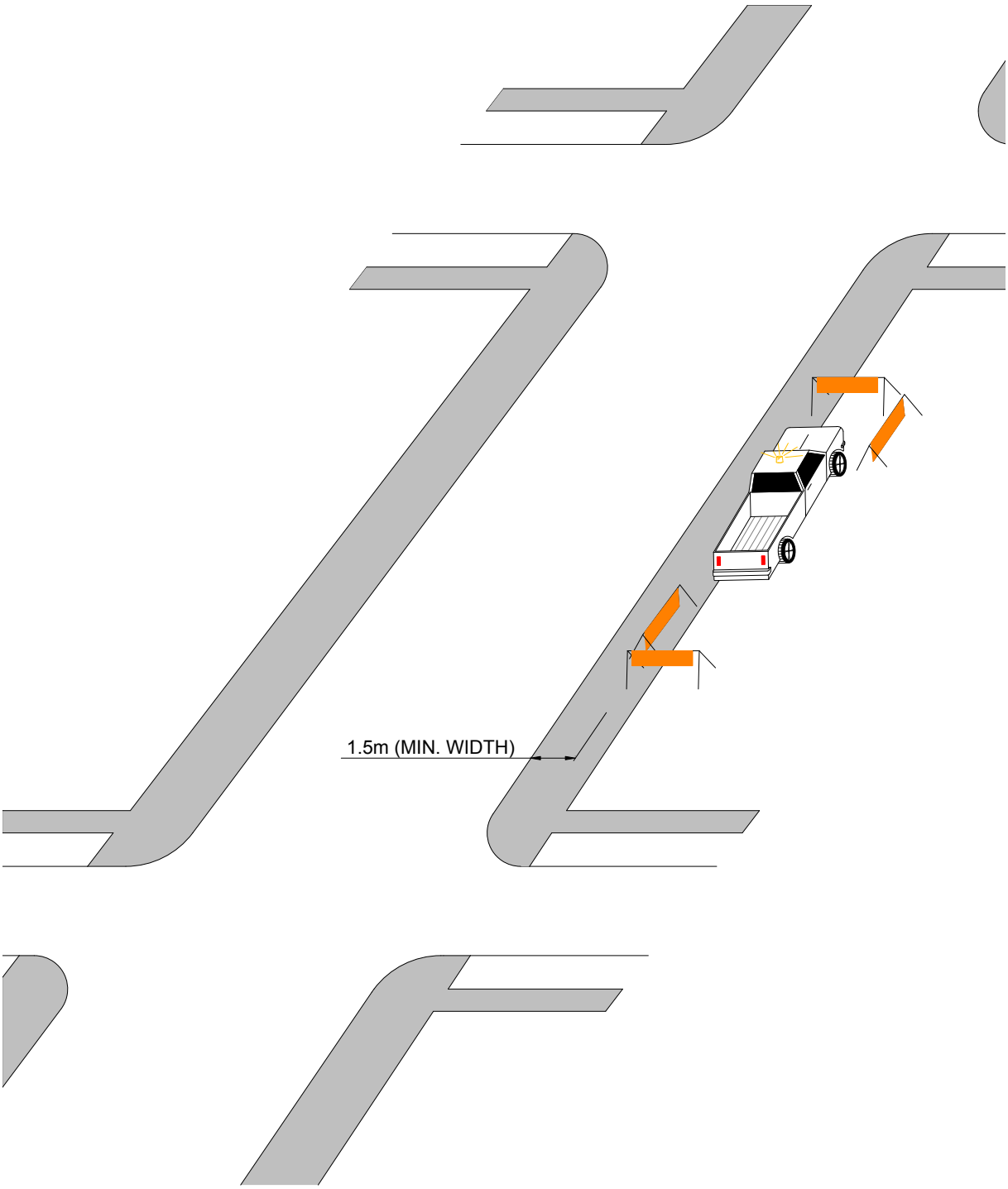
Figure 32 depicts a typical partial sidewalk blockage due to construction, repair or building maintenance. The devices shall conform to the requirements of Section 5.00 and shall be kept clean and in proper working order and the following conditions must prevail.

1. Barricades must be present at the work site at all times.

2. A minimum width of 1.5 metres must remain unobstructed on the sidewalk for pedestrians and such an unobstructed pathway must be free of any features that might endanger the free passage of pedestrians.

FIGURE 32

PARTIAL BLOCKAGE OF A SIDEWALK



MAINTENANCE OF GRANULAR SURFACE ROADWAYS
(Figure 33)

Figure 33 depicts a typical situation where maintenance is being carried out across the full width or any portion thereof of a granular surface (gravel) roadway. The Construction Agency shall place and maintain the devices as indicated in Figure 33. When the section of roadway upon which work is being carried out extends beyond 1000 metres, additional signs must be installed approximately 1000 metres from the beginning of the work site, preferably far-side of any intersecting street for both directions of travel. Any section of roadway upon which work is being undertaken must be completed by the end of the workday. The devices shall conform to the requirements of Section 5.00 and shall be kept clean and in proper working order.

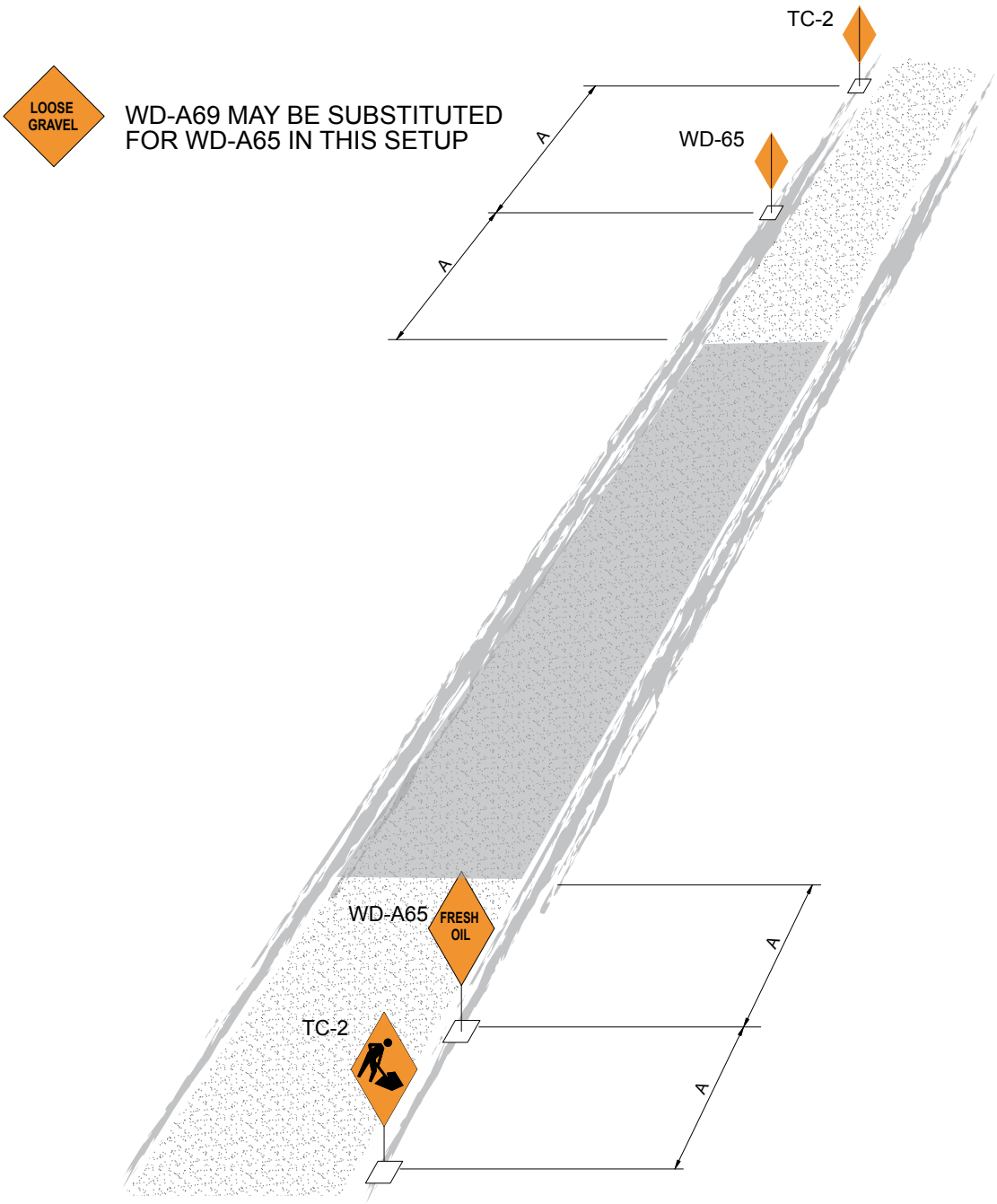
Distance A represented in Figure 33 shall be selected from the table below for the permanent posted speed limit on the highway at that point.

SPEED LIMIT (km/h)	"A" (m)
50	50
60	60
70+	100

"A" Distance between temporary traffic control devices.

FIGURE 33

MAINTENANCE OF GRANULAR SURFACE ROADWAYS

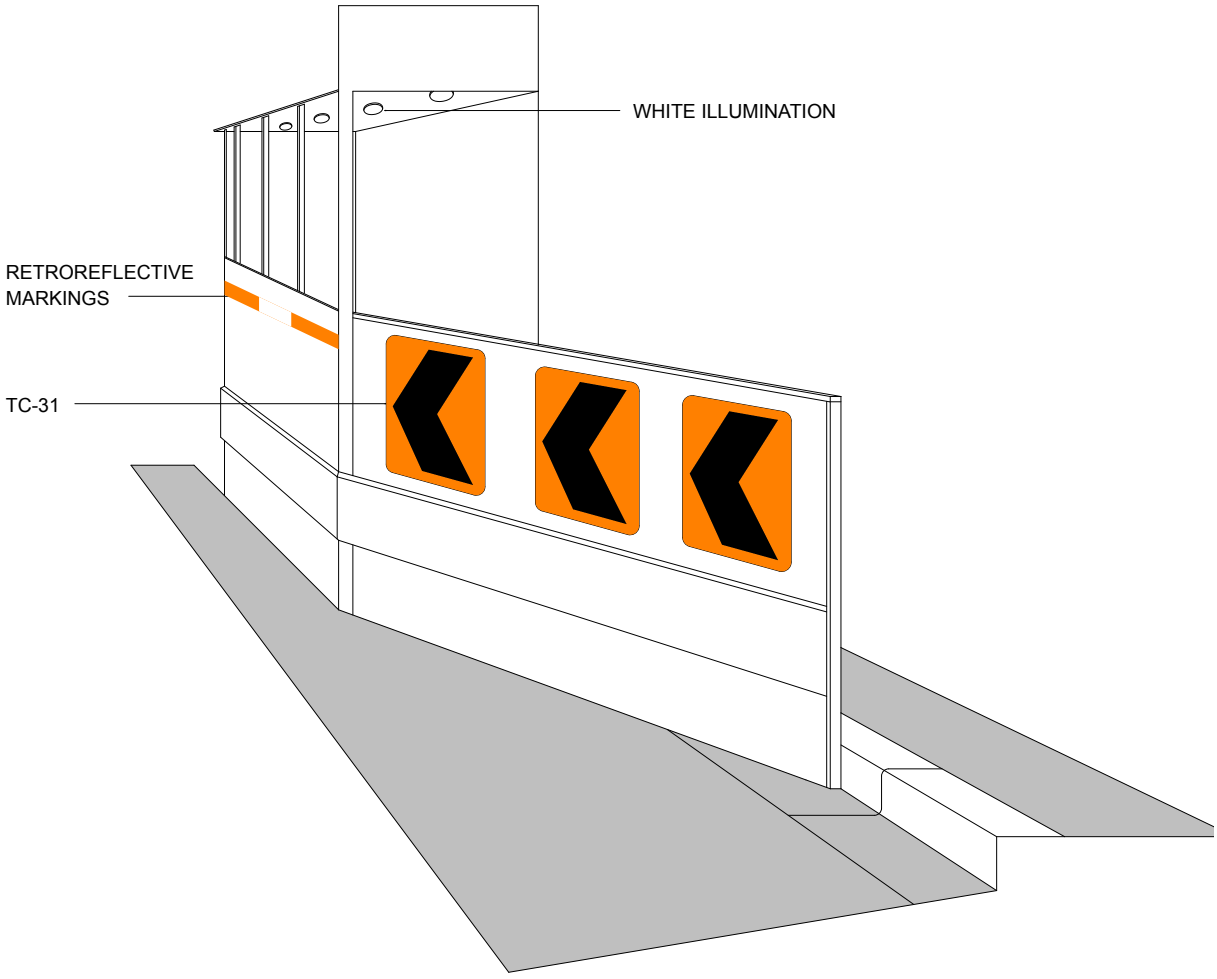


COVERED WALKWAYS
(Figure 34)

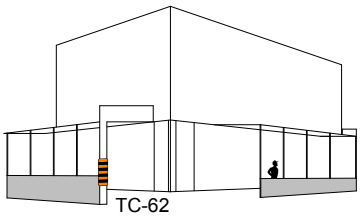
Figure 34 depicts a typical situation involving the closure of a public sidewalk due to construction or repair on adjacent private property, and its replacement with a temporary covered walkway. The necessary placements of white illumination within the covered walkway, and location of traffic control devices on the exterior of the covered walkway, are shown.The Construction Agency shall place and maintain on a 24 hour per day basis, the devices as indicated in Figure 34. The devices shall be kept clean and in proper working order. Refer to Manitoba Regulation 217/2006 for the covered walkway requirements in Manitoba , including on right-of- way in The City of Winnipeg, and general duties related to safe work procedures. Note that a Use of Street Permit is required for a covered walkway within the right-of-way.

FIGURE 34

COVERED WALKWAY ON ROADWAY



INSTALL ADVANCE SIGNING IN
ACCORDANCE WITH FIGURE 30
IN CONJUNCTION WITH
COVERED WALKWAY ON THE ROADWAY



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Appendix

List of Regional Streets

(January 2007)

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 Blvd.	Waverley Street	Lagimodiere Blvd.
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
Charleswood Bridge Crossing of Assiniboine River		
Charleswood Parkway	Assiniboine River	Grant Avenue
Chief Peguis Trail	Main Street	Henderson Highway
Colony Street	Portage Avenue	Ellice Avenue
Colony Street	St. Mary Avenue	York Avenue
Concordia Avenue	Gateway Road	Lagimodiere Blvd.
Concordia Overpass		
Cornish Avenue	Maryland Street	Sherbrook Street
Corydon Avenue	Donald Street	Roblin Boulevard
Cummberland Avenue	Maryland Street	Donald Street

Dakota Street	St. Mary's Road	Aldgate Road
Des Meurons rue	Provencher Boulevard	Marion Street
Day Street	Pandora Avenue	Regent Ave West
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
Doreen Street	Wolseley Avenue West	Portage Avenue
Dublin Avenue	Notre Dame Avenue	King Edward St.
Dublin Avenue Crossing of Omand's Creek		
Dufferin Avenue	Salter Street	McGregor Street
Dugald Road	Lagimodiere Boulevard	P.T.H. 101
Dugald Road Overpass of the CNR Line West of Terracon Place		
Dunkirk Drive	St. Vital Bridge	St. Mary's Road
Dunkirk Drive/Kingston Row/ Churchill Drive Interchange		
Eastway	Empress Street	Empress St. East
Edmonton Street	Broadway	Portage Avenue
Edmonton Street	Ellice Avenue	Cumberland Ave.
Ellice Avenue	Notre Dame Avenue	Ferry Road
Empress Street East	Doreen Street	Rapelje Avenue
Empress Street	Portage Avenue	Wellington Ave.
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 Street	Broadway	Portage Avenue
Fort Garry Bridges		
Garry Street	Broadway	Ellice Avenue
Gateway Road	Munroe Avenue	Concordia Avenue
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
Henderson Highway	Disraeli Bridge	Glenway Avenue
Henderson Highway/ Talbot Avenue Interchange		
Hespler Avenue	Redwood Bridge	Henderson Highway
Higgins Avenue	Princess Street	Louise Bridge
Inkster Boulevard	Main Street	Brookside Boulevard
Isabel Street	Notre Dame Avenue	Logan Avenue
James Avenue	King Street	Main Street
Johnson Avenue	Henderson Highway	Levis Street
Jubilee Avenue	Osborne Street	Pembina Highway
Jubilee Overpass of Pembina Highway		
Keewatin Street	Notre Dame Avenue	Old Commonwealth Path
Kenaston Boulevard	Scurfield Boulevard	St. James Bridge
Kenaston Boulevard/ St. James Bridge Interchange		
Kennedy Street	Cumberland Avenue	Ellice Avenue
Kennedy Street	Portage Avenue	Broadway
Kildonan Settlers Bridge		
King Street	Smith Street	Higgins Avenue
King Edward Street E.	St. Matthews Avenue	King Edward Street
King Edward Street	King Edward Street E.	Oak Point Highway
King Edward Street Crossing of Omand's Creek		
Kintyre Street	St. James Bridge	Portage Avenue
Lagimodiere Blvd.	John Bruce Road	North City Limit
Lagimodiere Boulevard/ 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		

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
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
Memorial Boulevard	York Avenue	Portage Avenue
Midtown Bridge		
Midwinter Avenue	Henderson Highway	Stadacona Street
Mission Street	Plinguet Street	Panet Road
Mountain Avenue	Main Street	McPhillips Street
Moray Street	Assiniboine River	Ness Avenue
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	St. Charles Street
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	P.T.H. 59

Princess Street	Notre Dame Avenue	Higgins Avenue
Provencher Blvd.	Archibald rue	Provencher Bridge
Provencher Boulevard 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	Redwood Bridge
Redwood 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. 100
Route 90/165 Ext.	Scurfield Boulevard	Waverley Street
St. Anne's Road	St. Mary's Road	Forbes Road
St. James Bridges and Interchange		
St. James Street	Portage Avenue	Notre Dame Avenue
St. Mary Avenue	Main Street	Spence Street
St. Mary's Road	Red River	Red River Floodway
St. Vital Bridges		
Salter Street	Logan Avenue	Leila Avenue
Sargent Avenue	Ferry Road	Edmonton Street
Saskatchewan Avenue	P.T.H. 101	Sturgeon Road
Selkirk Avenue	McPhillips Street	Main Street
Shaftesbury Blvd.	Wilkes Avenue	Corydon Avenue
Sherbrook Street	Maryland Bridge	Logan Avenue
Silver Avenue	Sturgeon Road	Hamilton Avenue
Silver Avenue	Century Street	St. James Street
Slaw Rebchuck Bridge		
Smith Street	Midtown Bridge	Notre Dame Avenue
Spence Street	St. Mary Avenue	Portage Avenue
Springfield Road	Henderson Highway	Lagimodiere Blvd.
Stadacona Street	Louise Bridge	Talbot Avenue
Stafford Street	Pembina Highway	Academy Road
Sterling Lyon Parkway	Wilkes Avenue	McCreary Road/ Shaftesbury Boulevard
Stradbrook Avenue	Wellington Crescent	Queen Elizabeth Way
Sturgeon Road	Portage Avenue	North City Limit
Sturgeon Road Crossing of Sturgeon Creek		

Tache Avenue	St. Mary's Road	Provencher Boulevard
Talbot Avenue	Riverton Avenue	Stadacona Street
Taylor Avenue	Pembina Highway	Kenaston Boulevard
Tuxedo Avenue	Kenaston Boulevard	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
Water Avenue	Main Street	Provencher Bridge
Waterfront Drive	Pioneer Avenue	York Avenue
Watt Street	CPR Keewatin Subdivision	Munroe Avenue
Waverley Street	Grant Avenue	P.T.H. 100
Wellington Avenue	Winnipeg International Airport	Empress Street
Wellington Crescent	Academy Road	River Avenue
Westbrook Street	Water Avenue	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 Boulevard	Provincial Trunk Highway No. 100
William Avenue	Main Street	McPhillips Street
York Avenue	Colony Street	Waterfront Drive
Youville Street	Goulet Street	Marion Street