

BY-LAW NO. 4416/86

A By-law of The City of Winnipeg to amend
The City of Winnipeg Streets By-law No.
1481/77.

THE CITY OF WINNIPEG in Council assembled, enacts
as follows:

1. Section 4.13.03 of By-law No. 1481/77 of The City
of Winnipeg is repealed and the following substituted therefor:

"4.13.03

(a) There is hereby adopted as part of
this by-law the document entitled 'Manual
of Temporary Traffic Control in Work Areas
on City Streets' and identified by the
signature of the City Clerk of The City of
Winnipeg.

(b) Any person undertaking authorized work
of any form within a street or in any way
interfering with or obstructing the normal
use of a street shall place and maintain tem-
porary traffic control devices and barricades
as prescribed in the Manual of Temporary
Traffic Control in Work Areas on City Streets;
or as directed by the Commissioner."

2. Schedule "D" of By-law No. 1481/77 is hereby
repealed.

DONE AND PASSED in Council assembled this 24th
day of September A.D. 1986.

Certified as to form:

W. J. Stuebel
for City Solicitor

[Signature]
Mayor

Maryl H. McCullough
City Clerk

Certified as to details:

[Signature]
Director (Acting)
Streets and Transportation

MANUAL OF TEMPORARY TRAFFIC CONTROL IN WORK AREAS ON CITY STREETS



**THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION**

(SEAL)
(Sgd.) Meryl G. McCullough
City Clerk
THIS IS THE DOCUMENT REFERRED
TO IN SECTION 4.13.03 OF THE
STREETS BY-LAW AND IN SECTION
16(1) OF THE TRAFFIC BY-LAW.

**METRIC EDITION
1985**

MANUAL OF TEMPORARY TRAFFIC CONTROL

IN WORK AREAS ON CITY STREETS

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MANUAL OF TEMPORARY TRAFFIC CONTROL

IN WORK AREAS ON CITY STREETS

1.00 INTRODUCTION

1.01 Purpose

It is the purpose of this Manual to ensure safe conditions for motorists, pedestrians, and workmen in areas on the City of Winnipeg Street System where unusual and temporary conditions prevail for periods of time due to work being undertaken. This purpose can be achieved by faithful observance of adequate and uniform standards of traffic control, and methods of work-area enclosure. Such standards are set forth in this Manual.

1.02 Scope

The Manual includes the general principles and detailed methods of providing for the safe and convenient movement of vehicular and pedestrian traffic on all streets in the City of Winnipeg where normal operation are not possible due to work on that street. The responsibilities of any Department of the City, public utility or Construction Agency responsible for the work or undertaking the work and the Works and Operations Division of the City of Winnipeg in this connection are clearly defined herein.

The methods of traffic control and work area enclosure described in the Manual take full advantage of recent improvements in traffic control devices for these purposes. The devices conform with the general principles of the Manual on Uniform Traffic Control Devices for Canada and rely largely on the use of symbols in traffic signs. In many cases this now allows the presentation of information to motorists which was not previously possible with written message.

Typical traffic control and work area enclosure arrangement are illustrated in the Manual. The devices utilized and their placement were chosen to give adequate warning to the approaching motorist and to provide him with sufficient information to enable safe and convenient travel through the work area. Methods are also provided to ensure adequate provision for the requirements of pedestrians on City streets.

Definite rules, methods and procedures are specifically set out in the Manual, and it is expected that they will be sufficient for most circumstances. It is recognized, however, that there will be occasions when they will prove either inadequate or inapplicable. For such situations, general guidelines have been set out to be used in coping with peculiar or unusual circumstances. In all cases, it shall be understood that the safety and convenience of highway users is to be a principal goal.

1.03 Interpretations

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

(1) "Agency" or "Construction Agency" shall mean the contractor or other person who is responsible for the undertaking of work on any section of the City of Winnipeg street system.

(2) "Information and Warning Devices" shall mean all signs which convey warning or essential information to the highway user as specified in this Manual and shall include such devices as flashers, traffic cones, and any other device of a similar nature which is approved herein for use on the street for this purpose.

(3) "Regulatory Signs" shall mean those signs which inform highway users of certain laws or regulations, the violation of which would constitute a misdemeanor.

1.04 Revisions

The Manual will be revised at any time that a clear need arises. Any suggestions for revision or improvement should be submitted in writing to the Director of the Street and Transportation Department of the City of Winnipeg.

1.05 Seminars

The Streets and Transportation Department is prepared to conduct seminars on The Manual of Temporary Traffic Control. To make the necessary arrangements, telephone Traffic Services at 284-6930, Ext. III.

2.00 AUTHORITY & RESPONSIBILITY

2.01 General Authority

The Highway Traffic Act of the Province of Manitoba assigns to the City of Winnipeg the authority to regulate traffic movement as it deems necessary under the circumstances, on any public street in the City of Winnipeg upon which public or private works are taking place. The City of Winnipeg Traffic By-law authorizes the Commissioner of Works and Operations to place and maintain or cause to be placed and maintained temporary traffic control devices to prohibit or regulate traffic for this purpose. Compliance with the contents of this Manual of Temporary Traffic Control In Work Areas on City Streets (hereinafter referred to as the Manual) is a requirement of the City of Winnipeg Traffic By-law and City of Winnipeg Streets By-law. All measures of traffic control and work site enclosure shall be undertaken in conformance with the Manual. Any failure to comply with the Manual shall be deemed to be a violation of the above-named By-laws.

2.02 Responsibilities of the Works and Operations Division

Any Department of the City or public utility which is responsible for the accomplishment of particular works in city streets has the responsibility to establish, maintain and enforce the prescribed standard of care in the conduct of these works, irrespective of whether the works are undertaken by a private contractor or by the staff of said Department or utility.

The Streets and Transportation Department is available for consultation and advice concerning appropriate traffic control and work site enclosure, and will be responsible for placing and maintaining all regulatory signs and any traffic control signals in connection with work activities on streets in the City of Winnipeg. Work pertaining to regional streets will be reviewed by the Streets and

Transportation Department. More specifically, the functions of the Streets and Transportation Department are:

- (i) To examine the plans prepared by the Department or public utility responsible for the accomplishment of the works or by the Construction Agency prior to commencement of the work.
- (ii) To discuss with the responsible Department, public utility or Construction Agency, the work schedule; the necessary measure of traffic control, warning, guidance and information signing; and of work site enclosure.
- (iii) To give consideration to the necessity of providing a detour route or of limiting part or all of the work to other than normal working hours.
- (iv) To issue the following permits:
 - Use of traffic lanes on regional streets.
 - Hooding or temporary removal of parking meters.
 - Hoarding permits on all streets.

(All Street Cut Permits will be issued by the appropriate District Engineer with liaison with the Streets and Transportation Department where there is reason to expect significant traffic impact.)
- (v) To place and maintain all regulatory traffic control signs and signals deemed necessary by the Streets and Transportation Department.

2.03 Responsibilities and Procedures of Construction Agencies

The Construction Agency will be responsible for the placement and maintenance 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. This responsibility will apply to all Agencies undertaking work on all streets in the City of Winnipeg. These responsibilities shall generally include the following:

- (i) To secure the necessary permit(s).
- (ii) To place and maintain the appropriate signs and barricades as specified in this Manual and/or in the Permit issued by the City.
- (iii) To provide for the safety and convenience of motorists and pedestrians.
- (iv) To provide for the safety of the worker by ensuring the wearing of a CSA approved safety helmet and reflectorized vest when working on city streets.
- (v) To ensure that all traffic control devices are removed from the street whenever, and as soon as they are no longer appropriate.
- (vi) To reimburse the City for all costs incurred arising from placement of traffic control devices by the Streets and Transportation Department at or adjacent to the work site, in connection with works undertaken by the Agency.

When an Agency is to undertake, or is undertaking work on regional streets in the City of Winnipeg, the responsibilities of the Department or public utility responsible for the accomplishment of the works, and of the Agency shall include the following:

- (i) To discuss with the Streets and Transportation Department the scope, schedule, procedures and street use associated with the work prior to commencement.
- (ii) To review with the Streets and Transportation Department 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 and pedestrians.
- (iii) To review with the Streets and Transportation Department the necessary work site enclosure techniques.
- (iv) To provide advance notice to the Streets and Transportation Department in respect to all changes in traffic control and to ensure that the Department is aware of the progress of the work.

Those works undertaken on regional streets in the City of Winnipeg which do not involve the tearing up, removal or replacement of curbing, sidewalk, pavement, or other road surface shall not generally require prior consultation with the Streets and Transportation Department before commencement of the work. However, in the placement of traffic control devices and barricades, the Agency involved in such work shall conform with the intent and requirement of the Manual.

3.00 PLANNING & LIAISON

3.01 Joint Planning

Prior to securing a Streets Permit to excavate, tear up, or remove any pavement, curbing or other road surface on a regional street, the Agency will undertake to contact the Streets and Transportation Department. This contact will include a full discussion of the scope and scheduling of the construction or repair work involved and will include joint planning of the necessary traffic control and work site enclosure methods. The Streets Permit will not be issued to the Agency until such time as the planning phase has been completed. This allows for the preparation of traffic control devices both by the Agency and by the Streets and Transportation Department and can ensure that upon commencement of the work, the proper methods and procedures are undertaken at the outset. The joint planning procedure may include any or all of the following considerations:

- (i) A detailed discussion of the intended work in order to review the influence of this work upon normal traffic operations on the streets. This review may indicate the need to reschedule the work to minimize the disruption and hazard to users of the street(s).
- (ii) In cases where it is necessary to close a street to either direction of vehicular traffic, the Permit may not be issued for approximately three weeks after conclusion of the joint planning function. This time period can be required to permit preparation and publicity for major traffic detours.
- (iii) Not less than 24 hours advance notification of the time and date of commencement of work is to be given by the Agency to the City of

Winnipeg Fire and Police Departments and, for work on regional streets, to the appropriate officer of the Streets and Traffic Branch and to the District Engineer for work on non-regional streets.

3.02 Emergency Work

In connection with an emergency situation on a street, the existence of which includes an element of public hazard, it shall be clearly understood that the Agency responsible for the repair function has the authorization to enter upon the site immediately and commence elimination of the public hazard. However, this authorization bears the following conditions which must also be carried out immediately. The conditions are the requirement to notify the authorities listed below:

- (i) The City of Winnipeg Emergency Services (786-8411)
- (ii) The City of Winnipeg Police Department.
- (iii) The City of Winnipeg Streets and Transportation Department (284-6930, Ext. 111 or 112) when the work occurs on a regional street, and the office of the appropriate District Engineer when the work occurs on a non-regional street.
- (iv) The City of Winnipeg Transit Department (284-6930). Outside of the normal working hours of the Streets and Transportation Department and the Transit Department, it will be sufficient to notify the staff of the Communication Centre in the Transit Department (284-6930, Ext. 133). In all other respects the intent and requirements of the Manual shall apply.

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

Under certain circumstances it may prove necessary to undertake part or all of the work during night hours, on Sunday, or on a public holiday. Such requirement would normally occur only where the work would cause extreme disruption of vehicular or pedestrian traffic operations during normal working hours. Work may only be undertaken during night hours, Sundays, or public holidays if allowed by the City of Winnipeg Police Department.

4.00 FIELD PRACTICES

4.01 Introduction

This section prescribes the types of devices for traffic control and work site enclosure that are to be used on streets in the City of Winnipeg and the manner in which they must be used. Included are a number of drawings which illustrate typical arrangements of proper traffic control measures designed to cope with those circumstances most frequently encountered in work being undertaken on City streets. It is to be understood that the Agency responsible for the work shall conform with the specifications in this section, and shall be allowed to depart therefrom only if the departure is clearly specified in the Permit. It is to be noted that the Streets and Transportation Department will undertake placement and removal of all regulatory traffic control signals and signs.

The traffic control signs and barricades and their prescribed usage provide information to the driver and pedestrian using the street under the abnormal conditions resulting from public or private works. The requirements set out herein give full consideration to the characteristics of major traffic movements which occur on major streets, including the special requirements of motorists on streets and highways under night-time conditions and inclement weather.

4.02 Basic Requirements of the Highway User

The traffic control and work site enclosure methods prescribed herein are designed to meet the needs of the highway user in situations which result from construction and repair operations. To be adequate, information related to the following factors must be displayed by the Agency on all approaches to the work site:

- (i) The fact that work is being undertaken on the highway ahead.
- (ii) The intended traffic diversion.
- (iii) Confirmation that the motorist is properly following the diversion.
Traffic control and information signing along the diversion will be undertaken by the Streets and Transportation Department.
- (iv) End of construction area and/or diversion.
- (v) Any other information required to safely guide the motorist through or around the work site.
- (vi) The boundaries of the work site.
- (vii) The name and emergency telephone number of the Agency undertaking the work. (This information will be prominently placed by the Agency at the work sites).

Speed Limits and Warning Sign Spacing

In suburban areas of the City, higher vehicular speeds are permitted on major streets which require more advanced warning of construction sites than is the case where lower speed limits exist. Section 4.03 includes a series of sketches illustrating "typical situations" and with each sketch, a distance table is provided

setting forth the dimensions which are to be used in the placement of signs and barricades on the approaches to a construction site. These tables set forth specific requirements in speed ranges of 50 kilometres per hour, 60 kilometres per hour, and 70 kilometres per hour and higher. In some instances, it may be necessary to utilize signs which are larger than the minimum sizes specified in Section 5.00.

Work Site Illumination

Where diversions or detours are undertaken on streets without street lighting or with low levels of street lighting, it will be necessary to utilize the device known as the delineator. This device delineates the edges of the usable roadway for motorists, under conditions of poor visibility. It is illustrated in Section 5.00.

It may also be deemed necessary that the Agency arrange for the illumination of the work site during hours of darkness. In all cases where there is no street lighting or there is a low level of street lighting, and when large objects or items of equipment are left on the highway during hours of darkness, the Agency shall adequately illuminate in white light the object or equipment and the immediate surrounding area. The light sources shall be suitably shielded to overcome glare so that the motorists' vision is not impaired.

There shall be no light source placed by the Agencies within or adjacent to the work site which utilizes a colour other than white or amber. White light shall be the only colour utilized for general illumination of the work site. All light sources used for delineation of the edge of the usable roadway or the boundaries of the work site shall be amber in colour.

Position of Barricades

The placement of barricades and portable flashers shall generally be in the manner indicated in the sketches of "Typical Situations and Proper Measures" in Section 4.03, and the barricades and flashers will conform with the specifications set out in Section 5.03. The enclosure of the work site using barricades will be as complete as possible to ensure that motorists and pedestrians are adequately advised of the boundaries of the work site. When barricades are removed to permit access to/egress from the work site for vehicles or equipment, the barricades shall be replaced immediately after such access/egress has occurred.

Position of Construction Equipment

The location of equipment, material, construction vehicles, and personnel shelters within the work site shall not interfere with the visibility of motorists and pedestrians. The parking of vehicles shall not contravene any section of the Highway Traffic Act of the Province of Manitoba or of the City of Winnipeg Traffic By-law.

Maintenance of Traffic Control Devices

It is the responsibility of the Agency to undertake regular maintenance of the warning and information signs and devices and barricades to ensure that they are clean, legible, and in their proper place at all times. The Agency shall also undertake to remove signs and devices from the work site as soon as circumstances permit in order to restore the highway to public use as soon as possible, having due regard for the safety of pedestrians and motorists and the specific requirements set out in the Manual.

Removal of Curb Parking

The Agency will be responsible for undertaking the prohibition of parking on short sections of a block by using closely spaced traffic cones on the roadway adjacent to the curb. Such prohibition of parking involving a complete block or more will be undertaken by the Streets and Transportation Department at the request of the Agency, when required. The Streets and Transportation Department is to be notified by the Agency upon completion of the work in order to restore parking where necessary.

Removal of Traffic Control Devices

In some cases the diversion or detour will be in operation only during certain hours of the day and the section of highway on which work is taking place will be restored to normal public use at other times. It is essential that all the devices which are not applicable when the highway is restored to public use be either removed from the motorists' view or covered in such manner that they are not visible to motorists.

4.03 Typical Situations and Proper Measures

There are a number of factors that relate directly to the task of driving safely. Among these are such matters as traffic lane width, design of transition sections approaching an obstruction, posting of relevant information, and the spacing of signs.

Traffic Lanes and Required Clearance

A traffic lane on a major thoroughfare shall normally be 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 width of lane. A motorist requires a clearance of approximately 1.5 m on each side of his vehicle to drive with a sense of safety at 50 kilometres per hour. Therefore, the placement of large objects

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 shall be provided whenever possible.

Traffic Channelization

In the enclosed drawings of "typical situations" a line of traffic control devices is placed to channelize and guide traffic past all roadway obstructions. This line will be tapered over the appropriate distance indicated in the associated distance table. This distance is sufficient to allow a motorist to move aside to pass the obstruction safely and conveniently at the highest associated speed shown in the distance table under normal traffic flow conditions.

In heavier traffic flow, a driver cannot observe in advance, through the vehicles preceeding him, the details of the obstruction on the road ahead or its location on the road. The driver is, therefore, unable to select the proper traffic lane in which to by-pass the obstruction. To overcome this problem, high-level warning devices (red or orange warning flags) are to be employed as indicated in the drawings of "typical situations", one such installation in each of the traffic lanes that is obstructed.

Movement of Construction Equipment in Work Site Area

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. Under conditions of heavy traffic flow, a flagperson will be required for this purpose.

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BLOCKAGE OF CENTRE LANE OR LANES OF A DIVIDED HIGHWAY
(Figure 1)

Figure 1 depicts the typical situation where the centre lanes of a divided highway are blocked and utilized for purposes of construction or repair. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 1. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 1 shall be selected from the table below for the maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

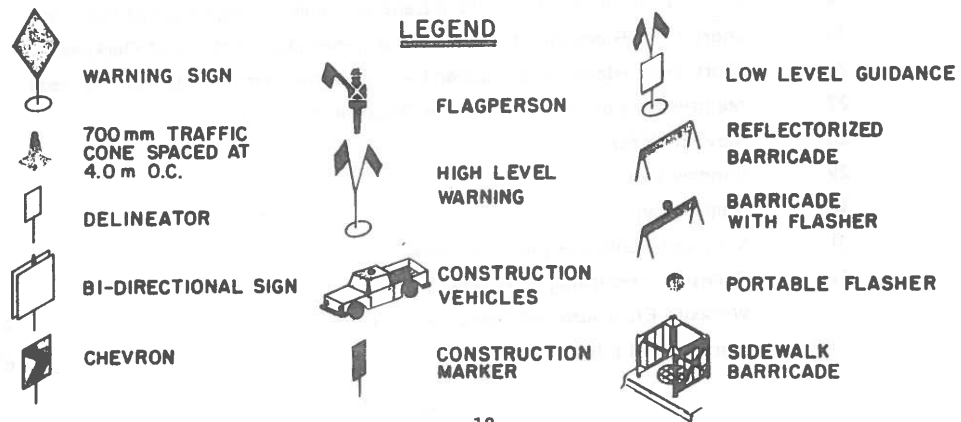
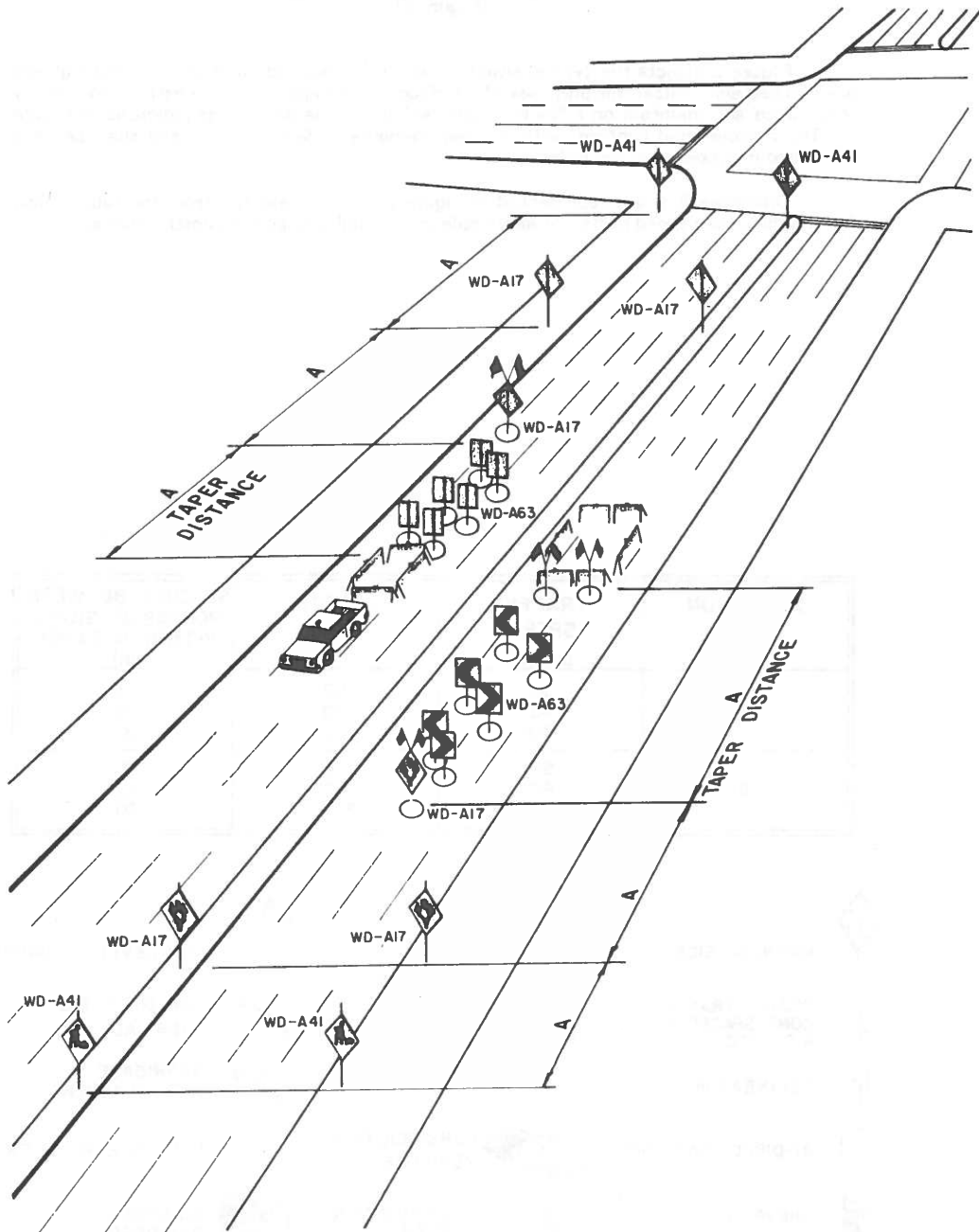


FIGURE 1



BLOCKAGE OF OUTSIDE LANE OR LANES OF A DIVIDED HIGHWAY
(Figure 2)

Figure 2 depicts the typical situation where the outside lanes of a divided highway are blocked and utilized for purposes of construction or repair. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 2. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

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

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

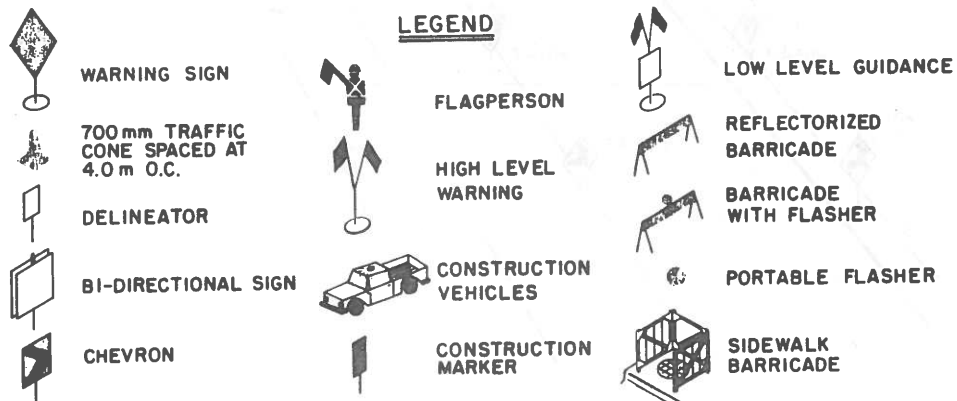
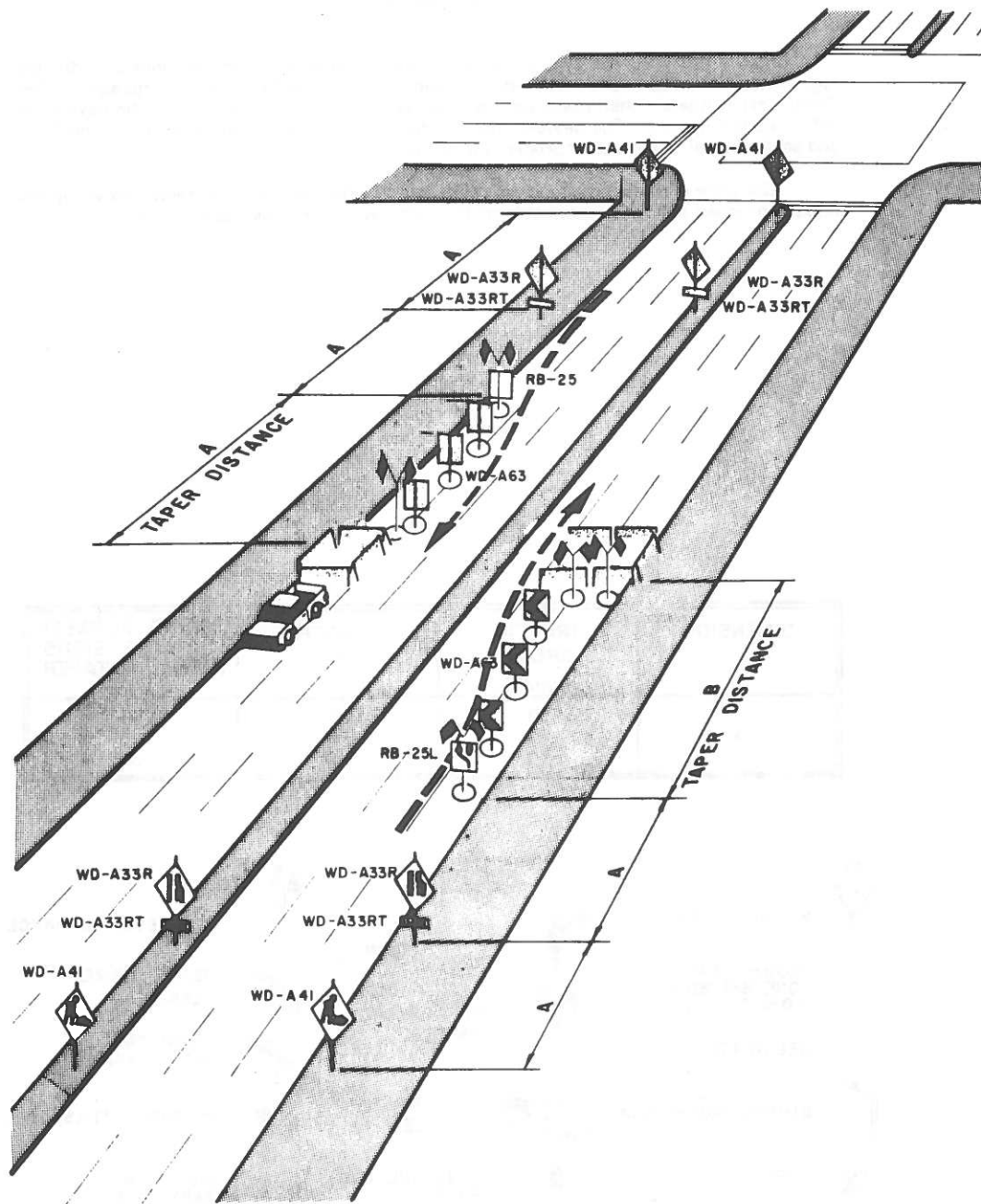


FIGURE 2



BLOCKAGE OF MEDIAN LANE OR LANES OF A DIVIDED HIGHWAY
(Figure 3)

Figure 3 depicts the typical situation where one or both median lanes on a divided highway are blocked and utilized for purposes of construction or repairs. 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 with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 3 shall be selected from the table below for the maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

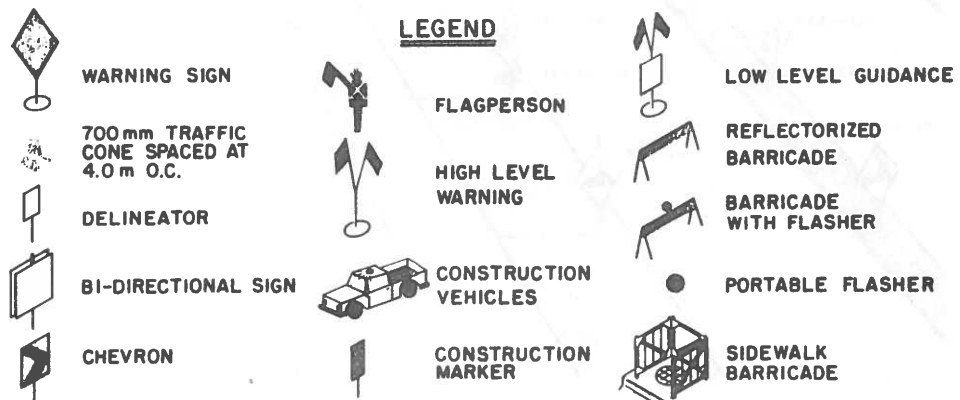
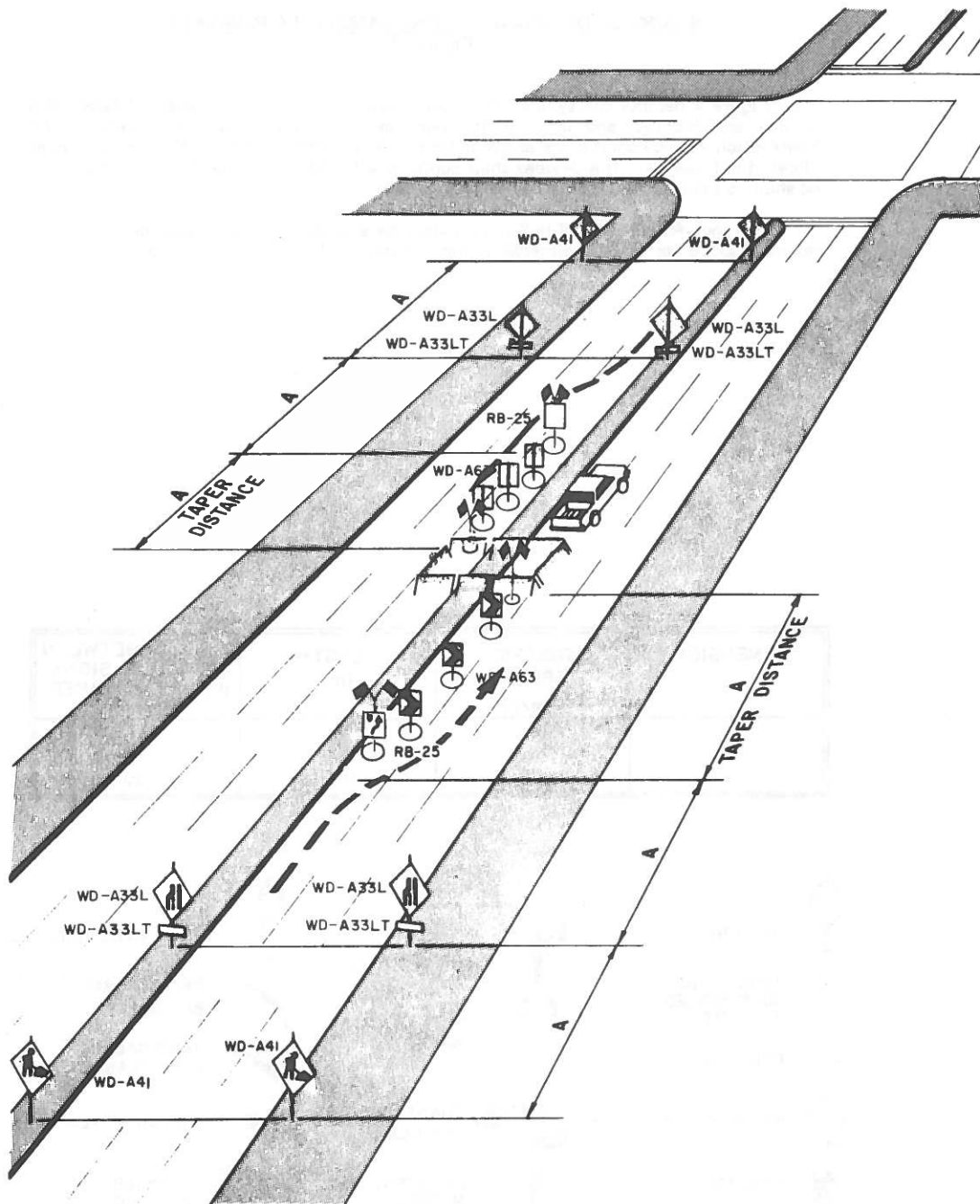


FIGURE 3



BLOCKAGE OF NON-ADJACENT LANES ON A ROADWAY
(Figure 4)

Figure 4 depicts the typical situation where a number of non-adjacent lanes on a roadway are blocked and utilized for purposes of construction or repairs. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 4. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 4 shall be selected from the table below for the maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

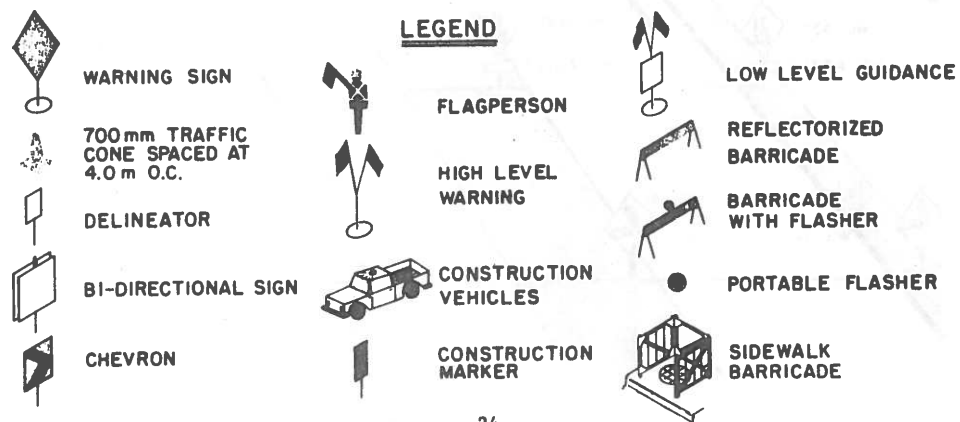
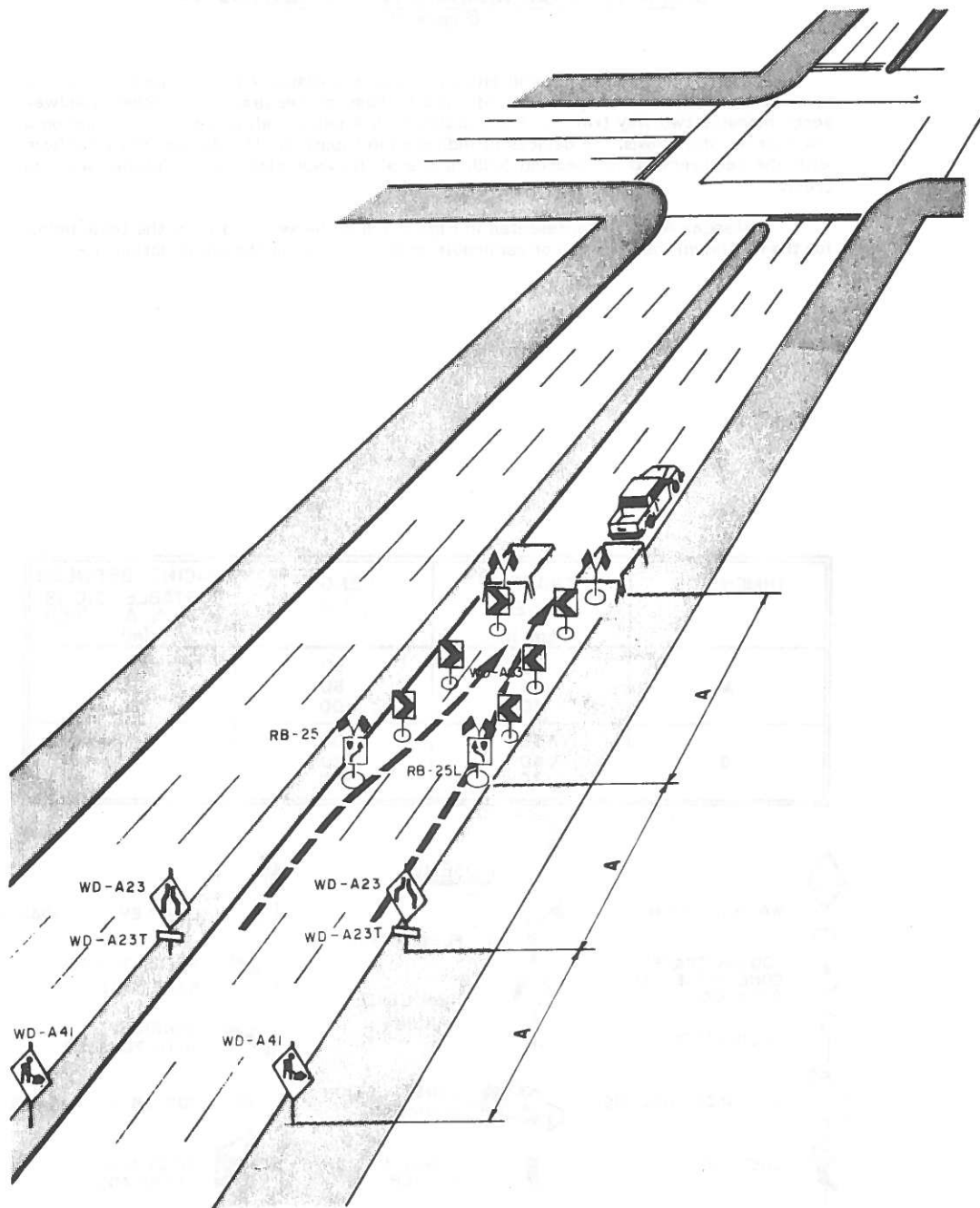


FIGURE 4



BLOCKAGE OF ONE ROADWAY OF A DIVIDED HIGHWAY
(Figure 5)

Figure 5 depicts the typical situation where a roadway of a divided highway is blocked and utilized for purposes of construction or repairs. The other roadway accommodates two-way traffic. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 5. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 5 shall be selected from the table below for the maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	
	60	120	
	70+	200	

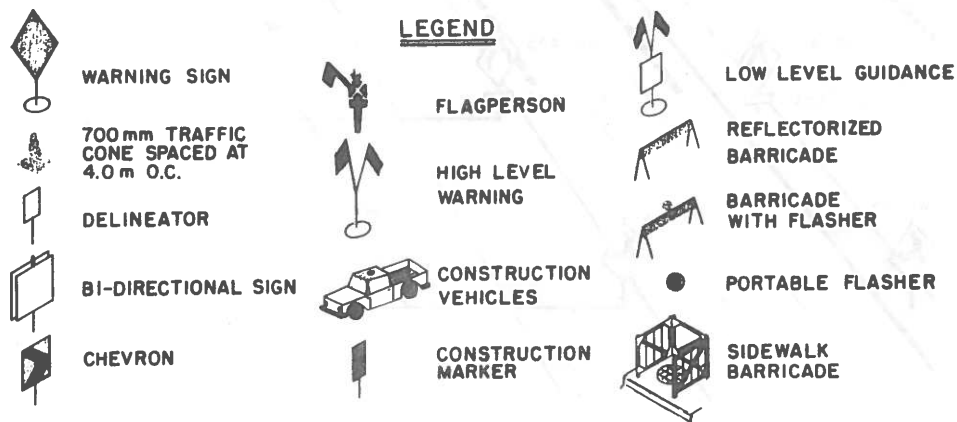
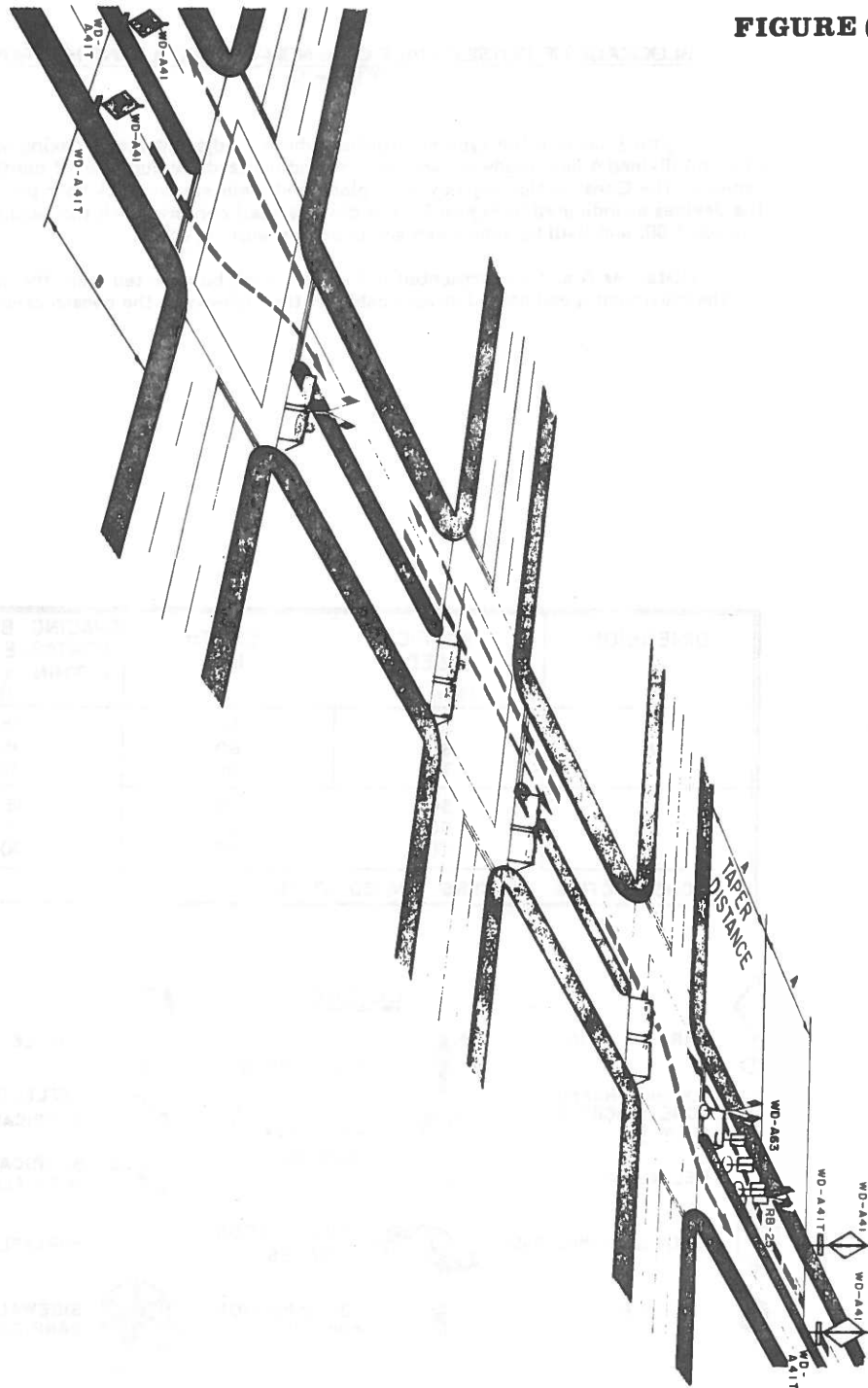


FIGURE 5



BLOCKAGE OF OUTSIDE HALF OF A NON-DIVIDED 4 LANE HIGHWAY
(Figure 6)

Figure 6 depicts the typical situation where 2 adjacent lanes making up one half, of a non-divided 4 lane roadway, are blocked and utilized for purposes of construction or repairs. 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 with 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 maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

CONSTRUCTION MARKERS SPACED AT 15 m

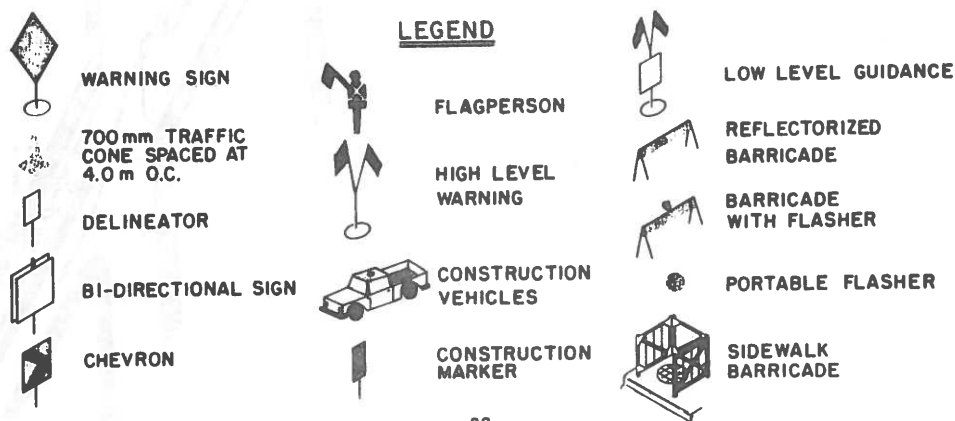
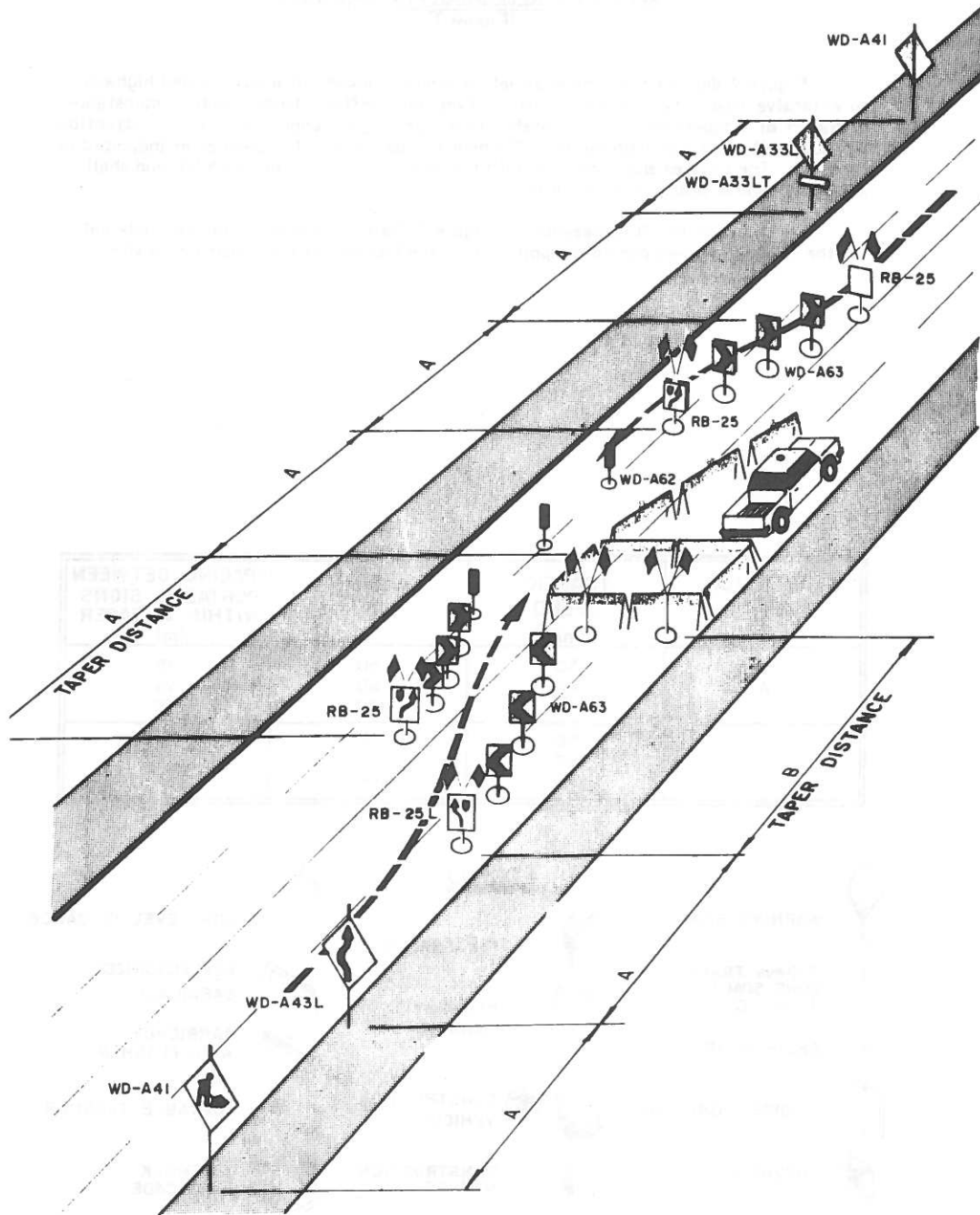


FIGURE 6



BLOCKAGE REQUIRING FLAGPERSONS
(Figure 7)

Figure 7 depicts the typical situation where blockage of a non-divided highway is so extensive that only 1 lane remains for two-way traffic. Under such circumstance, provision of flagpersons by the Construction Agency is mandatory. 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 with 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 maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

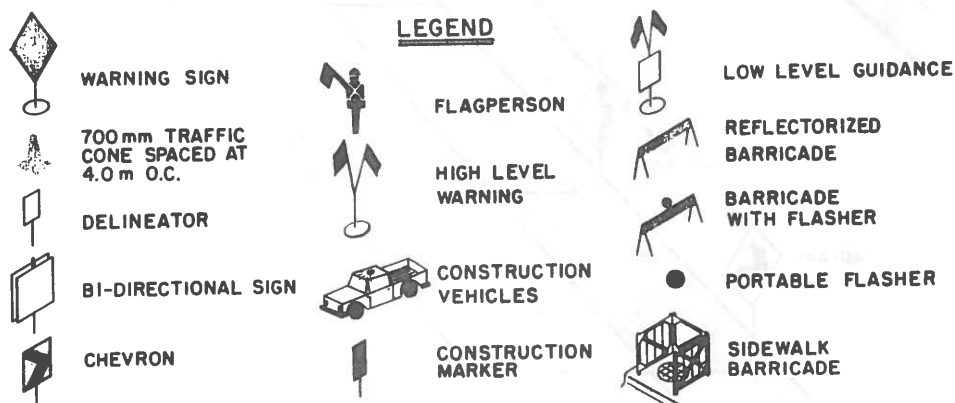
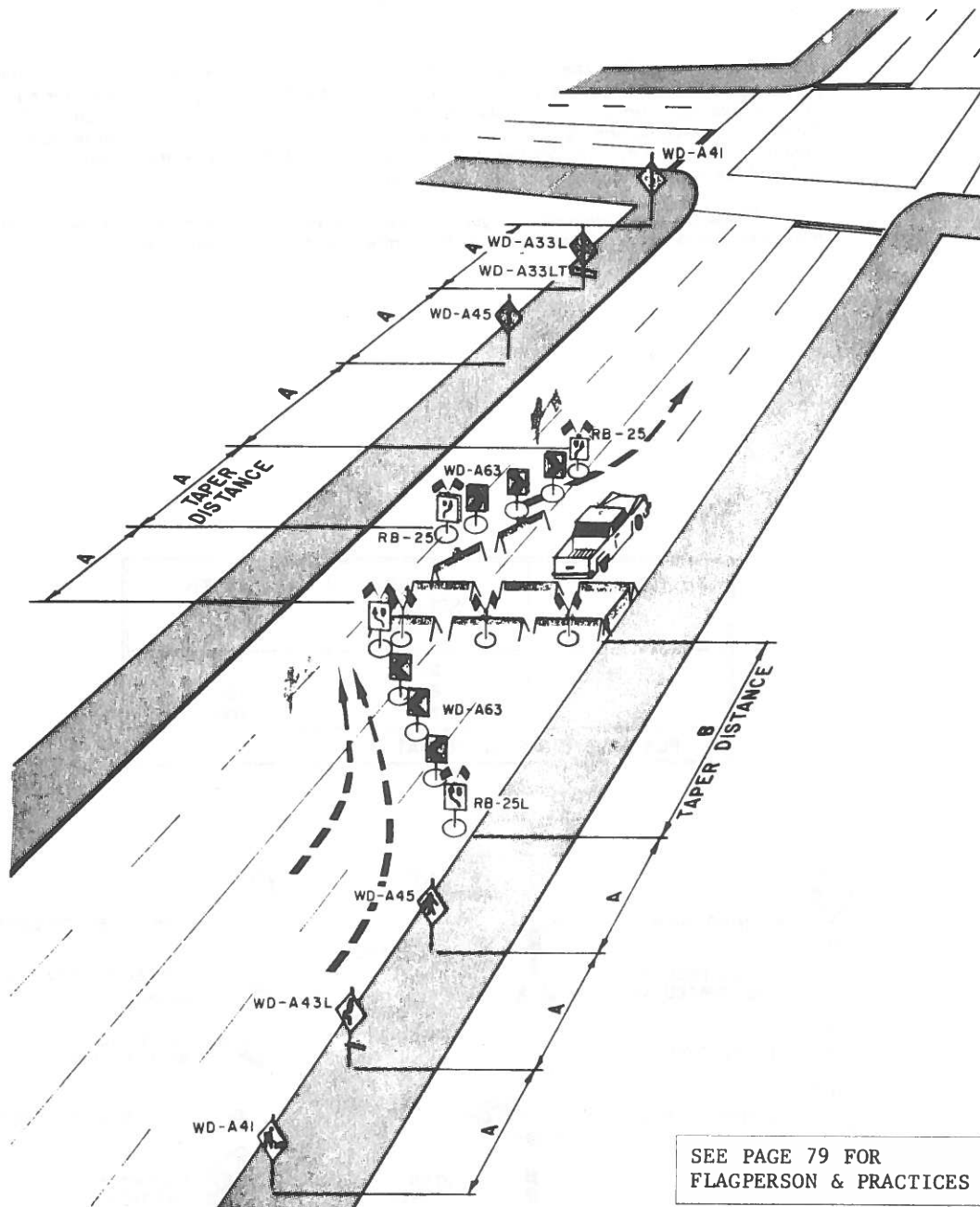


FIGURE 7



COMPLETE BLOCKAGE OF A MAJOR HIGHWAY
(Figure 8)

Figure 8 depicts the typical situation of complete blockage of a street for the purpose of construction or repair. In this case, two detours are established, one for each of the two directions of vehicular traffic movement on the major street. 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 with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance B represented in Figure 8 shall be selected from the table below for the maximum speed posted or applicable on the highway at the construction site.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)
B	50	100
	60	120
	70+	200
PORTABLE SIGNS SPACED AT 4.0m		

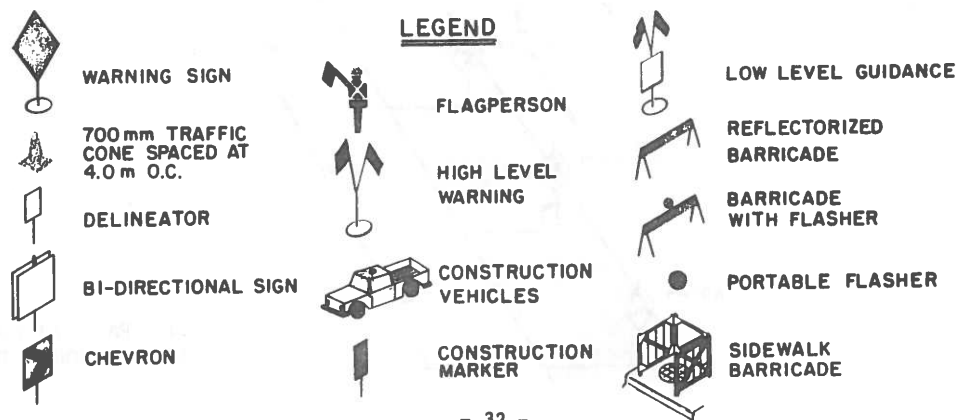
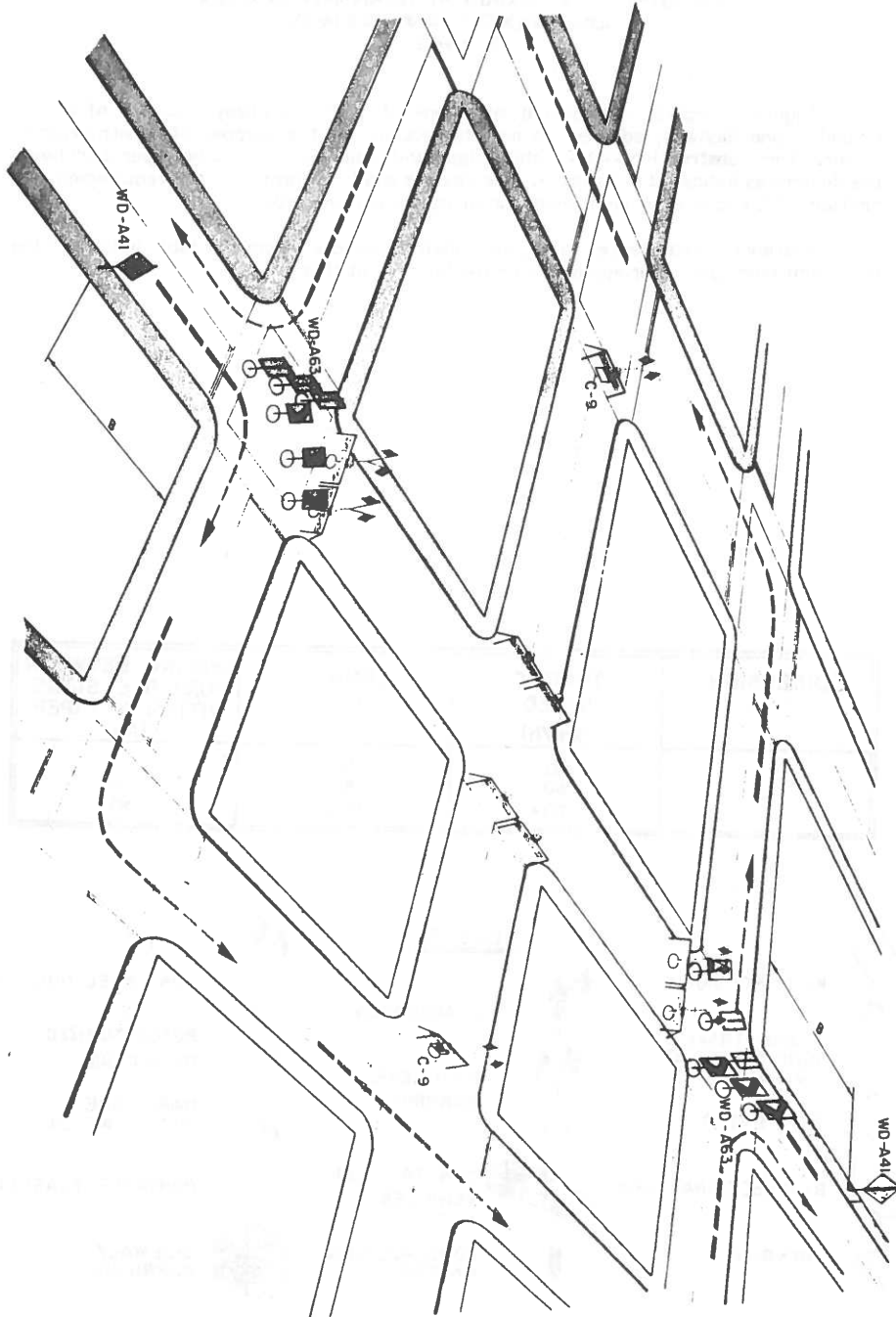


FIGURE 8

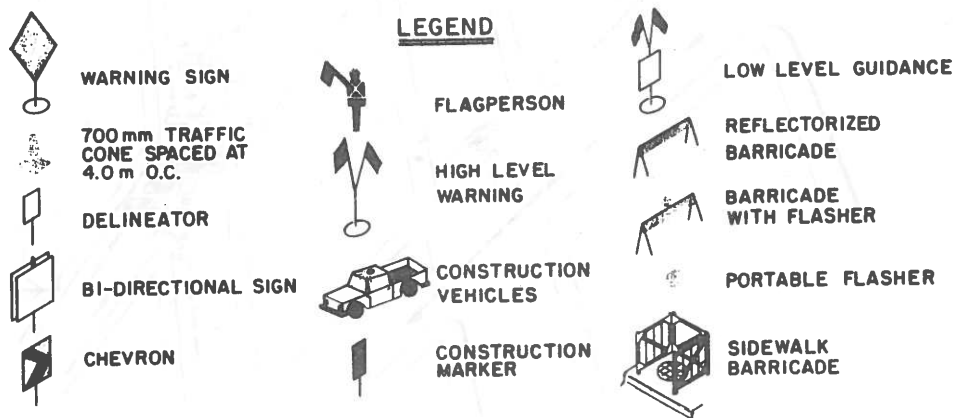


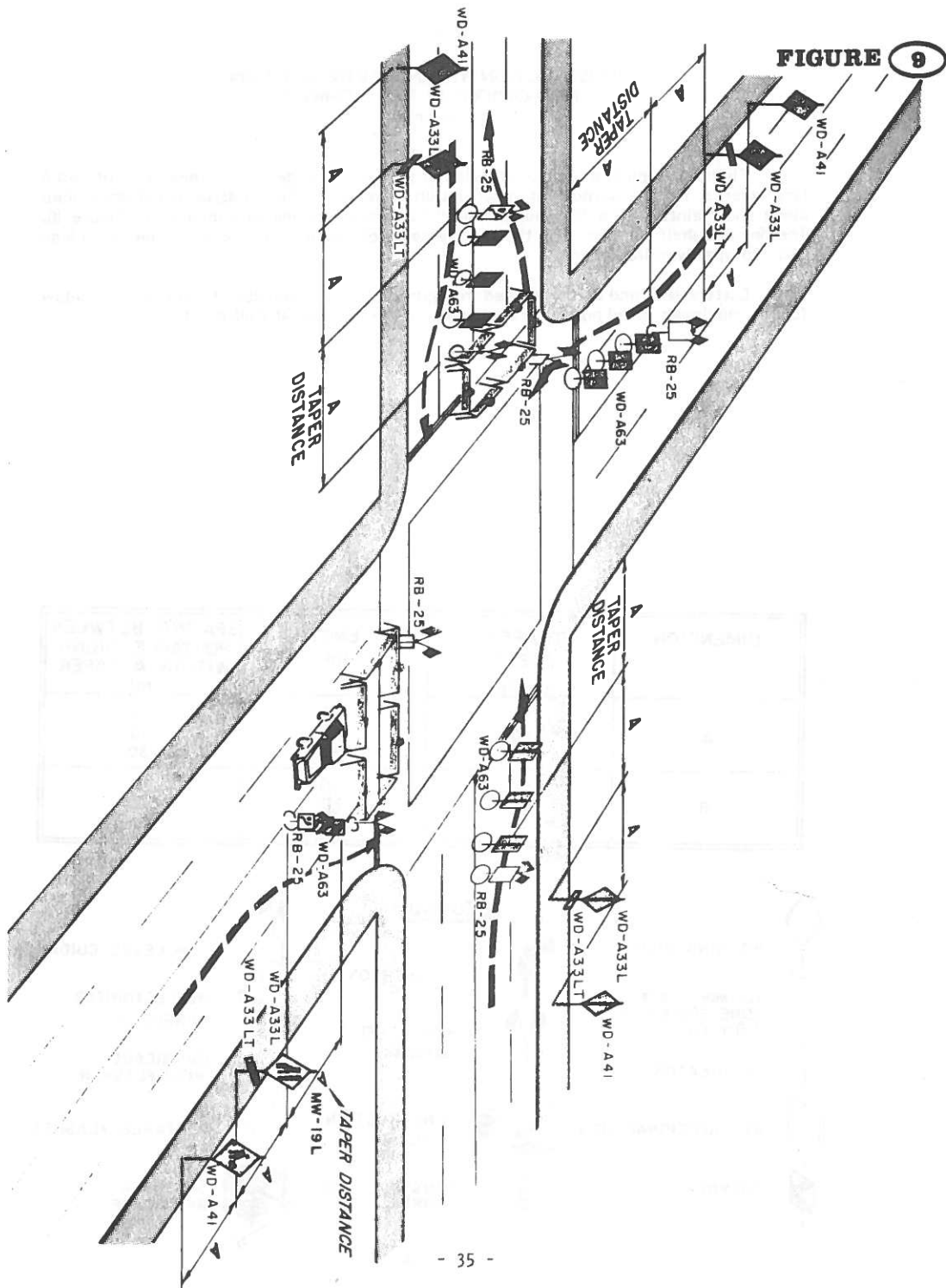
**CONSTRUCTION ADJACENT TO AN INTERSECTION
NON-DIVIDED 4 LANE HIGHWAY
(Figure 9)**

Figure 9 depicts two typical situations of partial roadway blockage of a non-divided 4 lane highway, adjacent to an intersection, for the purpose of construction or repair. 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 with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 9 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30





**CONSTRUCTION WITHIN AN INTERSECTION
NON-DIVIDED 4 LANE HIGHWAY
(Figure 10)**

Figure 10 depicts a typical situation of partial blockage of an intersection of two 4 lane streets, for the purpose of construction or repair. 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 with 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 maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

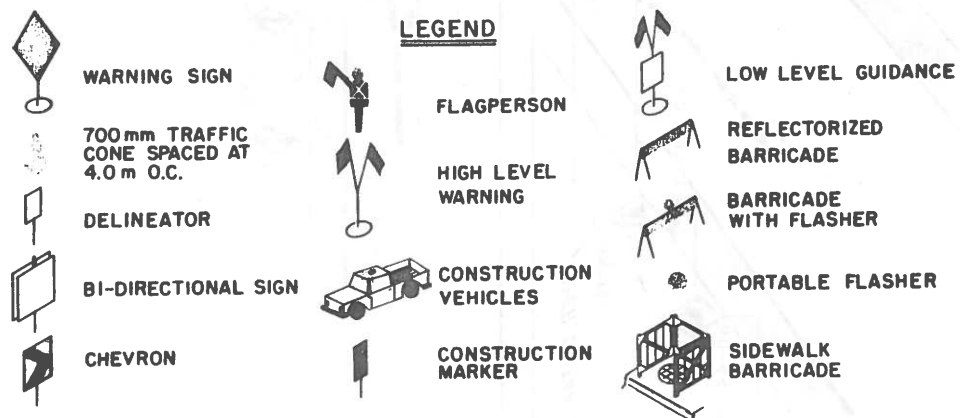
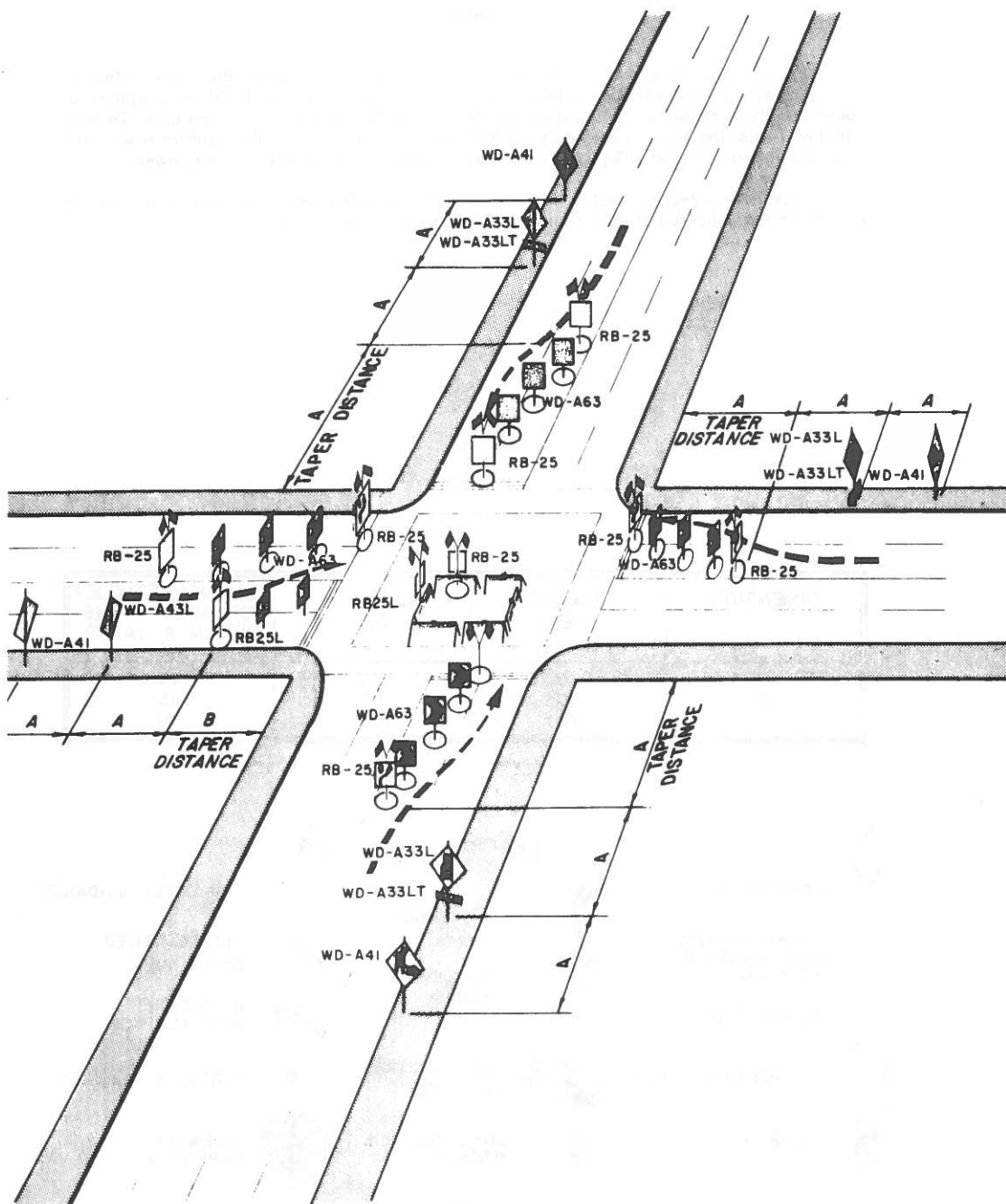


FIGURE 10



**BLOCKAGE OF EITHER ONE OR BOTH OUTSIDE LANES OF A
NON-DIVIDED 4 LANE HIGHWAY
(Figure II)**

Figure II depicts the typical situation where 2 outside lanes (outside quarters of the roadway) of a non-divided 4 lane roadway, are blocked and utilized for purposes of construction or repair. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure II. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure II shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

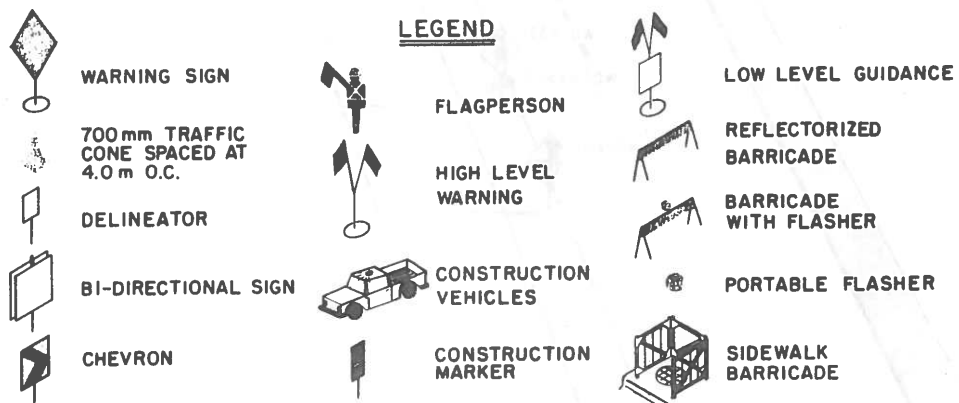
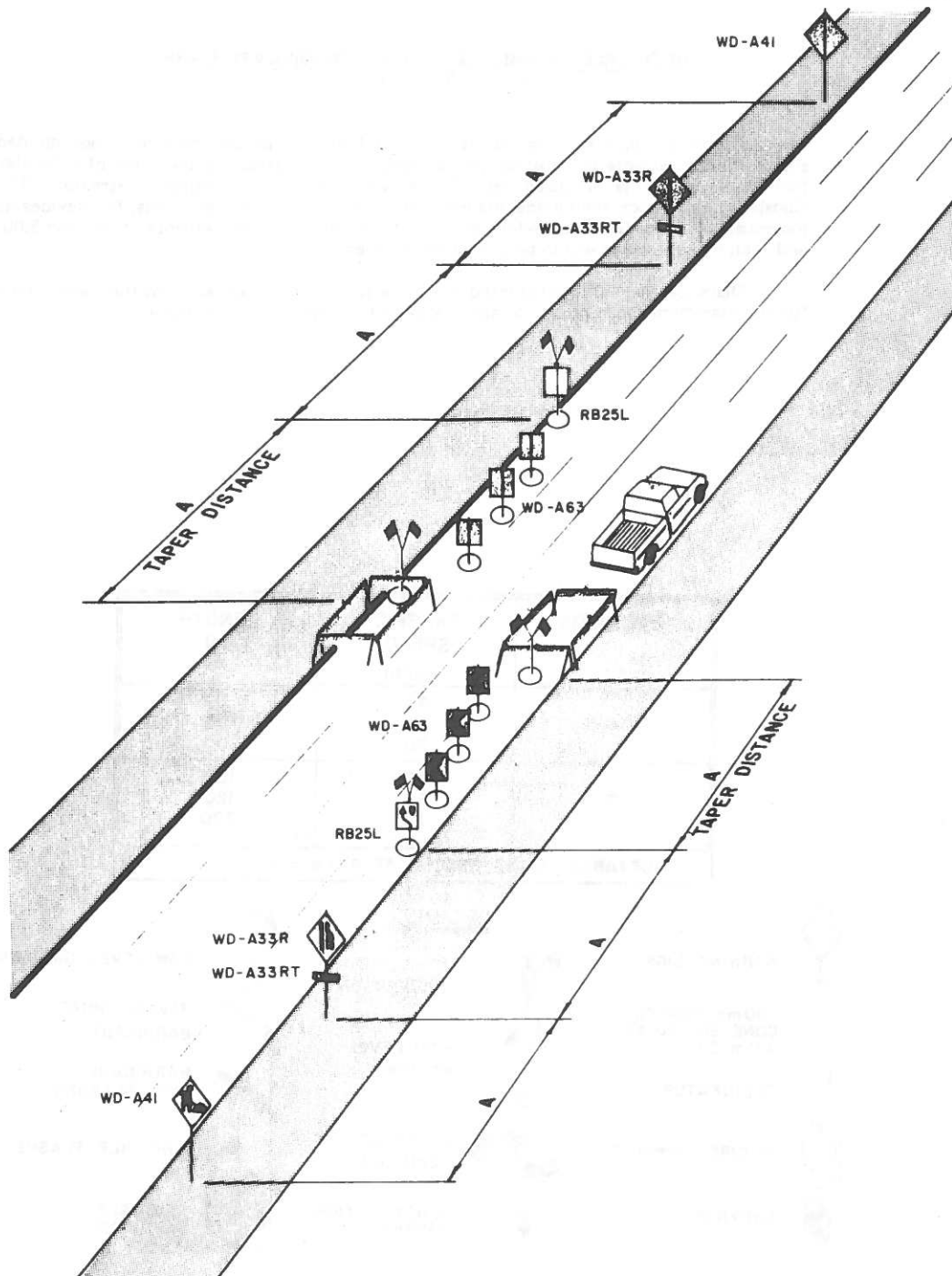


FIGURE 11



BLOCKAGE OF HALF OF 4 LANE NON-DIVIDED HIGHWAY
(Figure 12)

Figure 12 depicts a typical situation of blockage of one half of a non-divided street for the purpose of construction or repair. In this case, one direction of vehicular traffic movement is detoured around the work area, along adjacent streets. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 12. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 12 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)
A	50	50
	60	60
	70+	100
B	50	100
	60	120
	70+	200

PORTABLE SIGNS SPACED AT 4.0 m

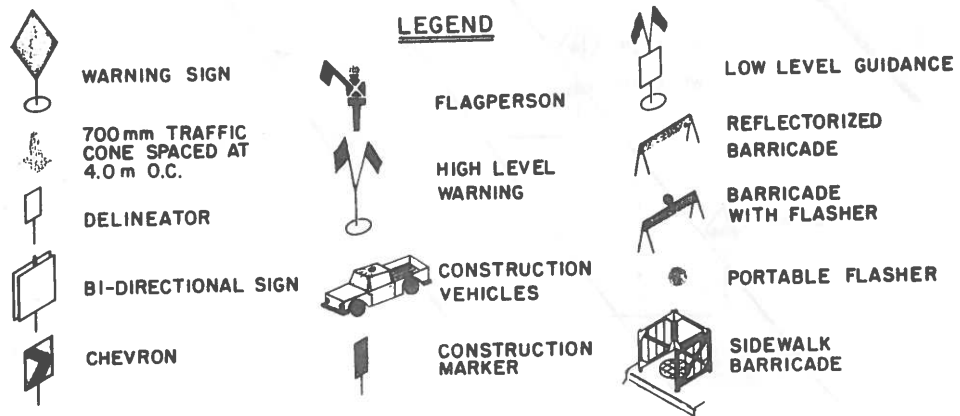
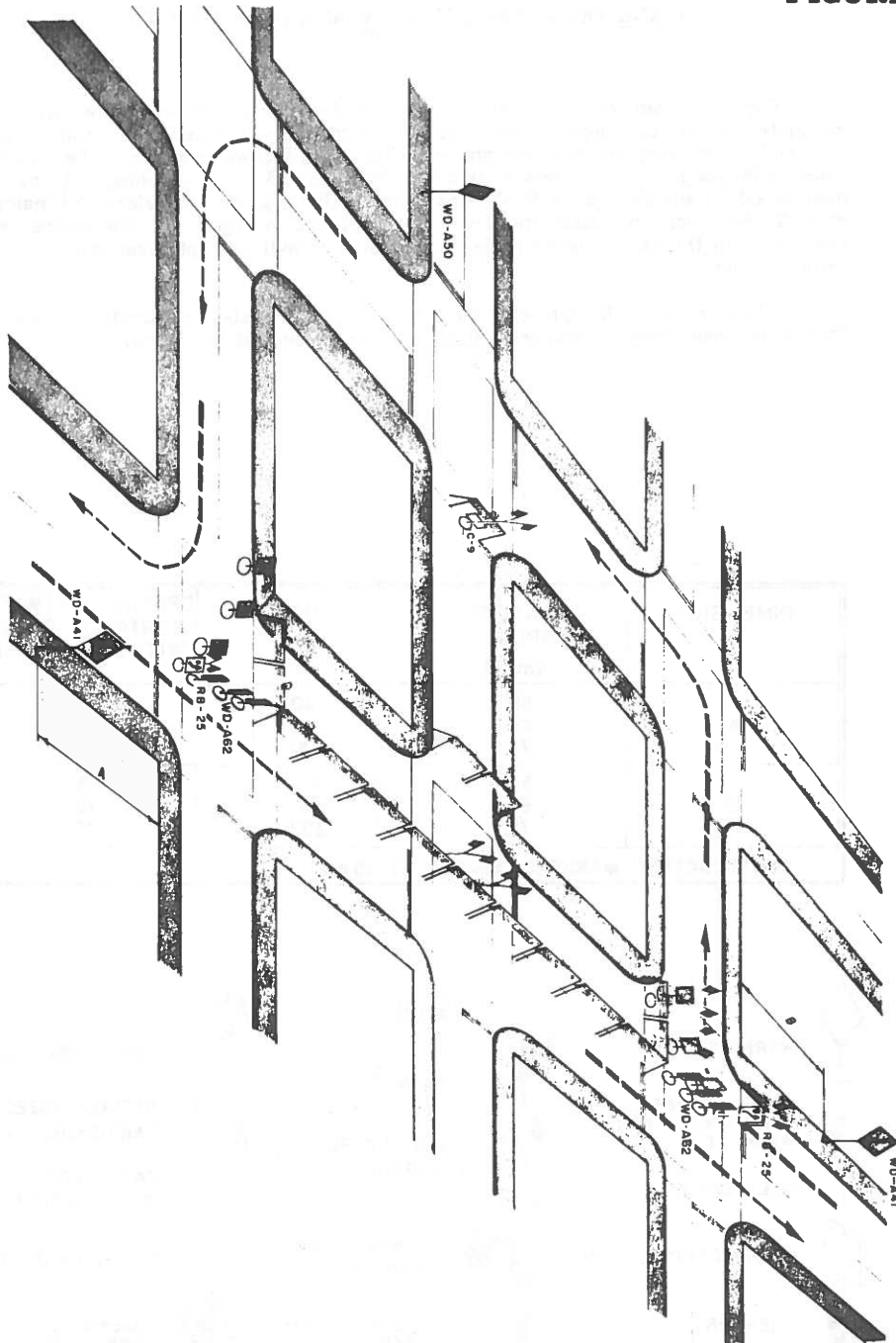


FIGURE 12



LOCAL DIVERSION AROUND ROADWAY BLOCKAGE
(Figure 13)

Figure 13 depicts a typical situation of local diversion around a partial or complete roadway blockage, for the purpose of 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 13. 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 13. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distances A and B represented in Figure 13 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

CONSTRUCTION MARKERS SPACED AT 15 m

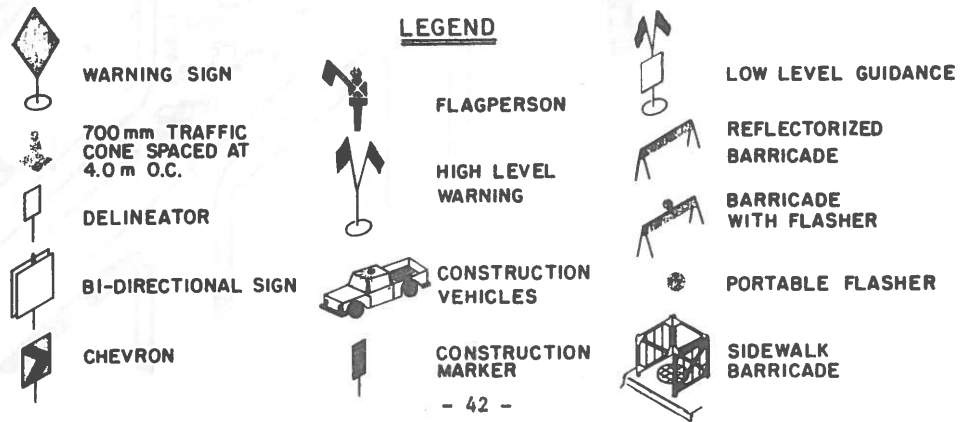
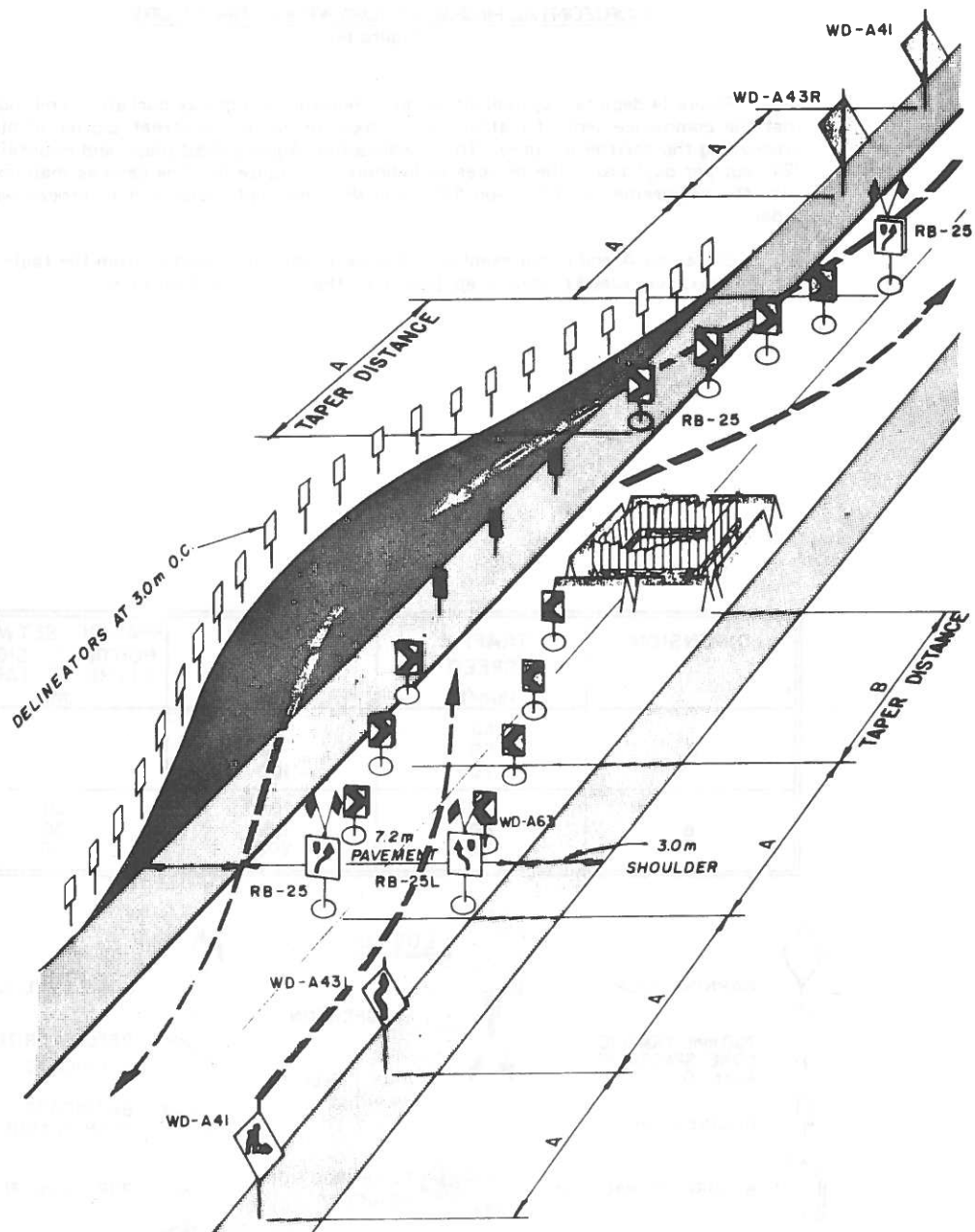


FIGURE 13



HORIZONTAL HIGHWAY CURVATURE (ON A CURVE)
(Figure 14)

Figure 14 depicts a typical situation on horizontal highway curvature and indicates that the commencement of traffic control must occur on the street section of highway preceeding the horizontal curve. 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 with 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 maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	
	60	60	
	70+	100	
B	50	100	30
	60	120	30
	70+	200	30

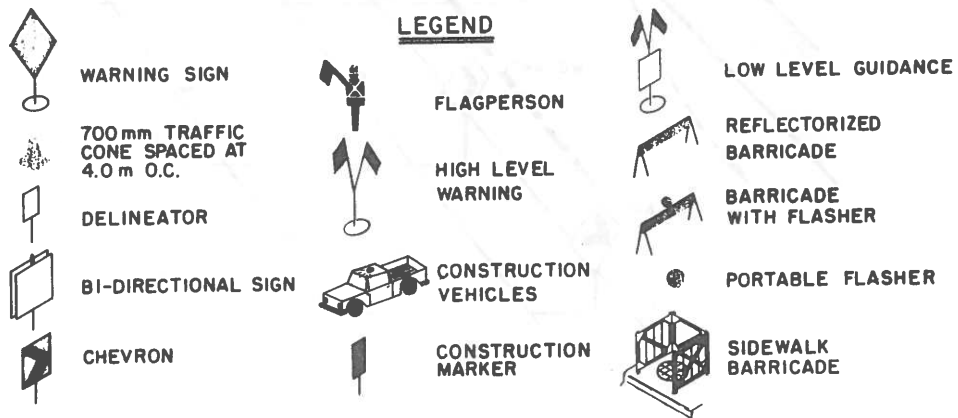
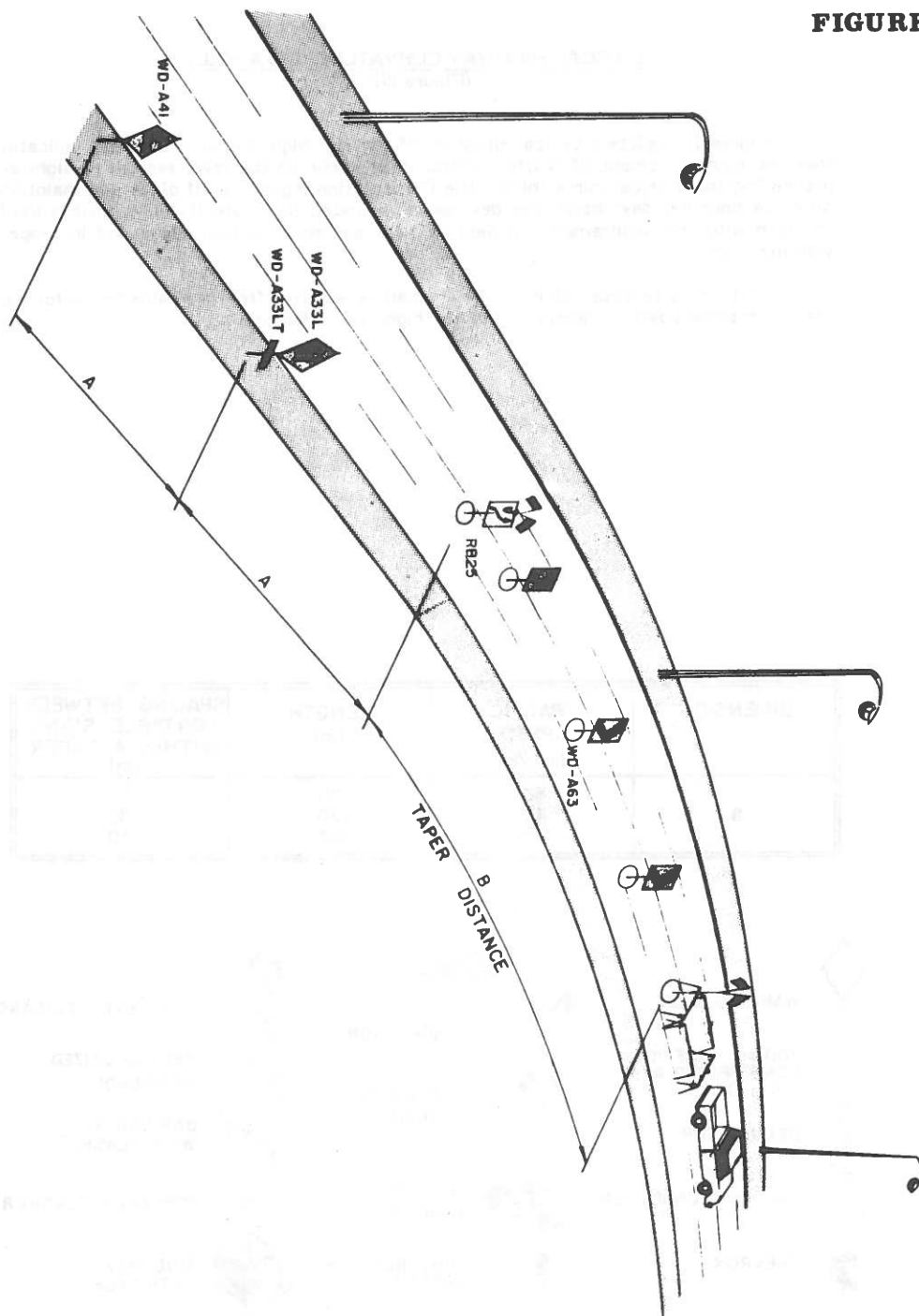


FIGURE 14



VERTICAL HIGHWAY CURVATURE (ON A HILL)
(Figure 15)

Figure 15 depicts a typical situation of vertical highway curvature and indicates that the commencement of traffic control must occur on the level section of highway preceeding the vertical curve (hill). 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 with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance B represented in Figure 15 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
B	50	100	30
	60	120	30
	70+	200	30

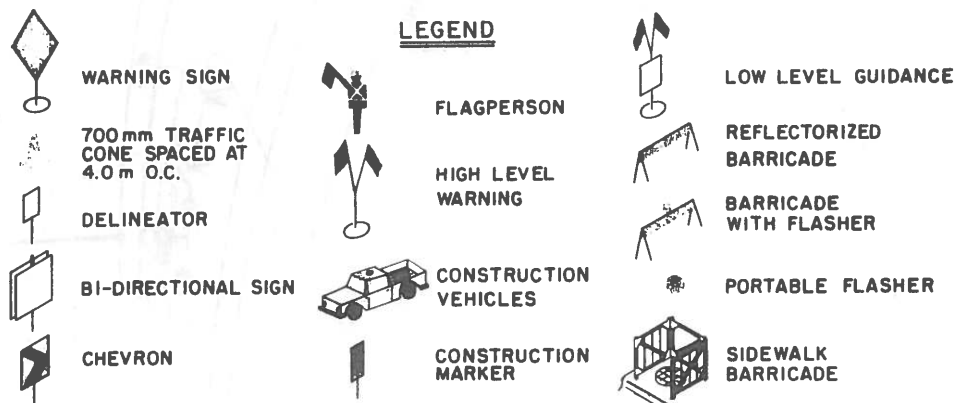
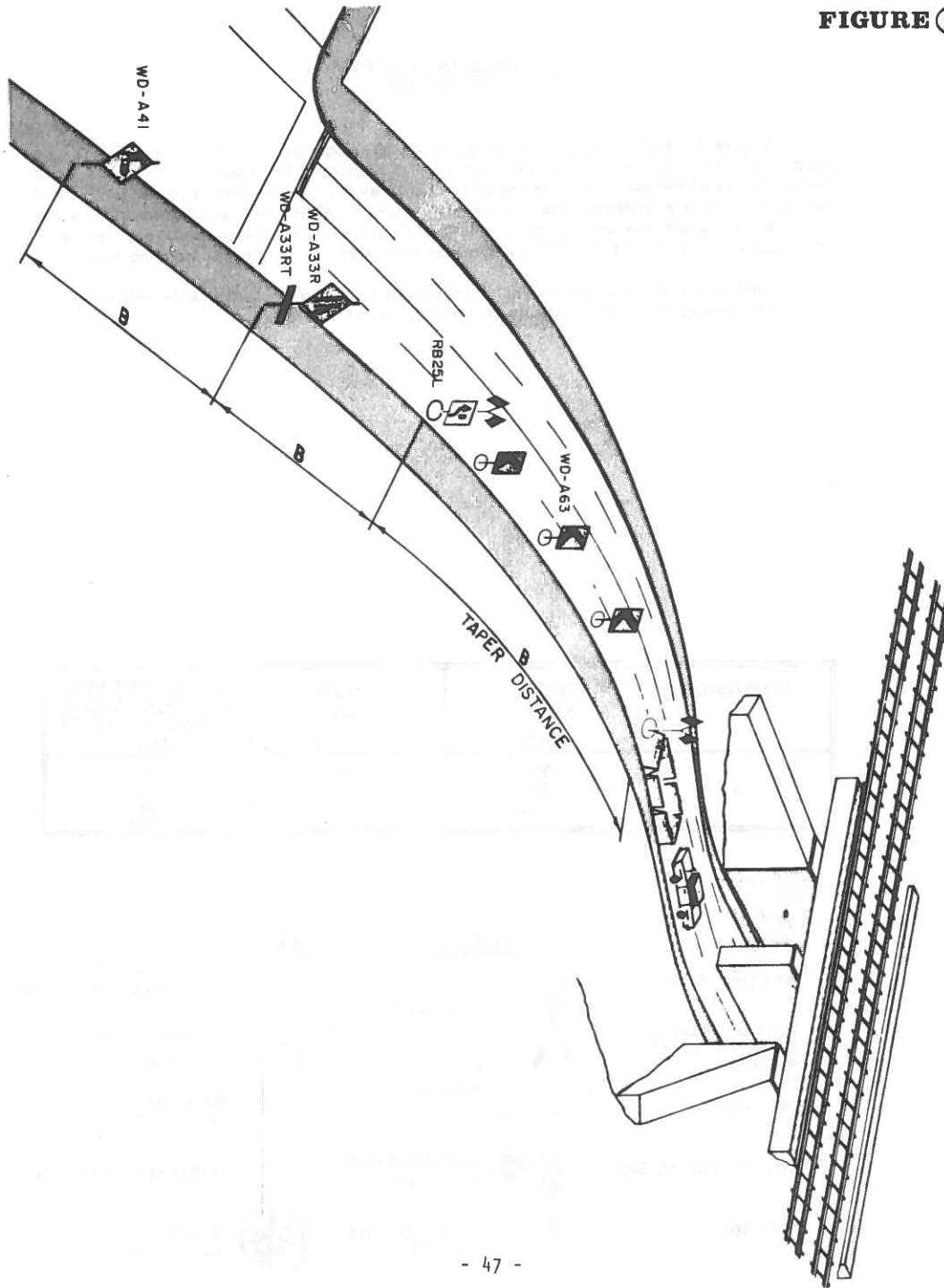


FIGURE 15



81 220000

BLOCKAGE OF A SIDEWALK (Figure 16)

Figure 16 depicts a typical situation of blockage of a public sidewalk for the purpose of construction or repair, and shows two methods of temporary provision for the requirements of pedestrians. 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 16. The devices shall conform with 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 maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

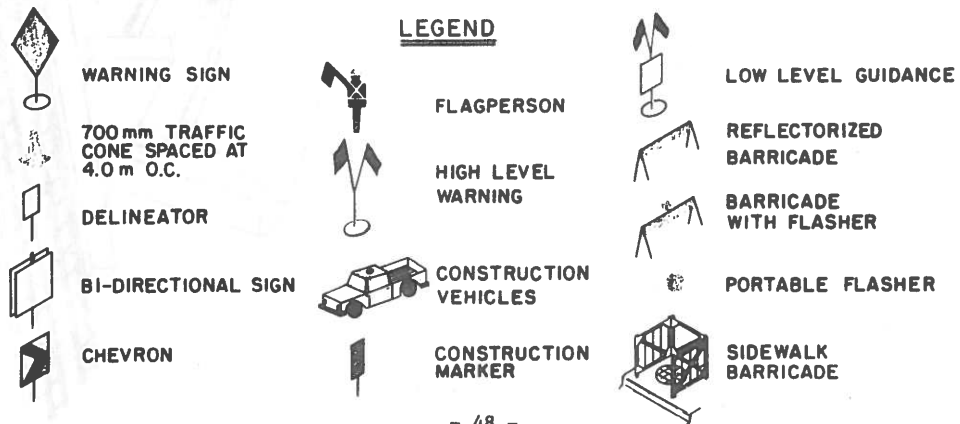
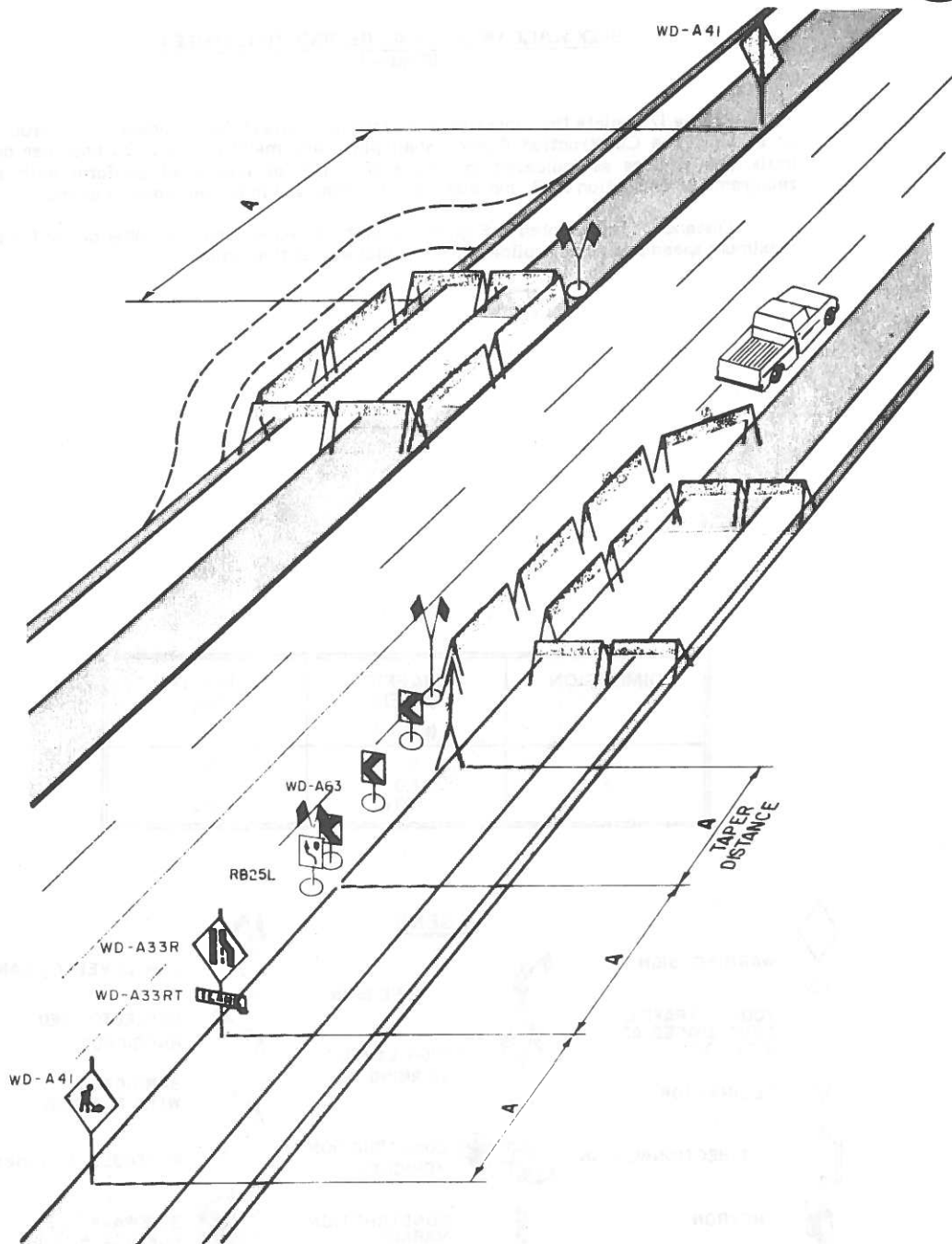


FIGURE 16

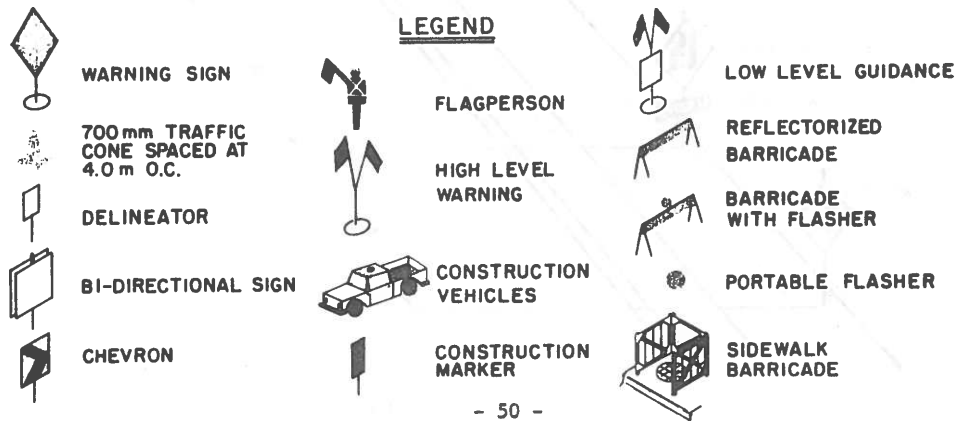


BLOCKAGE OF A LOCAL RESIDENTIAL STREET
(Figure 17)

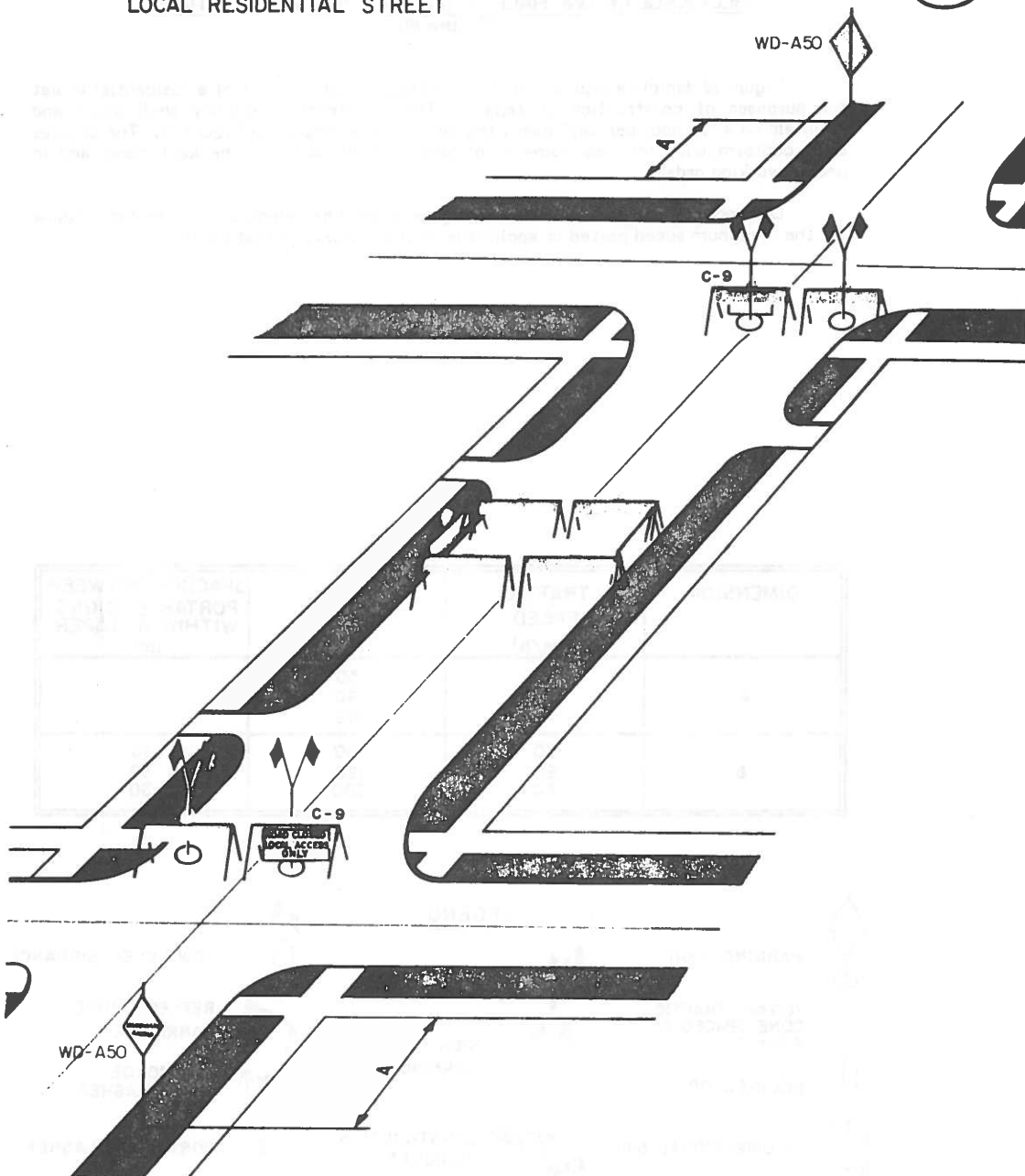
Figure 17 depicts the blockage of a residential street for purposes of construction or repair. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 17. The devices shall conform with the requirements of Section 5.00, and shall be kept clean and in proper working order.

Distance A represented in Figure 17 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)
A	50	50
	60	60
	70+	100



17

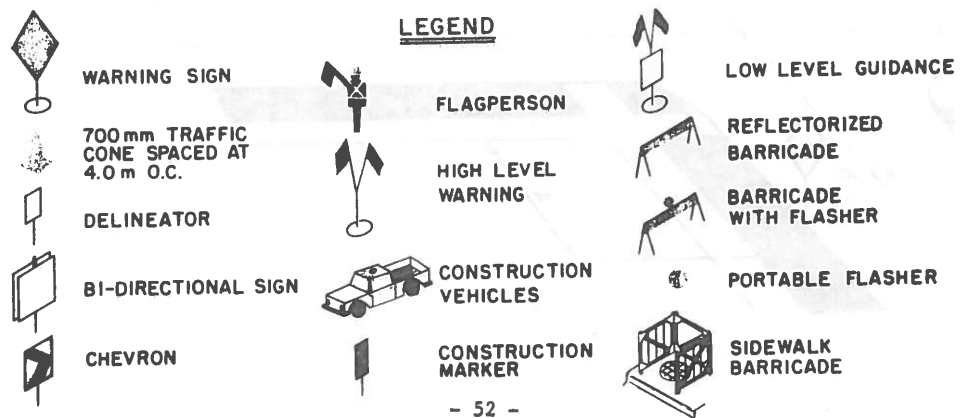


BLOCKAGE OF ONE HALF OF A LOCAL RESIDENTIAL STREET
(Figure 18)

Figure 18 depicts a typical situation of blockage of one half of a residential street for purposes of 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 with the requirements of Section 5.00, and shall be kept clean and in proper working order.

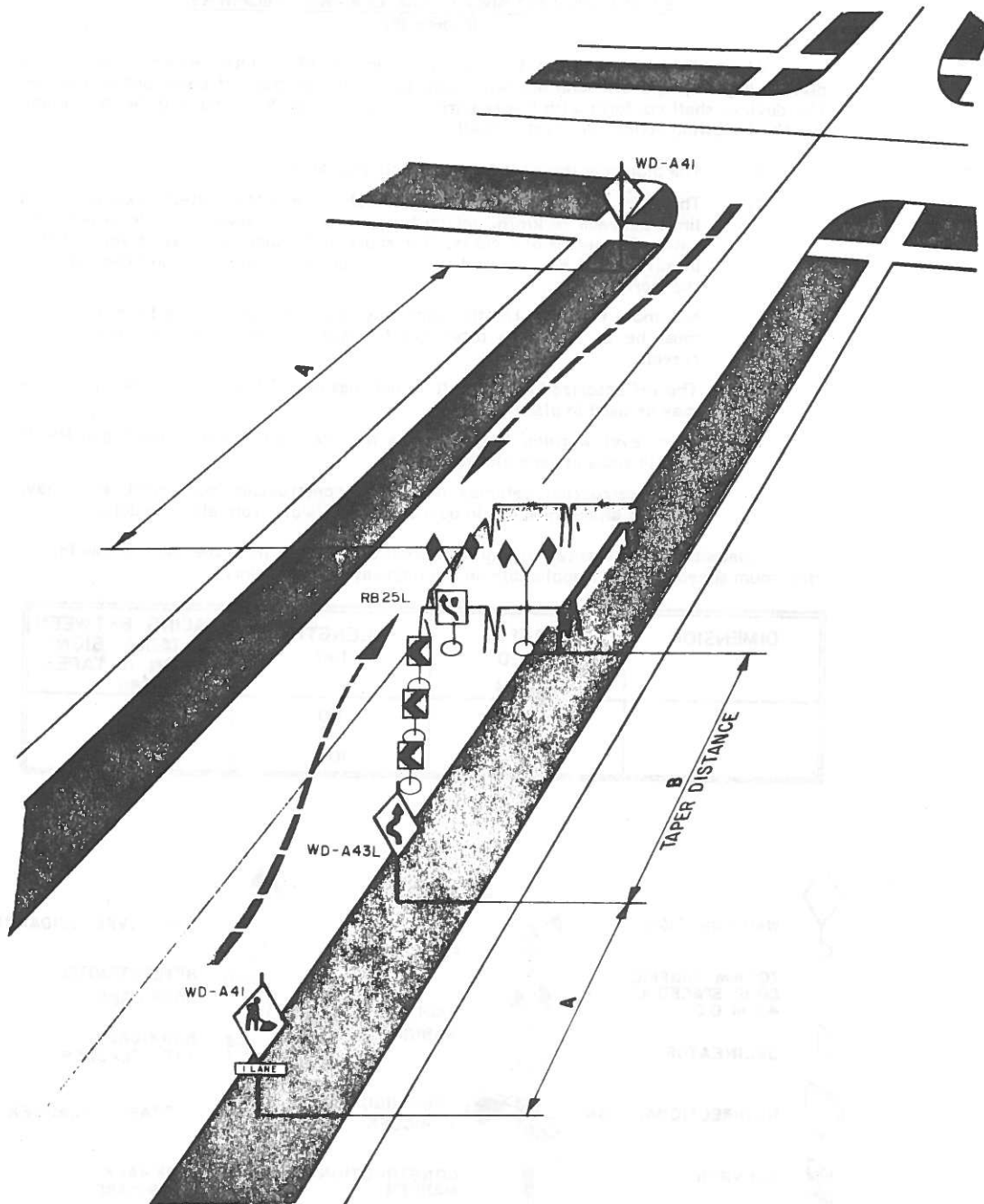
Distances A and B represented in Figure 18 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	
	60	60	
	70+	100	
B	50	100	30
	60	120	30
	70+	200	30



LOCAL RESIDENTIAL STREET

FIGURE 18



**SHORT TERM BLOCKAGE WITHIN AN INTERSECTION
DURING HOURS OF DAYLIGHT
8 LANE DIVIDED AND 4 LANE ONE-WAY HIGHWAY
(Figure 19)**

Figure 19 depicts a short-term partial blockage of an intersection of an 8 lane divided highway and a 4 lane one-way highway for the purpose of construction repairs. The devices shall conform with the requirements of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 50 metres of a curve. The short term blockages may be set up 100 m in advance of a curve and the line of cones extended around the curve to the work site.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the WD-A17 and RB-25 traffic signs in each blocked lane.
6. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

Distance A represented in Figure 19 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

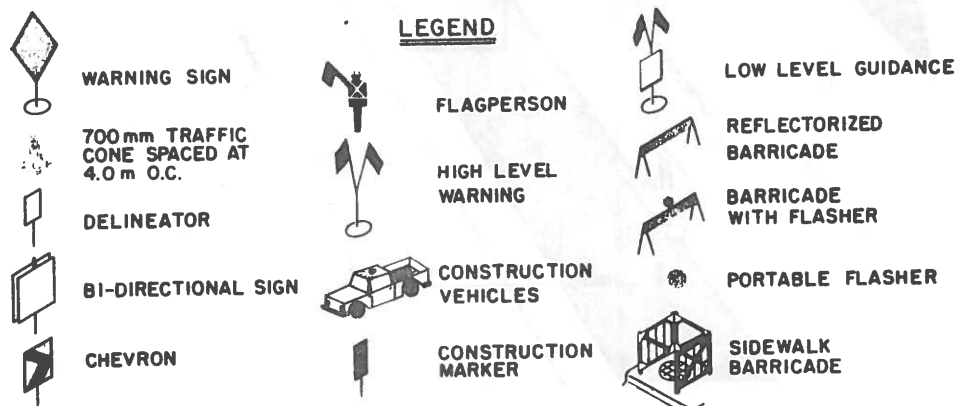
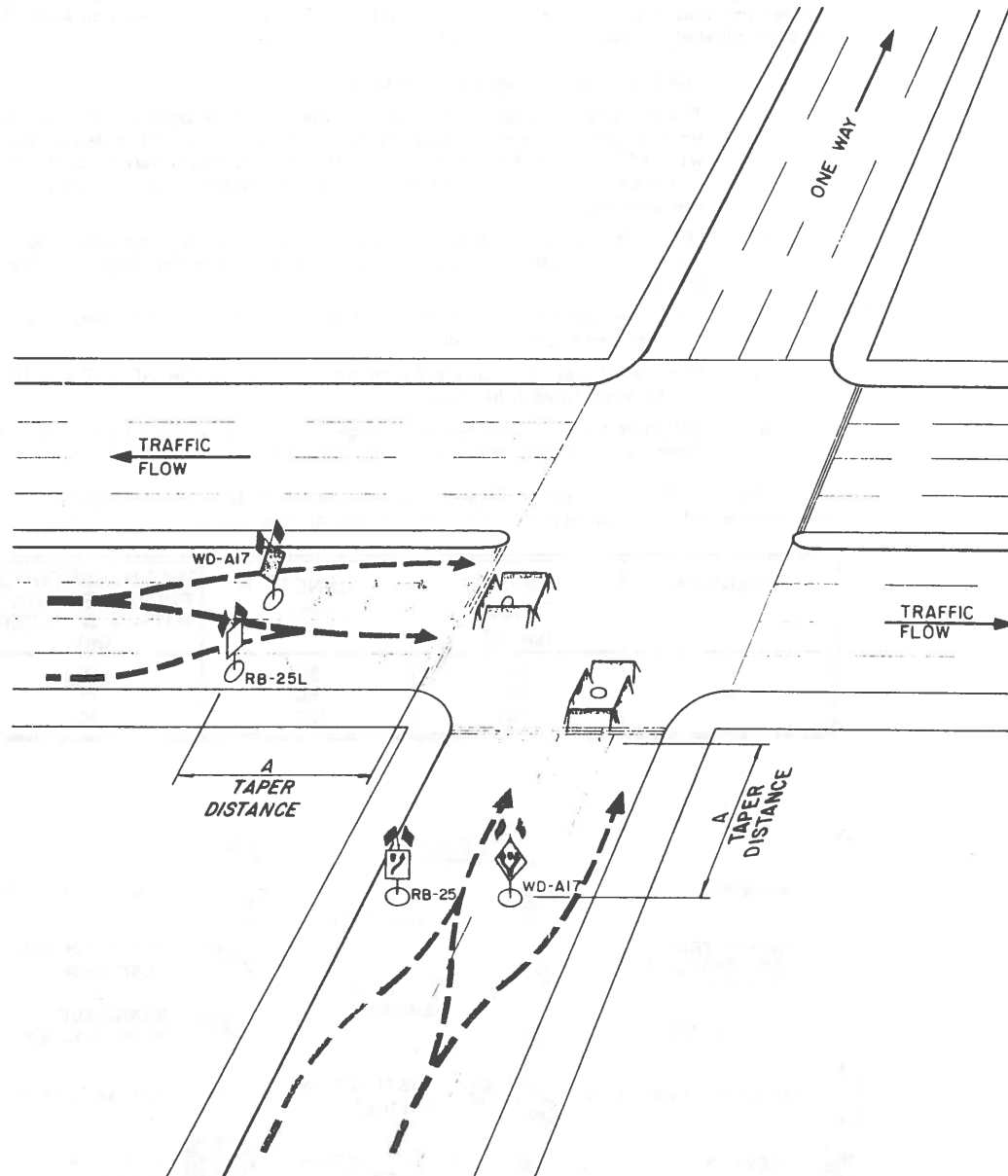


FIGURE 19



**SHORT TERM BLOCKAGE WITHIN AN INTERSECTION
DURING HOURS OF DAYLIGHT
8 LANE DIVIDED AND 6 LANE DIVIDED HIGHWAY
(Figure 20)**

Figure 20 depicts a short-term partial blockage of an intersection of an 8 lane divided highway and a 6 lane divided highway for the purpose of construction or repair. The devices shall conform with the requirements of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 50 metres of a curve. The short term blockages may be set up 100 m in advance of a curve and the line of cones extended around the curve to the work site.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the WD-A17 and RB-25 traffic signs in each blocked lane.
6. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

Distance A represented in Figure 20 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30

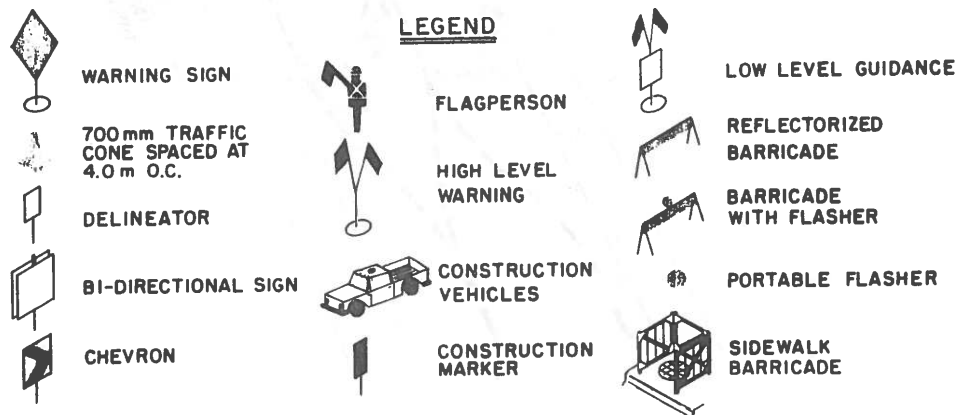
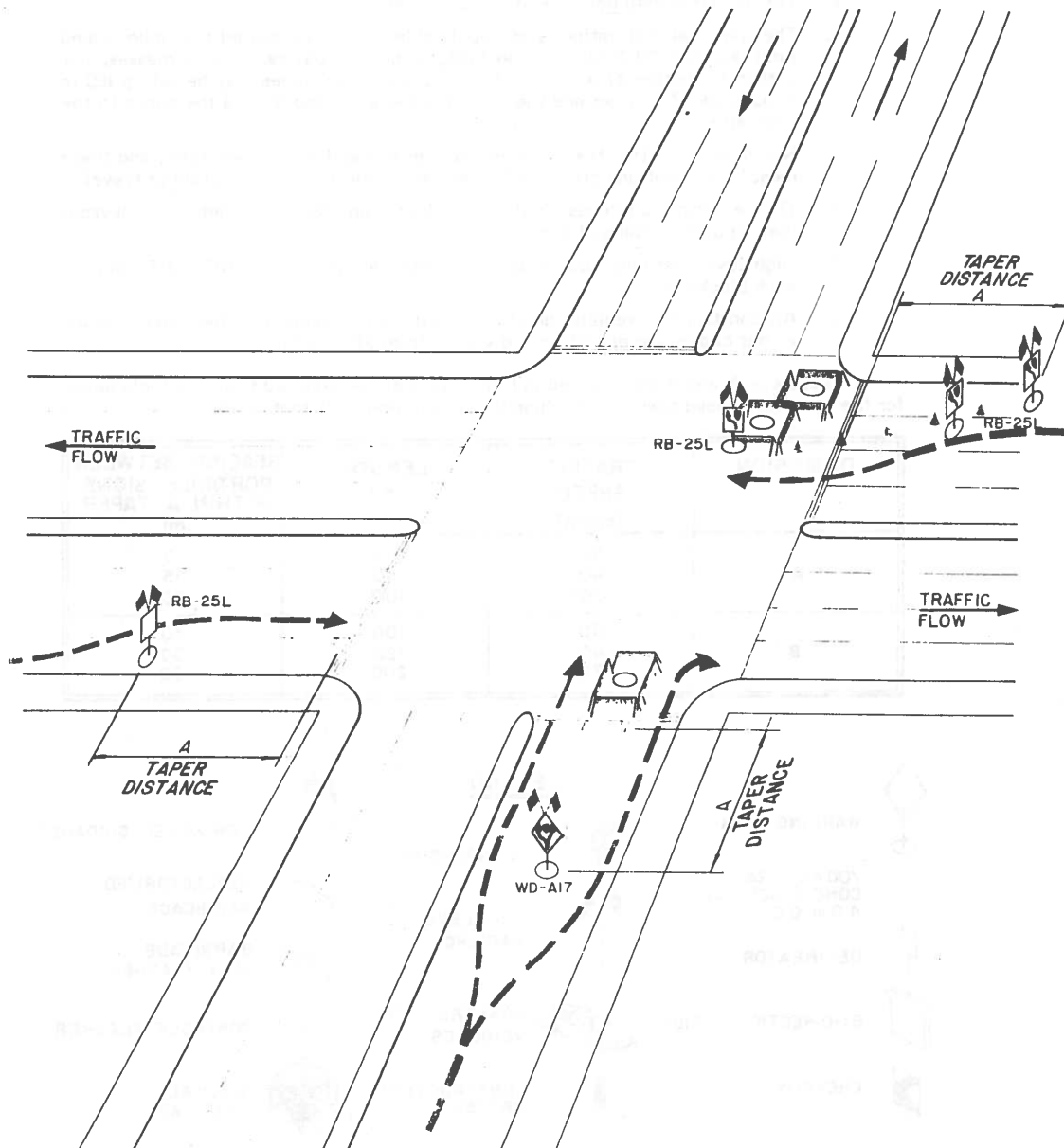


FIGURE 20



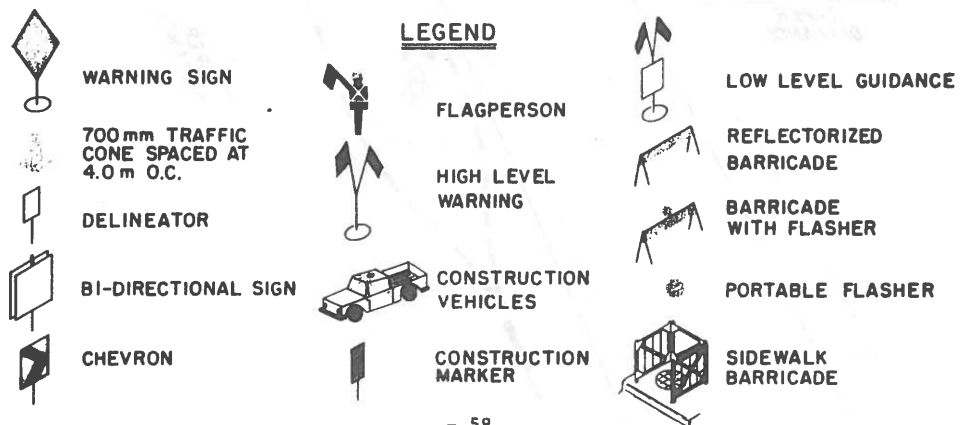
**SHORT TERM BLOCKAGE OF CENTRE LANE OR LANES
DURING HOURS OF DAYLIGHT
(Figure 21)**

Figure 21 depicts a typical situation where a centre lane of a street is blocked for a short time - not longer than 2 hours. The devices shall conform with the requirement of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 50 metres of a curve. The short term blockages may be set up 100 m in advance of a curve and the line of cones extended around the curve to the work site.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the WD-A17 traffic sign in each blocked lane.
6. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

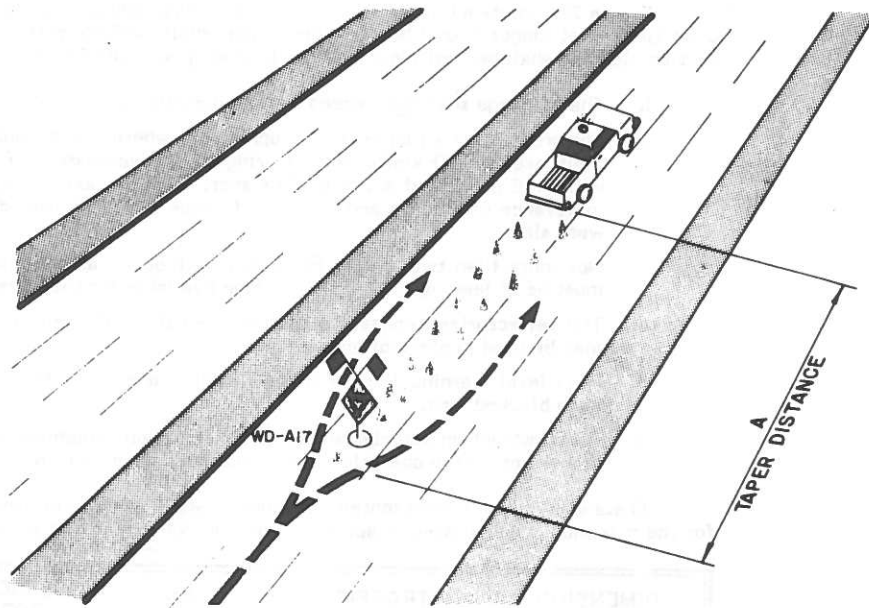
Distances A and B represented in Figure 21 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	30
	60	120	30
	70+	200	30

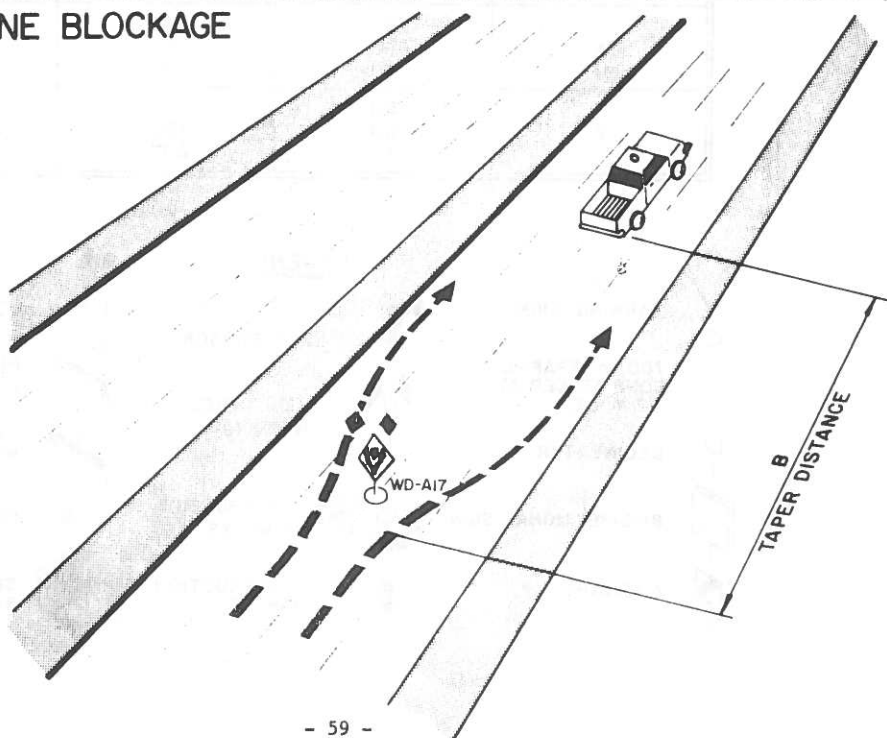


ONE LANE BLOCKAGE

FIGURE 81



TWO LANE BLOCKAGE



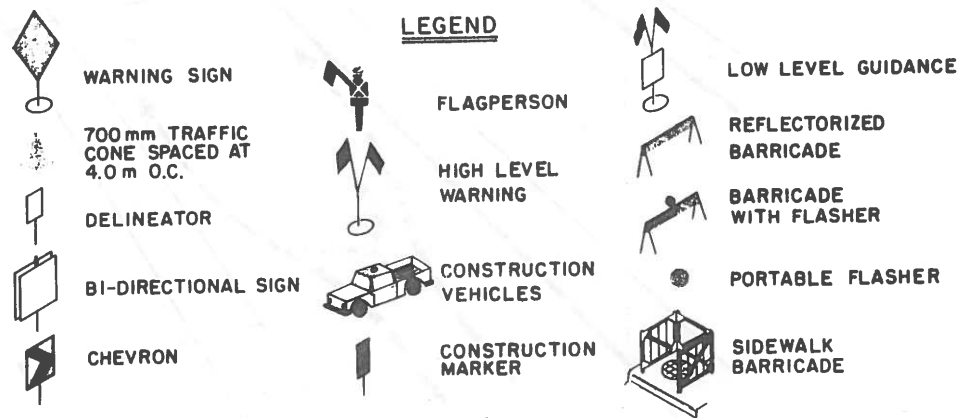
**SHORT TERM BLOCKAGE OF CURB LANE OR LANES
DURING HOURS OF DAYLIGHT**
(Figure 22)

Figure 22 depicts a typical situation where a curb lane of a street is blocked for a short time - not longer than 2 hours. The devices shall conform with the requirement of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 50 metres of a curve. The short term blockages may be set up 100 m in advance of a curve and the line of cones extended around the curve to the work site.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the RB-25L traffic sign in each blocked lane.
6. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

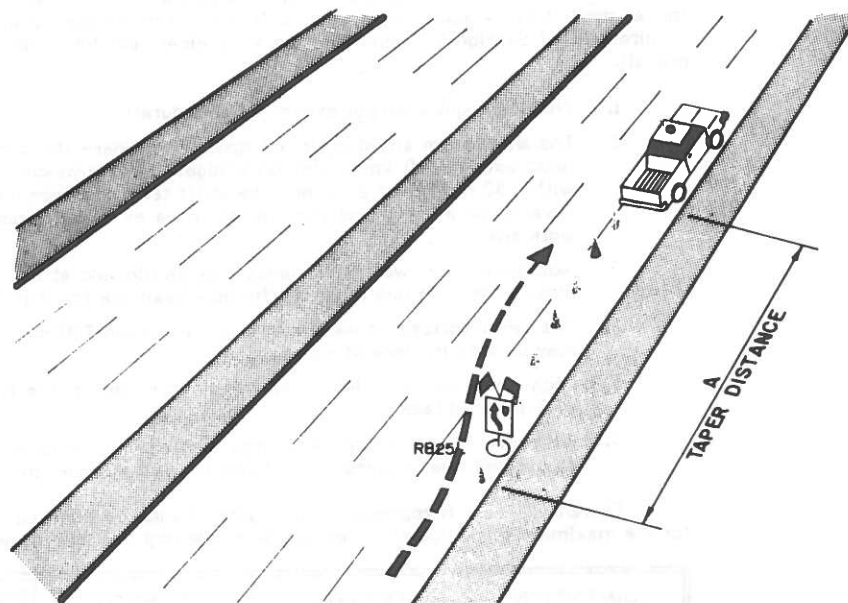
Distances A and B represented in Figure 22 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

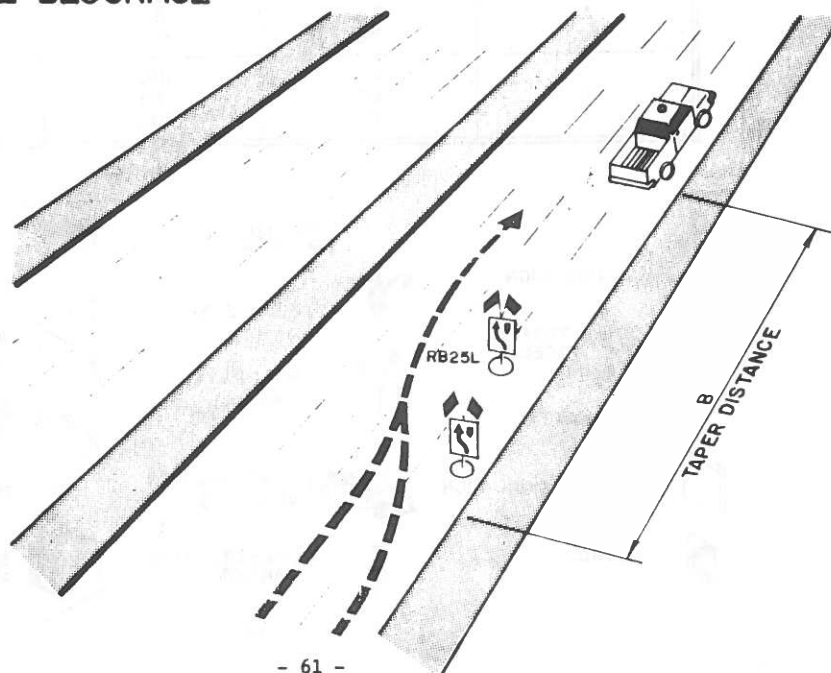


ONE LANE BLOCKAGE

FIGURE 22



TWO LANE BLOCKAGE



SHORT TERM BLOCKAGE OF MEDIAN LANE OR LANES DURING HOURS OF DAYLIGHT

(Figure 23)

Figure 23 depicts a typical situation where a median lane of a street is blocked for a short time - not longer than 2 hours. The devices shall conform with the requirement of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockages shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 50 metres of a curve. The short term blockage may be set up 100 m in advance of a curve and the line of cones extended around the curve to the work site.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the RB-25 traffic sign in each blocked lane.
6. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

Distances A and B represented in Figure 23 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

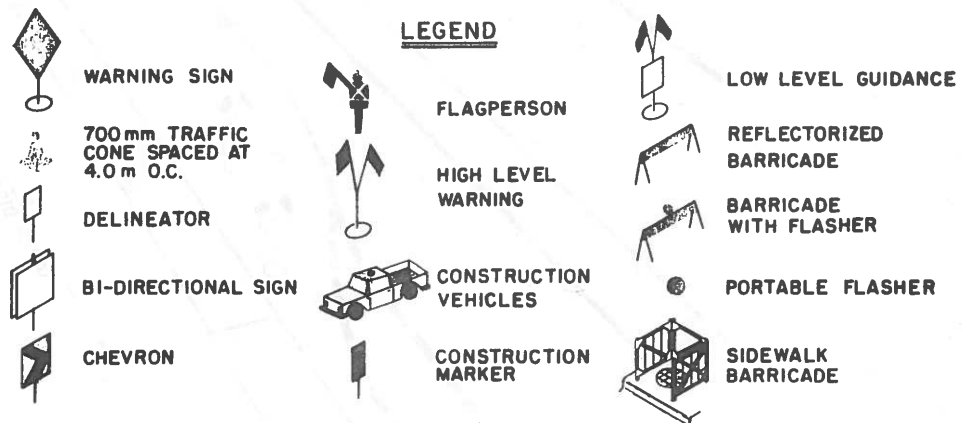
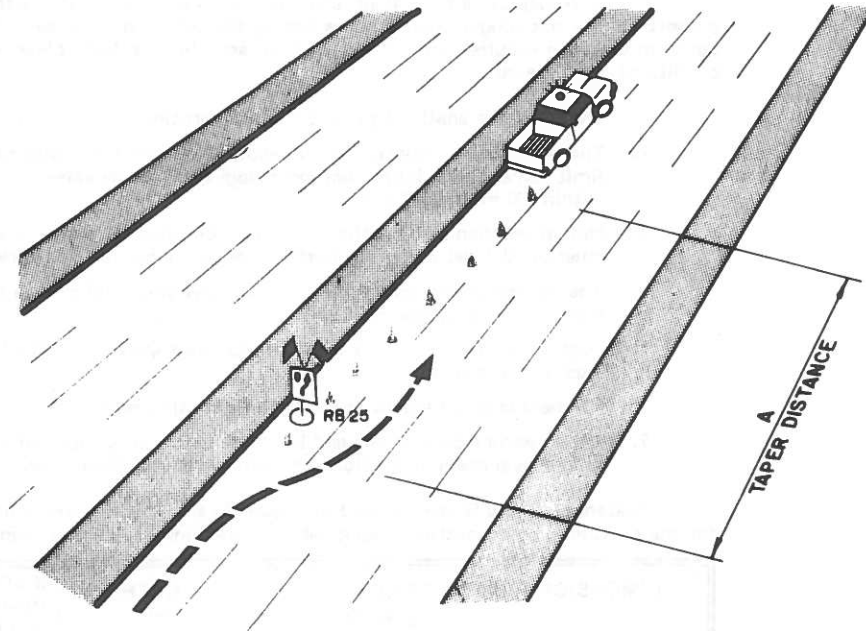
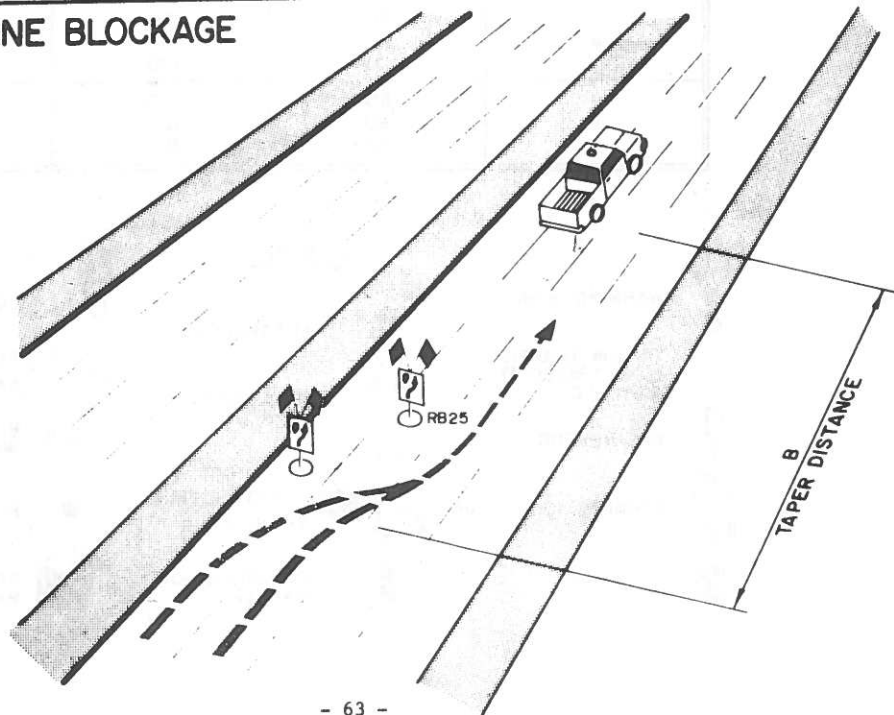


FIGURE 23

ONE LANE BLOCKAGE



TWO LANE BLOCKAGE



SHORT TERM BLOCKAGE OF CENTRE LANE OR LANES DURING HOURS OF DARKNESS

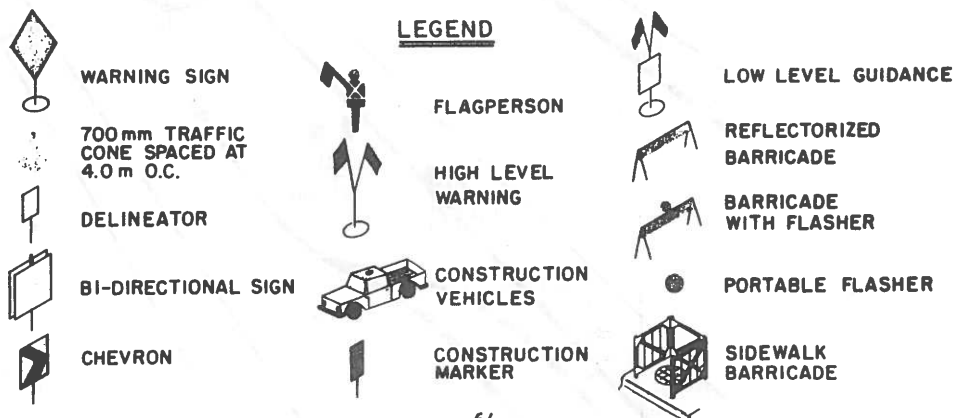
(Figure 24)

Figure 24 depicts a typical situation where a centre lane of a street is blocked for a short time - not longer than 2 hours during the hours of darkness. The devices shall conform with the requirement of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 100 metres of a curve.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the WD-A17 traffic sign in each blocked lane.
6. Flashers shall be mounted above the WD-A17 traffic sign.
7. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

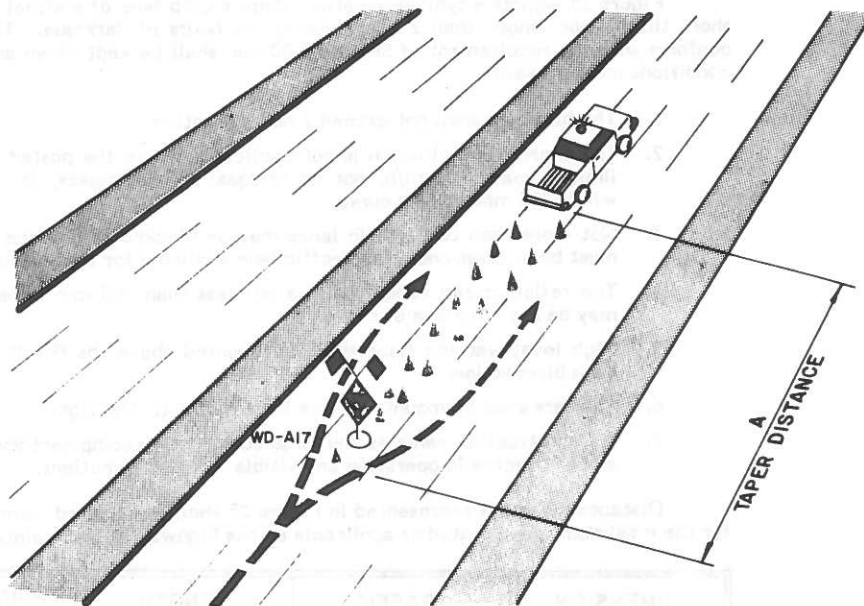
Distances A and B represented in Figure 24 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

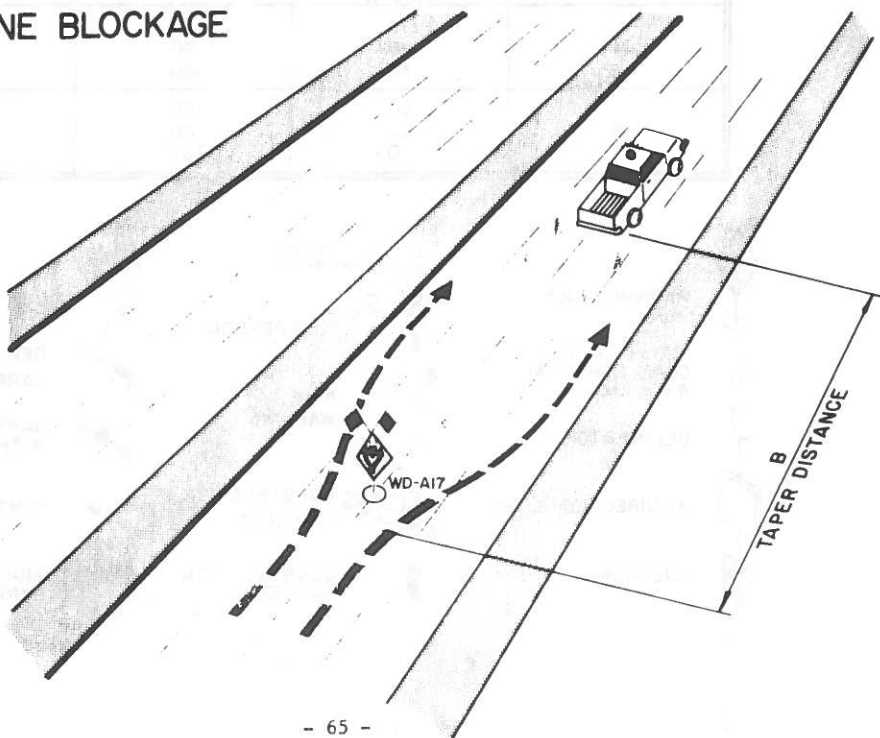


ONE LANE BLOCKAGE

FIGURE 24



TWO LANE BLOCKAGE



SHORT TERM BLOCKAGE OF CURB LANE OR LANES DURING HOURS OF DARKNESS

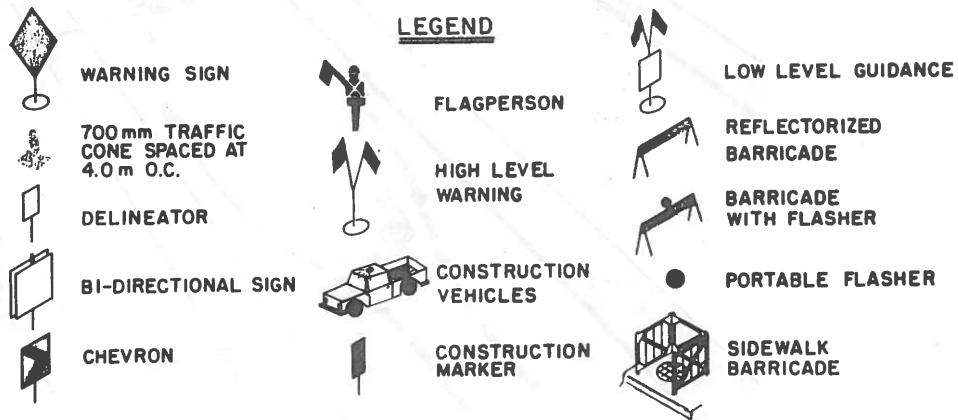
(Figure 25)

Figure 25 depicts a typical situation where a curb lane of a street is blocked for a short time - not longer than 2 hours during the hours of darkness. The devices shall conform with the requirement of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 100 metres of a curve.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the RB-25L traffic sign in each blocked lane.
6. Flashers shall be mounted above the RB-25L traffic sign.
7. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

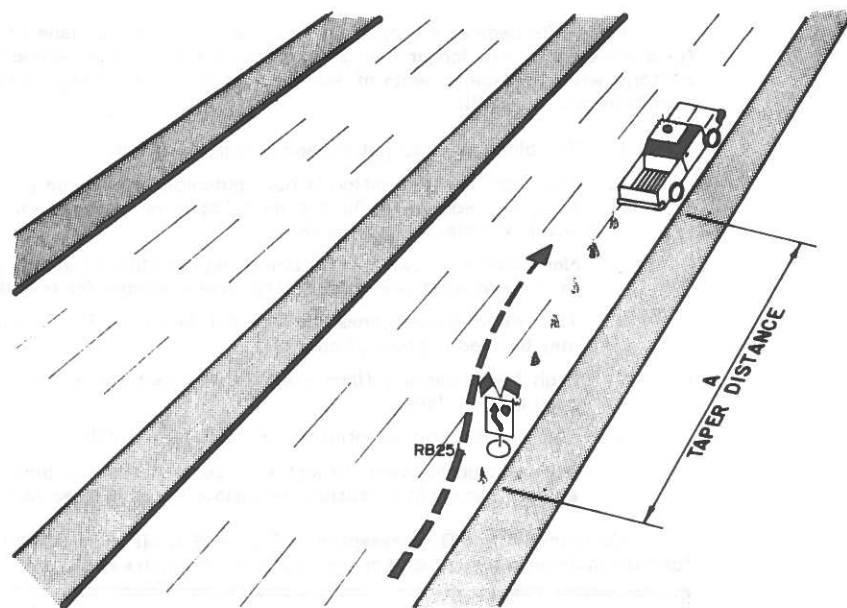
Distances A and B represented in Figure 25 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

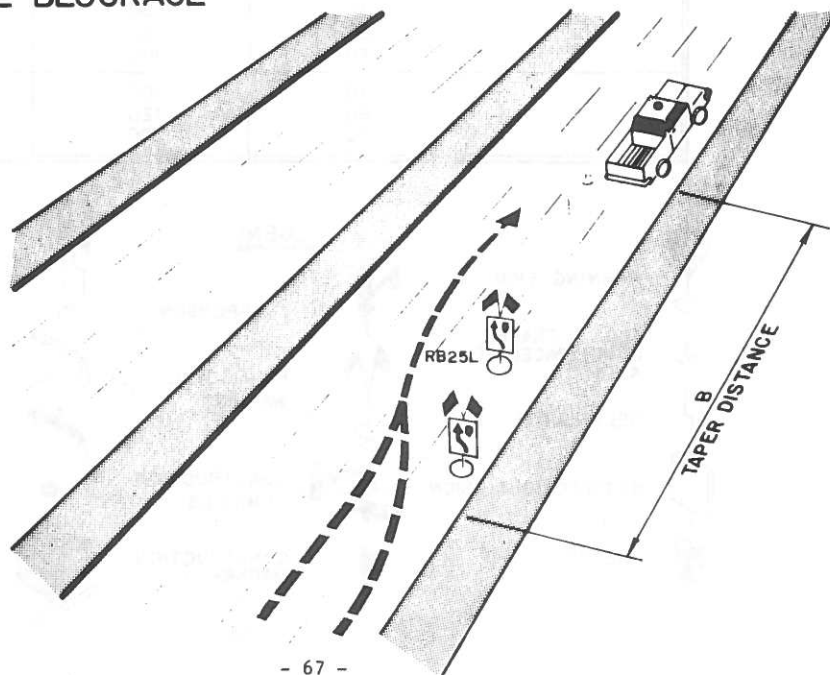


ONE LANE BLOCKAGE

FIGURE 25



TWO LANE BLOCKAGE



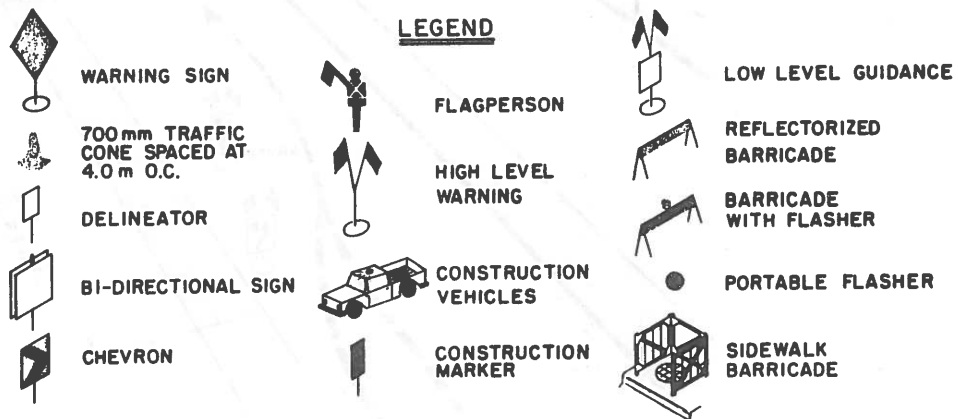
**SHORT TERM BLOCKAGE OF MEDIAN LANE OR LANES
DURING HOURS OF DARKNESS**
(Figure 26)

Figure 26 depicts a typical situation where a median lane of a street is blocked for a short time - not longer than 2 hours during the hours of darkness. The devices shall conform with the requirements of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockage shall not exceed 2 hours duration.
2. The short term situation is not applicable where the posted maximum speed limit exceeds 70 km/h, not on bridges, on overpasses, in underpasses, nor within 100 metres of a curve.
3. 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.
4. The reflectorized cones shall be not less than 700 mm in height. Chevrons may be used in place of cones.
5. High level warning flags shall be mounted above the RB-25 traffic sign in each blocked lane.
6. Flashers shall be mounted above the RB-25 traffic sign.
7. All construction vehicles and large construction equipment shall have flashing amber beacons in operation and visible from all directions.

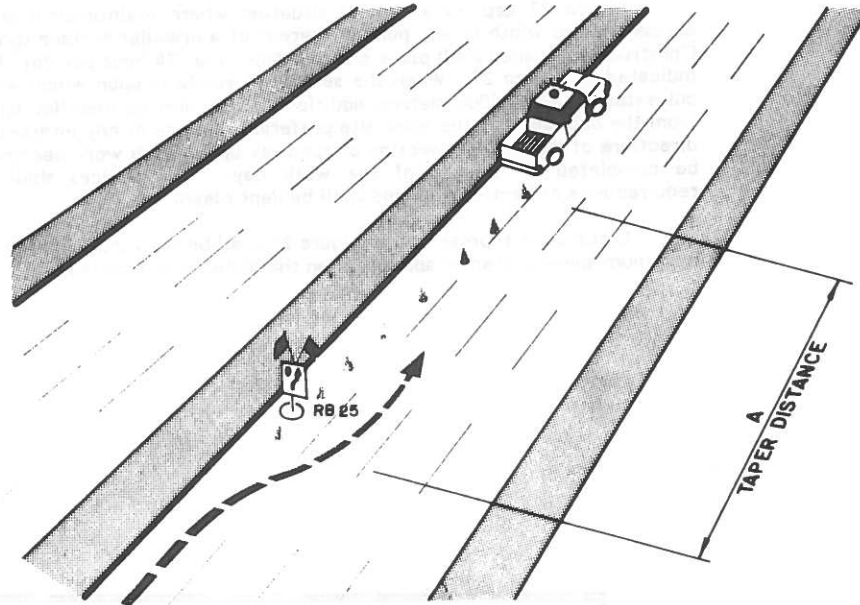
Distances A and B represented in Figure 26 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)	SPACING BETWEEN PORTABLE SIGNS WITHIN A TAPER (m)
A	50	50	15
	60	60	15
	70+	100	30
B	50	100	15
	60	120	15
	70+	200	30

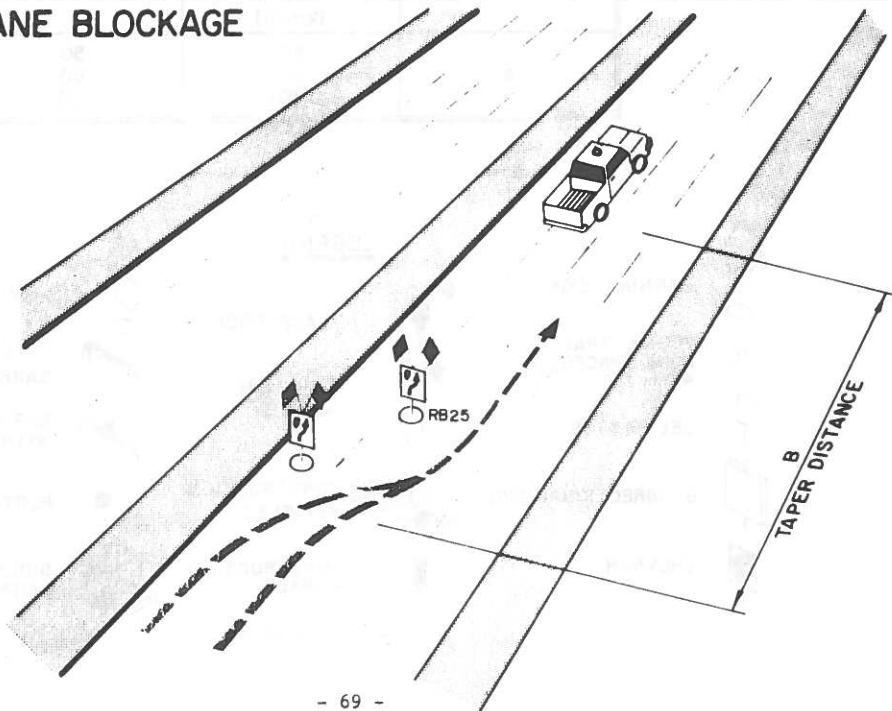


ONE LANE BLOCKAGE

FIGURE 26



TWO LANE BLOCKAGE



MAINTENANCE OF GRANULAR SURFACE ROADWAYS
(Figure 27)

Figure 27 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 on a "24 hour per day" basis the devices as indicated in Figure 27. When the section of roadway upon which work is being carried out extends beyond 1000 metres, additional signs must be installed approximately 1000 m from the beginning of the work site preferably farside of any intersecting street for both directions of travel. Any section of roadway upon which work has been undertaken must be completed by the end of the work day. The devices shall conform with the requirements of Section 5.00 and shall be kept clean.

Distance A represented in Figure 27 shall be selected from the table below for the maximum speed posted or applicable on the highway at that point.

DIMENSION	TRAFFIC SPEED (km/h)	LENGTH (m)
A	50	50
	60	60
	70+	100

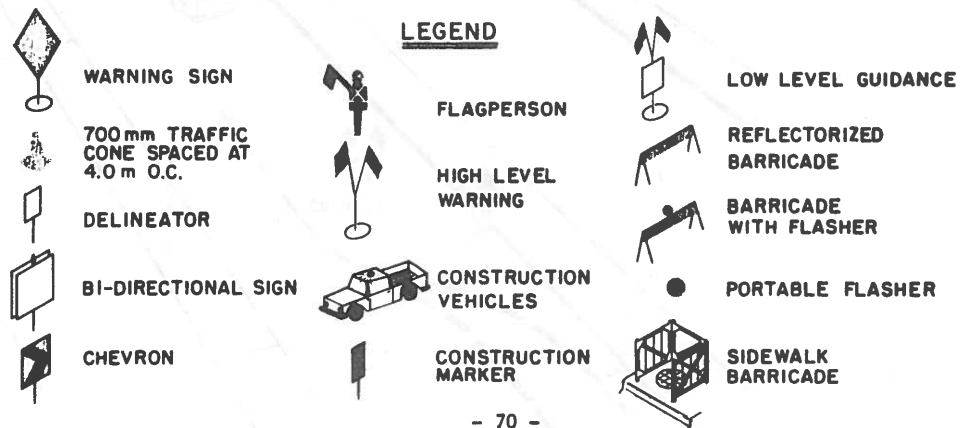
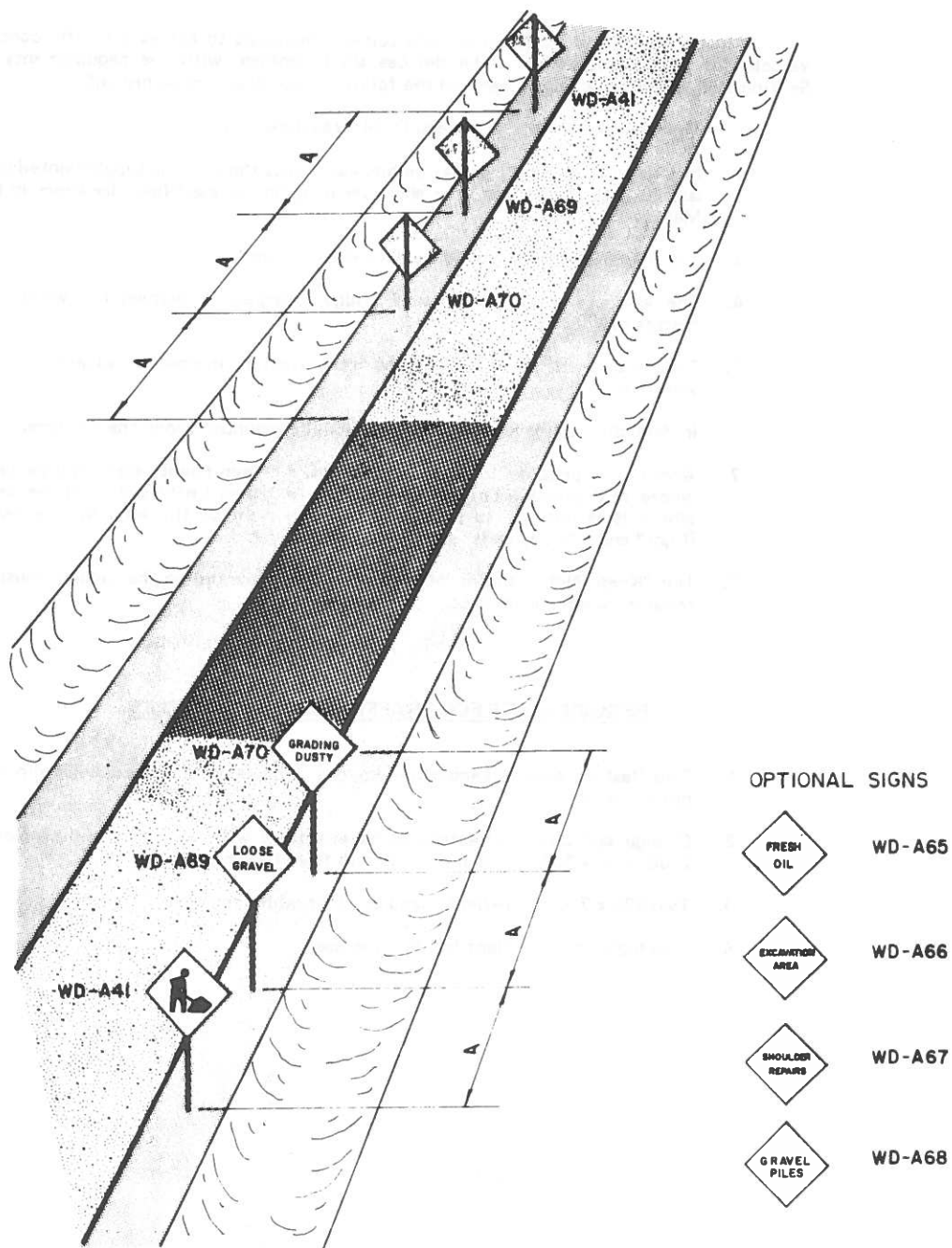


FIGURE 27



MOVING WORKSITES
(Figures 28, 29 and 30)

Figures 28, 29 and 30 depict a truck suitably equipped to act as a traffic control vehicle for moving worksites. The devices shall conform with the requirements of Section 5.00 and shall be kept clean and the following conditions must prevail.

1. The blockages shall not exceed 15 minutes duration.
2. Not more than one lane may be blocked unless the truck is supplemented by a suitably equipped flagman or short term signing as specified elsewhere in the Manual.
3. The maximum speed limit does not exceed 70 km/h.
4. The worksite shall not be on a bridge, overpass, underpass nor within 100 metres of a curve.
5. The truck shall be stationed not more than 15 metres in advance of the worksite.
6. In daylight, high level warning flags shall be mounted above the beacons.
7. 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, both a "Keep Right" and a "Keep Left" sign shall be used.
8. The "Keep Right" and/or "Keep Left" signs mounted on the vehicle must be removed when not in use.

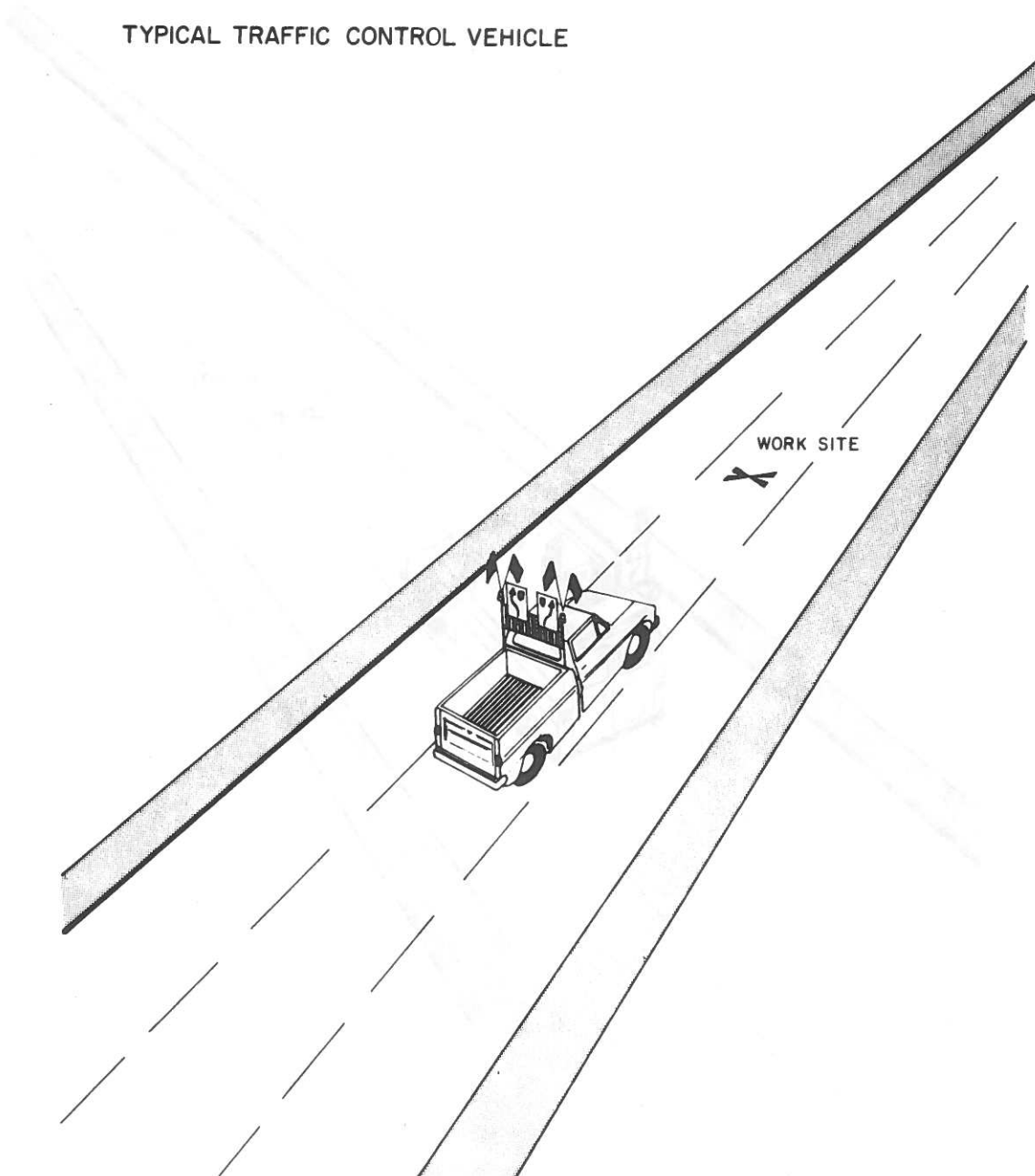
REQUIREMENTS FOR TRAFFIC CONTROL VEHICLES

1. Two flashing amber beacons (minimum 2 lamp variety) at least 2000 mm from ground level.
2. Orange and black reflectorized hazard panel with a minimum dimension of 2000 mm by 500 mm at least 1500 mm from the ground.
3. Two 600 x 750 mm reflectorized black on white regulatory signs.
4. Two high level red flags for daytime use.

MOVING WORKSITES

TYPICAL TRAFFIC CONTROL VEHICLE

FIGURE 28



MOVING WORKSITES

TYPICAL TRAFFIC CONTROL VEHICLE

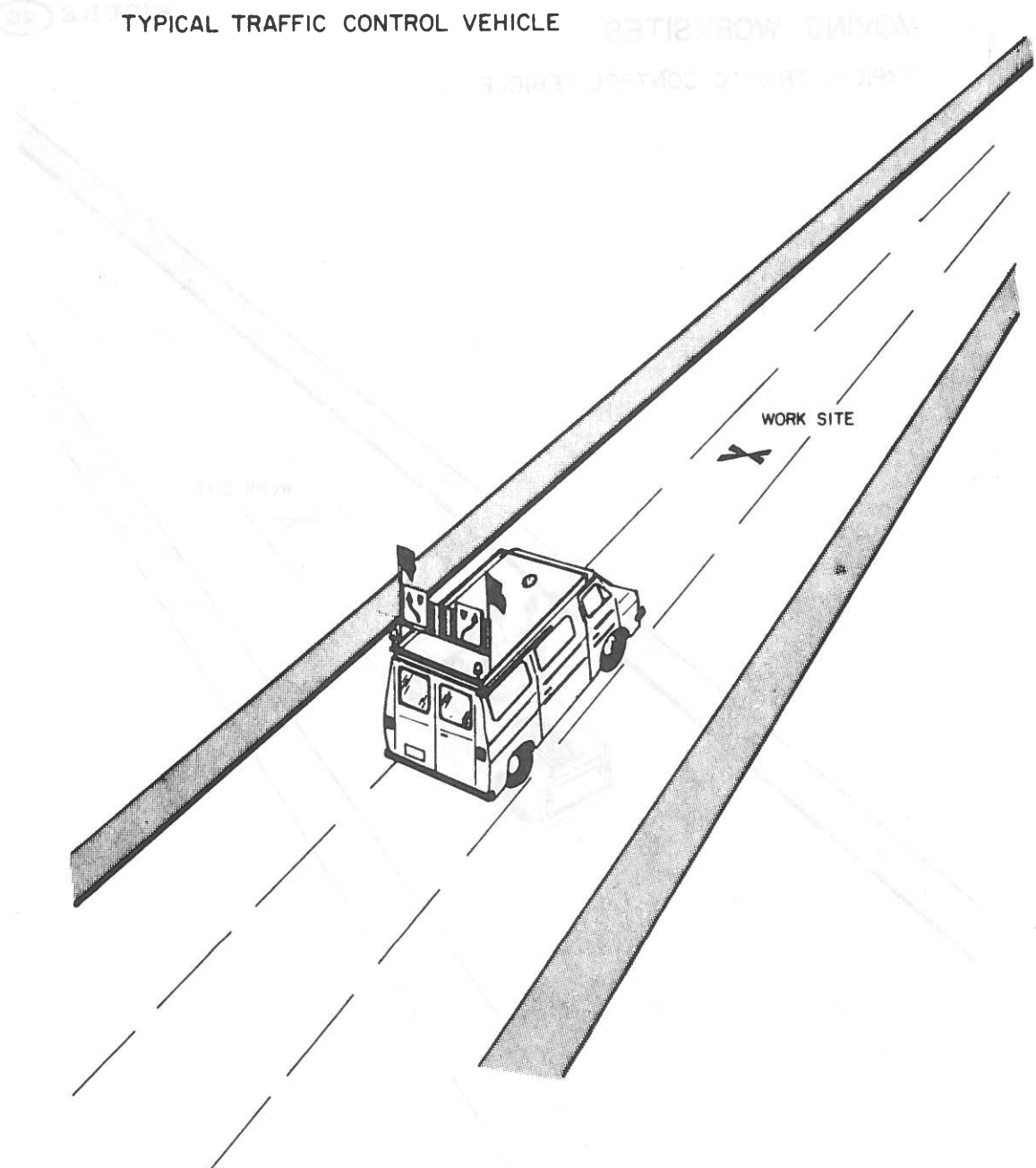
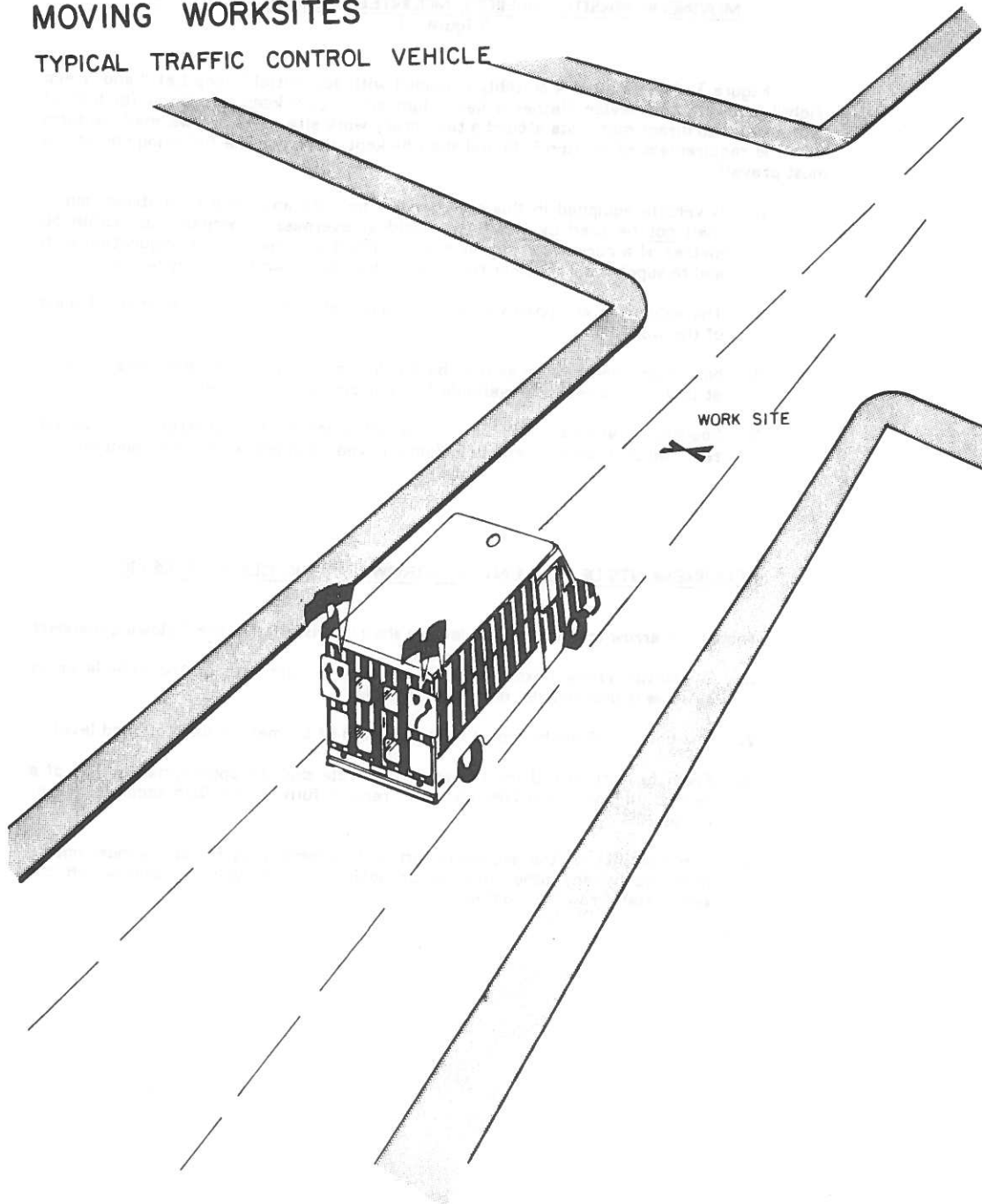


FIGURE 30

MOVING WORKSITES

TYPICAL TRAFFIC CONTROL VEHICLE



MOVING WORKSITE - VEHICLE MOUNTED SEQUENTIAL ARROW
(Figure 31)

Figure 31 depicts a truck suitably equipped with sequential "Keep Left" and "Keep Right" arrows. The device flashes a keep right arrow or a keep left arrow (or both if appropriate) to direct motorists around a temporary work site. The arrows shall conform with the requirement of section 5.00 and shall be kept clean and the following conditions must prevail.

1. A vehicle equipped in this manner may be used anywhere on a street, but it shall not be used by itself on a bridge, overpass, underpass nor within 50 metres of a curve. On curves and on hills it may be used in conjunction with and to supplement, but not to replace, devices shown in Figures 14 and 15.
2. The vehicle so equipped shall be stationed not more than 15 metres in advance of the worksite.
3. Not more than two lanes may be blocked at any one time and there must be at least one other lane available for that direction of travel.
4. Sequential arrows must be turned off when traffic control is no longer required or when the vehicle is being moved from one worksite to another.

REQUIREMENTS OF SEQUENTIAL ARROW TRAFFIC CONTROL DEVICE

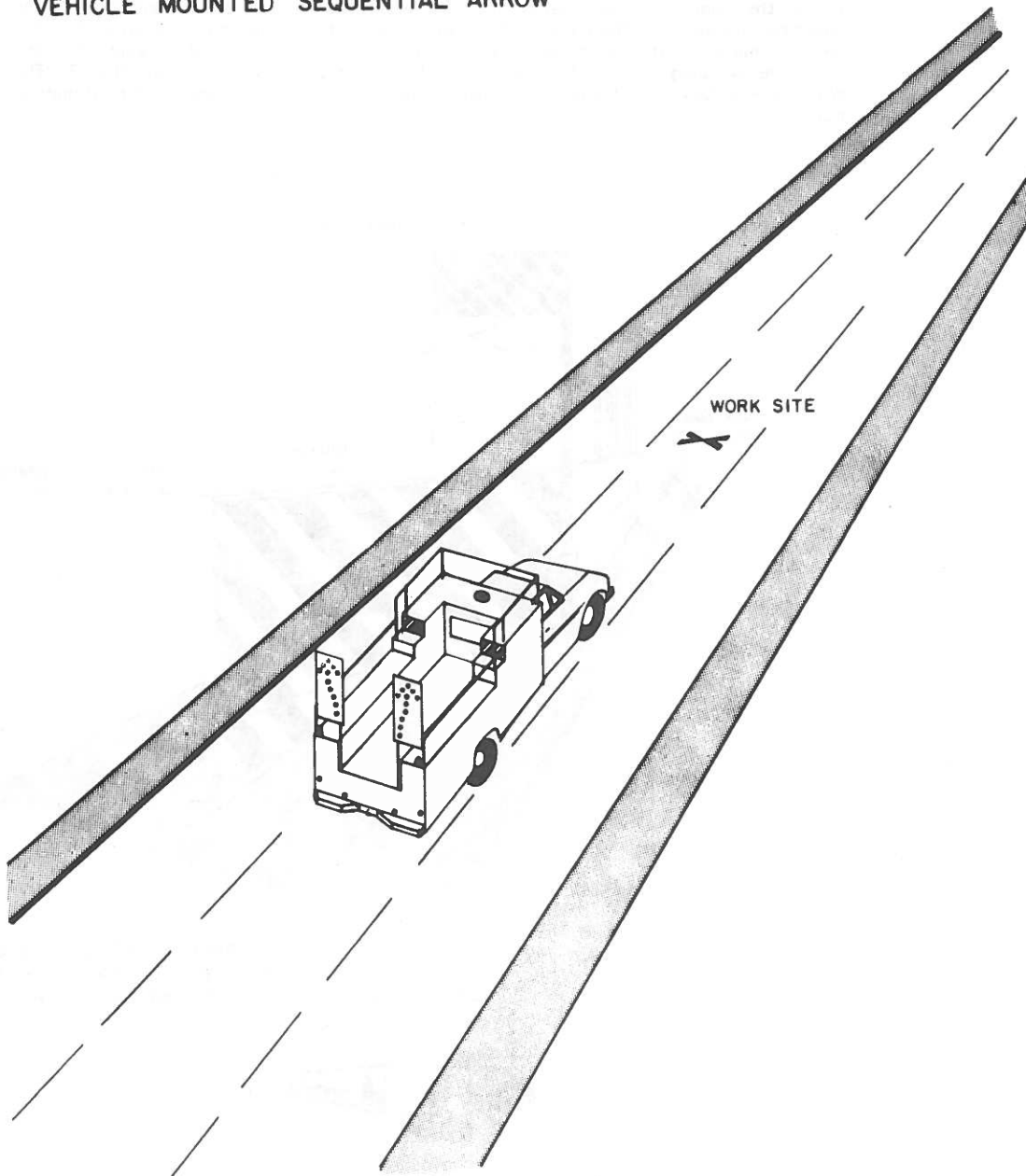
Sequential arrow traffic control devices shall be installed in the following manner:

1. Sequential arrow boxes must be mounted on the rear of the vehicle or as close as is practicable, one on either side.
2. The bottom of the box must be a minimum of 1.3 metres above ground level.
3. From full off to full on, the sequence cycle shall be approximately 0.50 of a second plus or minus 20% and shall remain fully on for 0.75 seconds plus or minus 20%.
4. The visibility of the sequential arrow to approaching motorists must not be obscured by any other devices or objects on the vehicle upon which the sequential arrow is mounted.

FIGURE 31

MOVING WORKSITES

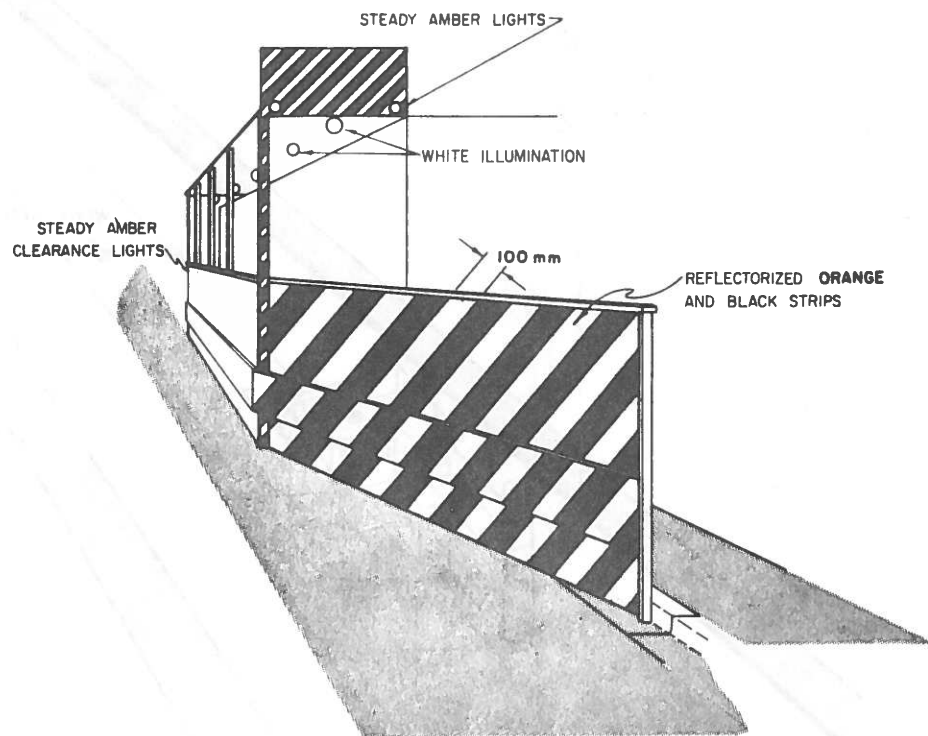
VEHICLE MOUNTED SEQUENTIAL ARROW



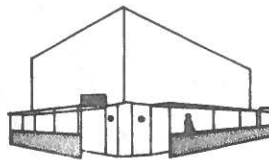
PEDESTRIAN HOARDING ON ROADWAY

FIGURE 32

Figure 32 depicts a typical situation of physical blockage of a public sidewalk for the purpose of construction or repair on adjacent private property, and its replacement with a temporary covered hoarded walk. The necessary placement of white illumination within the hoarding, and location of traffic control devices on the exterior of the hoarding, are shown. The Construction Agency shall place and maintain on a "24 hour per day" basis, the devices as indicated in Figure 32. The devices shall be kept clean and in proper working order. Sections 84 and 85 of Manitoba Regulation 204/77 "The Workplace Safety and Health Act" governs the construction of pedestrian hoardings in Manitoba.



Advance signing in accordance with Figure 14 in conjunction with hoarding on the roadway



4.04 Flagperson & Practices

On streets or highways where the work activity limits two-way traffic movement to a single traffic lane for short periods of time, it will generally be undesirable to undertake major diversion of detours. In such circumstances, flagperson operation will be established and conducted as set out below.

Where maximum speed limits are 70 kilometres per hour or greater, "FLAGPERSON AHEAD" signs shall be placed 120 m in advance of all flagperson stations and a flagperson shall stand approximately 60 m in advance of each end of the work site. He/She should be clearly visible to the motorists he/she is controlling for a distance of at least 150 m. Where maximum speed limits are 60 kilometres per hour or less, "FLAGPERSON AHEAD" signs shall be placed 90 m in advance of all flagperson stations and a flagperson shall stand approximately 30 m in advance of each end of the work site. He/She should be clearly visible to the motorists he/she is controlling for a distance of at least 75 m.* For this reason, he/she must wear the reflectorized orange vest and approved CSA safety helmet, and he/she must stand alone, never permitting a group of workmen to congregate around him/her. He/She should stand either on the edge of the shoulder or in the barricaded traffic lane and under no circumstances should he/she stand in the traffic lane which he/she is controlling. The following procedures shall be used:

- (i) The flagperson must face traffic in signalling motorists to stop or proceed.

***NOTE:** Fluorescent equipment is only suitable during daylight conditions. For night-time conditions, reflectorized vests, hats, paddles and red flashlights must be used.

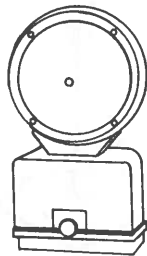
(ii) To stop traffic, the flagperson shall stand in a stationary position and extend the paddle or flag horizontally across the traffic lane. The signal shall be held still so the message may be read and understood from a maximum distance away. For greater emphasis, the free arm shall be raised with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

Additional information is contained in the "FLAGMAN'S MANUAL", published by the Manitoba Highways, Traffic Section.

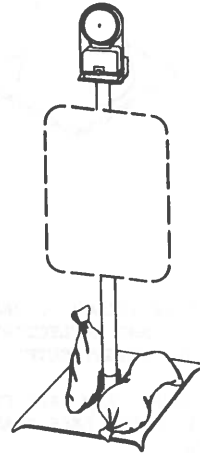
WORK AREA ENCLOSURE AND OTHER DEVICES

PORTABLE FLASHER



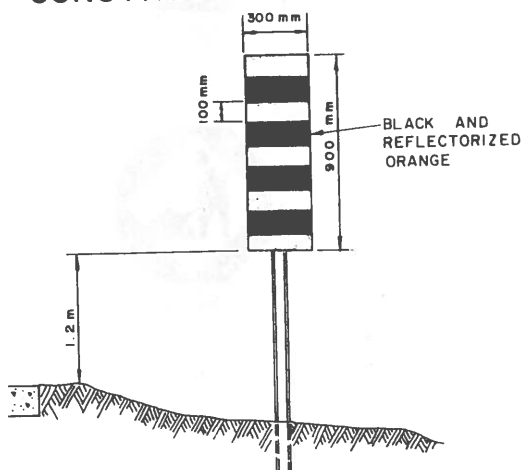
- (A) THE LENS SHALL BE NOT LESS THAN 175 mm IN DIAMETER.
- (B) THE FLASHER SHALL GIVE NOT LESS THAN 50 NOR MORE THAN 60 FLASHES PER MINUTE.
- (C) THE LAMP SHALL BE ILLUMINATED NOT LESS THAN 40 NOR MORE THAN 60 PER CENT OF THE TIME WHEN OPERATING.
- (D) THE FLASHER SHALL OPERATE AS DESCRIBED IN ITEMS (A) AND (B) ABOVE, DURING HOURS OF DARKNESS BUT NEED NOT OPERATE DURING DAYLIGHT HOURS.
- (E) FLASHERS SHALL BE EMPLOYED FROM APRIL 1, TO NOV. 15, INCLUSIVE.

PORTABLE SIGN SUPPORT

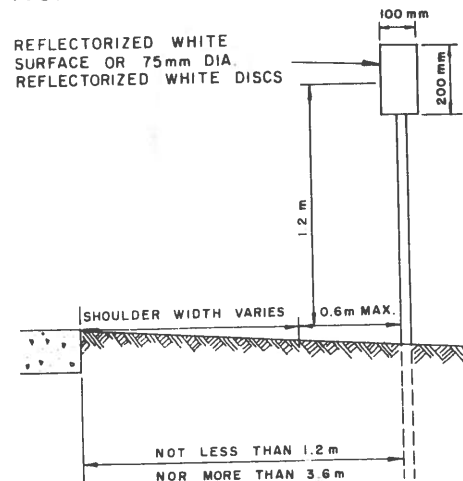


- A) BOTTOM EDGE OF SIGN SHALL BE NOT LESS THAN 1.0 m ABOVE THE ROADWAY.

CONSTRUCTION MARKER



ROAD EDGE DELINEATORS

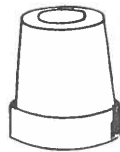


TRAFFIC CONES

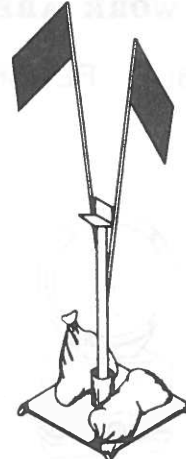


- A) SHALL BE YELLOW OR ORANGE RUBBER OR PLASTIC AND REFLECTORIZED OVER 75% OF THE UPRIGHT OUTER SURFACE.
- B) FOR SHORT TERM LANE CLOSURES, CONES SHALL BE NOT LESS THAN 700 mm IN HEIGHT.

FLASHING AMBER BEACON FOR VEHICLES

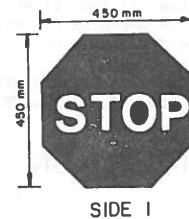


HIGH LEVEL WARNING FLAG DEVICE

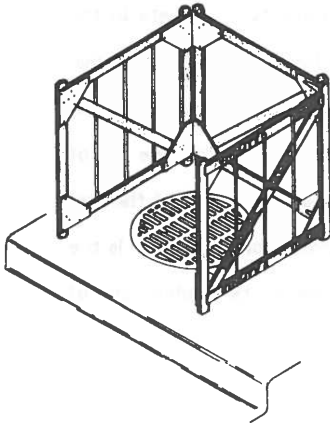


- A) FLAGS SHALL BE APPROXIMATELY 3.0 m ABOVE THE ROADWAY.
- B) FLAGS SHALL BE APPROXIMATELY 400 mm SQUARE.
- C) FLAGS SHALL BE RED OR ORANGE.
- D) SHALL BE NOT FEWER THAN 2 FLAGS PER DEVICE.

FLAGPERSON'S PADDLE

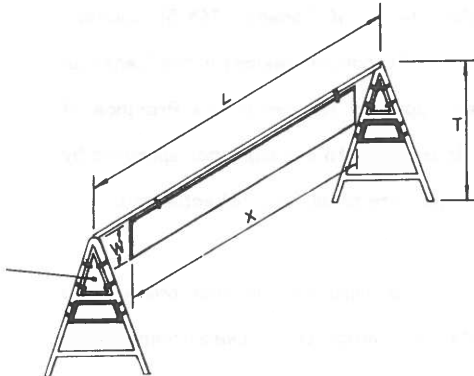


SIDEWALK BARRICADE (USED AROUND MANHOLES)



- A) THE OVERALL HEIGHT OF THE BARRICADE SHALL BE APPROXIMATELY 900 CENTIMETRES.
- B) THE OVERALL WIDTH OF THE SET UP BARRICADE SHALL BE 900 CENTIMETRES.
- C) OPEN SIDE OF SET UP 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 METAL BARRICADE



- A) THE OVERALL LENGTH OF "L" SHALL BE APPROXIMATELY 250 CENTIMETRES.
- B) THE OVERALL HEIGHT "T" OF THE BARRICADE SHALL BE APPROXIMATELY 100 CENTIMETRES.
- C) "W" SHALL NOT BE LESS THAN 25 CENTIMETRES.
- D) "X" SHALL NOT BE LESS THAN 80% OF "L".
- E) "Y" SHALL NOT BE LESS THAN 1,000 SQUARE CENTIMETRES.
- F) BARRICADE SHALL BE OF METAL MATERIAL AND BOTH SIDES OF EACH END, AND BOTH SIDES OF THE PANEL ("W" x "X") SHALL BE REFLECTORIZED ORANGE IN COLOUR.
- G) THE OWNERS NAME ETC. SHALL BE SHOWN ON BOTH SIDES OF THE PANEL ("W" x "X").

5.00 EQUIPMENT FOR TRAFFIC CONTROL AND WORK ENCLOSURE

5.01 Introduction

Considerable progress has been made in recent years in a number of areas that relate directly to motorist and pedestrian safety in construction areas. Levels of street lighting have been increased on the majority of streets in the City of Winnipeg, improving night-time visibility in difficult driving conditions. Improved traffic control devices, including reflectorization, have ensured the communication of information to drivers under all weather conditions. The use of high-level warning flags, reflectorized barricades, and battery operated flashers have contributed to a more clear-cut definition of on-street work areas. It is the intention of the City of Winnipeg in producing this Manual to take advantage of this progress in serving the needs of road users.

5.02 Warning and Information Signs

Many of the signs and standard practices of signing that apply to construction and maintenance activities are to be found in the Manual on Uniform Traffic Control Devices for Canada (Metric edition), which is available at the office of the Roads and Transportation Association of Canada, 1765 St. Laurent Boulevard, Ottawa, Ontario, K1G 3V4. All traffic control devices in the Canadian Manual, and other signs shown herein, are approved for use in the Province of Manitoba by the Highway Traffic Board. It is illegal to use signs not approved by the Board. All warning and traffic control signs are to be fully reflectorized.

Full scale drawings of all traffic signs described in this Manual are available from the City of Winnipeg Streets and Transportation Department.

WARNING AND INFORMATION SIGNS



WD-A33L



WD-A33LT
LANE DROPS
(LEFT)



WD-A23



WD-A23T
PAVEMENT NARROWS



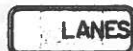
WD-A33R



WD-A33RT
LANE DROPS
(RIGHT)



WD-A23R



WD-A23RT
PAVEMENT NARROWS
(RIGHT)



WD-A23L



WD-A23LT
PAVEMENT NARROWS
(LEFT)



WD-83



TWO-WAY
TRAFFIC AHEAD



WD-A43L
ROADSIDE DETOUR
(LEFT)



WD-A17
DOUBLE ARROW



WD-A43R
ROADSIDE DETOUR
(RIGHT)



WD-A41(A)



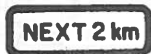
WD-A50

NOTE: DIAMOND SHAPED WARNING SIGNS SHALL BE 750mm X 750mm REFLECTORIZED ORANGE. TABS SHALL BE 300mm X 600mm REFLECTORIZED ORANGE.

WARNING AND INFORMATION SIGNS



WD-A41



WD-A41T
CONSTRUCTION
AHEAD



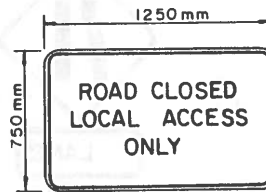
WD-46
SURVEY
CREW



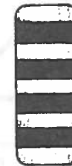
WD-A45
FLAGMAN



WD-22
BUMP SIGN



C-9



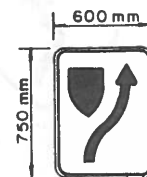
WD-A62
CONSTRUCTION
MARKER



WD-A63
CHEVRON



RB-25L
KEEP LEFT



RB-25
KEEP RIGHT

NOTE: DIAMOND SHAPED WARNING SIGNS SHALL BE 750 mm x 750 mm REFLECTORIZED ORANGE. TABS SHALL BE 300mm x 600mm REFLECTORIZED ORANGE.

All sign placement on streets in the City of Winnipeg is to conform with the general terms expressed in Section A1.15 of the Canadian Manual. The basic goal is that of placement in the most advantageous position for motorist visibility. In general, signs are placed on the right hand side of the roadway and/or in the median at a minimum height of 2.0 m measured from ground elevation at the base of the post to the bottom of the sign, except for signs on portable stands.

It is imperative that traffic signs be well maintained. They must be kept clean, and properly located.

The warning and traffic control signs are depicted on Page 80. Their permitted use is indicated in the sketches of "Typical Situations and Proper Measure", in Section 4.03.

Traffic control devices used in Manitoba must conform as closely as possible with the standard colours for Canadian signs. Colour specifications have been established by the Canadian Government Specifications Board (CGSB). All colour used on signs shall conform to these standards.

5.03 Work Area Enclosure and Other Devices

Work site enclosure devices are utilized to indicate the location and extent of a work area to motorists and pedestrians, to prohibit their entry into the work area which is generally unsuitable or unsafe for their passage, and to protect workmen within the work area from the unanticipated and possible dangerous entry of vehicles and pedestrians. These devices include reflectorized barricades and portable flashers.

Other devices, such as traffic cones, high flags, and portable sign supports are used to assist in guiding and informing motorists when approaching and bypassing a work area. The designs and dimensions of these devices are to conform with the specifications set out in the sketches shown on Pages 81 and 82. Their usage and placement is to conform with the general terms expressed in Section A1.15 of the Canadian Manual. It is imperative that work areas be well enclosed, and that all of the work area enclosure and other devices be properly located and well maintained. Their permitted use is indicated in the sketches of "Typical Situations and Proper Measures", in Section 4.03.