

APPENDICES

TRAFFIC CONTROL FOR SPECIALIZED MINISTRY WORKS ON HIGH SPEED RURAL HIGHWAYS

Notice

Traffic control as called for in these Appendices is generally required for high speed rural highways only. It is not intended as a requirement for low speed urban streets.

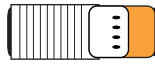
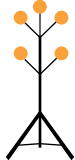
LEGEND	
	TUBULAR MARKER – TYPE D
	CONE – TYPE A, B or C
	SIGN
	TRAFFIC CONTROL PERSON (TCP)
	SHADOW, BUFFER or WORK VEHICLE
	(360°) FLASHING YELLOW LIGHT
	WORK AREA
	PORTABLE LANE CONTROL SIGNAL
	BARRICADES and FENCING
	FLASHING ARROW BOARD (FAB)
	HIGH LEVEL WARNING DEVICE (HLWD)

TABLE A

Positioning of devices on conventional roadways for various speed limits.
(For positioning of devices on rural freeways, see Table B in Chapter 5.)

*	Regulatory speed limit	50 km/h	60 km/h	70 km/h	80 km/h	90-100 km/h
1a	Taper length for lane closure	35 (1:10)	55 (1:15)	75 (1:20)	90 (1:25)	110 (1:30)
1b	Taper length for shoulder work or where TCPs used (min. 3 cones)	5	8	10	12	15
2	Maximum distance between cones or tubular markers for 1a	10	10	10	10	10
3	Minimum tangent distance between tapers	30	60	90	120	150
4	Distance between construction signs	40	60	80	100	150

Dimensions shown are in metres and are minimums except for 2*.

Cones and tubular markers are generally used in daylight but if used at night must be reflectorized. Barricades, flexible drums or temporary delineator posts are generally used during hours of darkness and must be reflectorized.

Dimensions 1b* apply to downstream tapers, shoulder tapers, and to two-way traffic tapers on travelled lanes where traffic is controlled by TCPs, portable lane control signals or temporary traffic signals.

Dimensions 4* represent the minimum advance placement distances for initial signs as well as distances between subsequent signs in multi-sign series.

APPENDIX A

ROAD CLOSURES FOR SNOW AVALANCHE CONTROL

Where snow avalanche conditions warrant, a highway may be closed at locations with gates, at designated locations without gates, or at other locations approved by the Avalanche Technician. Closure locations should be on relatively level grade, be free of avalanche hazard and have turning room for large vehicles.

Traffic control for snow avalanche closures is as illustrated in one of the following:

Figure A1 Gates and no TCPs

Figure A2 Gates and TCPs

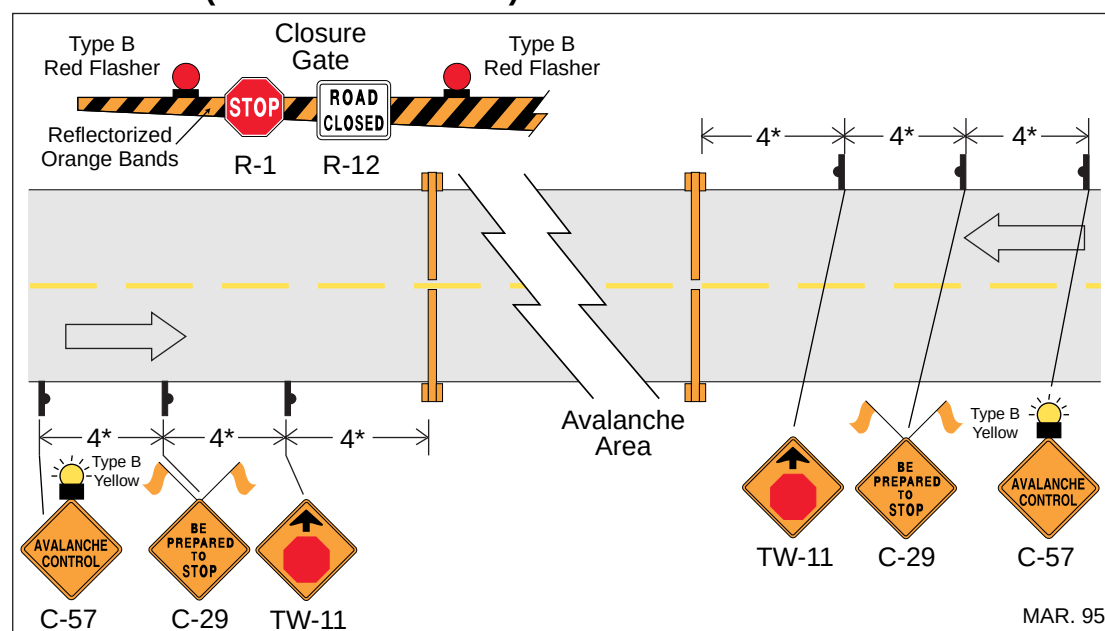
Figure A3 Barricades and TCPs

When not required, signs, including those on gates, must be removed, folded or covered, and flags removed.

Bases for gates shall be marked with W-54 black and yellow HAZARD markers.

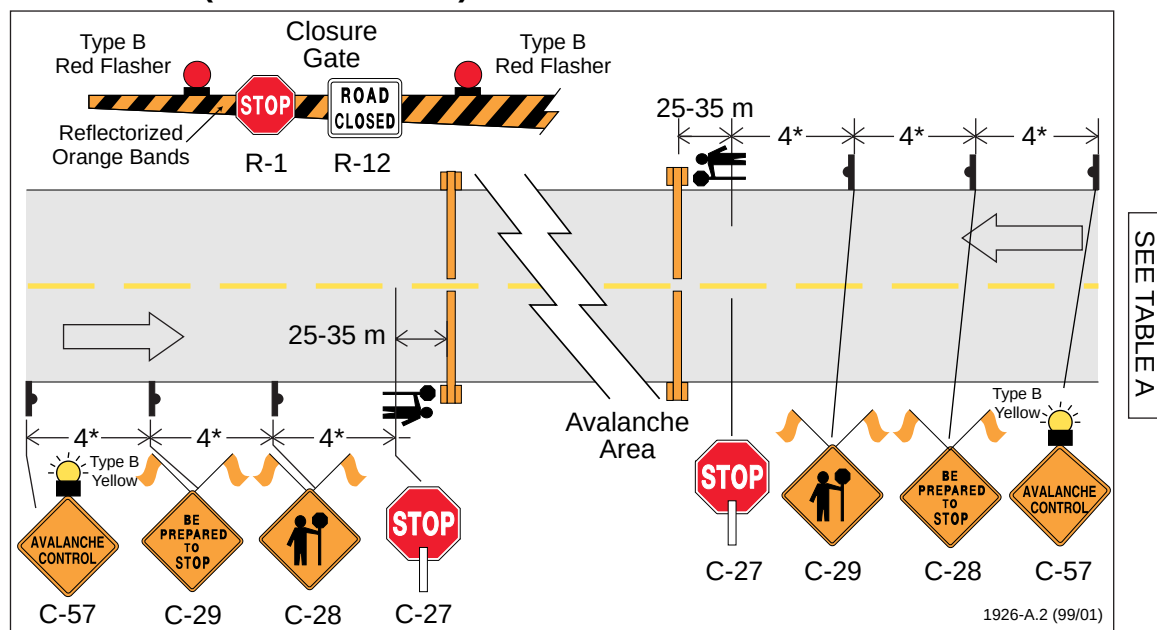
On multilane divided roadways the indicated signing should be repeated in the median if space permits. A sign mounted in the median should be approximately 60 m upstream from the same sign on the shoulder.

**Figure A.1 – Road Closure for Snow Avalanche Control
(Gates and no TCPs)**



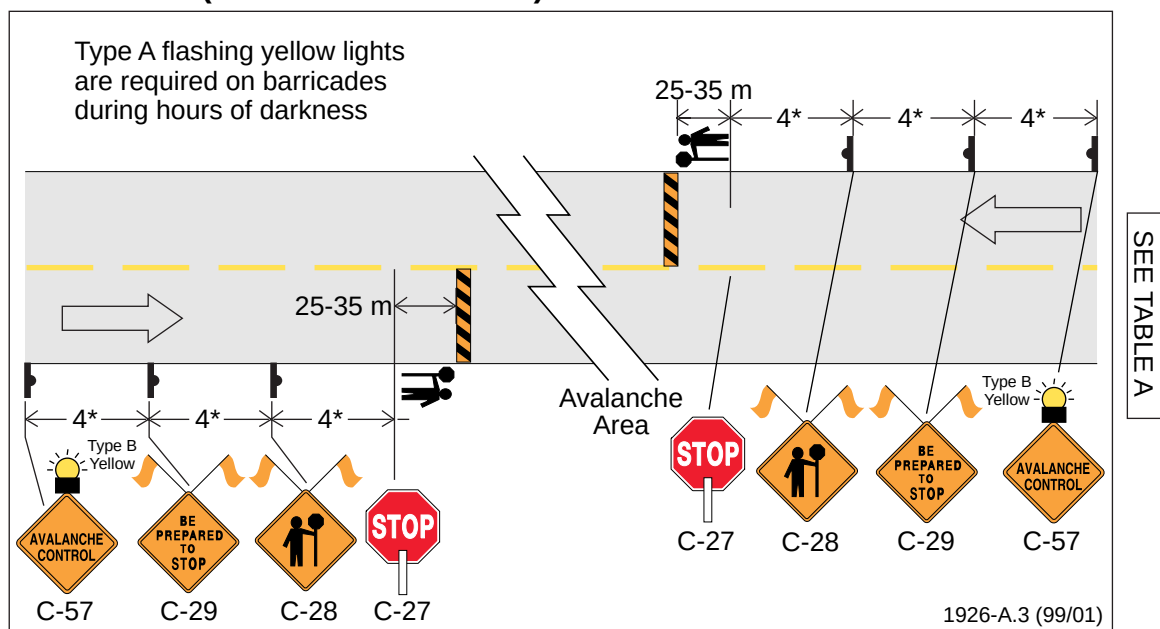
- If avalanche barrier gates are not manned during the closure, they should be locked as authorized by the Ministry Snow Avalanche Technician.
- Type B flashing yellow lights may be replaced with flags.

**Figure A.2 – Road Closure for Snow Avalanche Control
(Gates and TCPs)**



- Type B flashing yellow lights may be replaced with flags.

**Figure A.3 – Road Closure for Snow Avalanche Control
(Barricades and TCPs)**



- Roads may be closed for snow avalanche control (with barricades and TCPs) at ungated locations approved by the Avalanche Technician.
- Type B flashing yellow lights may be replaced with flags.

APPENDIX B

PAVEMENT MARKING

A document titled “Roadmarking Procedures” dated March 31, 1981 and subsequent revisions describes procedures and equipment required when marking is carried out on roads under the jurisdiction of the Ministry of Transportation and Highways. In addition, the following figures show recommended traffic control for the most common rural marking procedures.

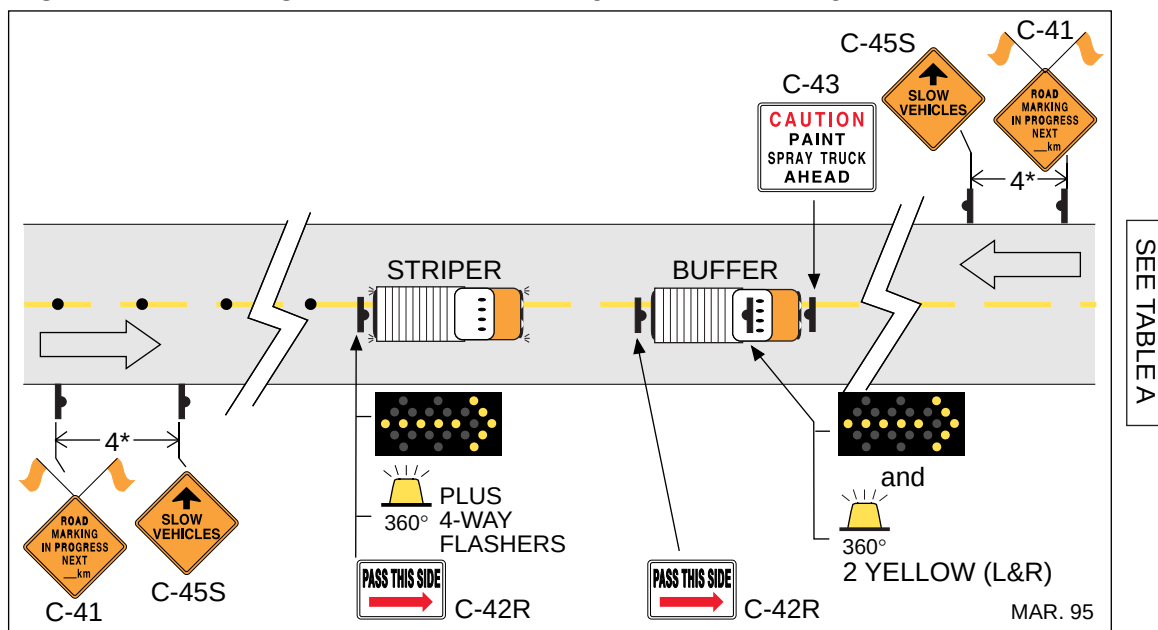
Two Lane Two-way Rural Roadway

Figure B.1 indicates traffic control for painting centreline on a two lane two-way rural road.

Multilane Rural Roadway

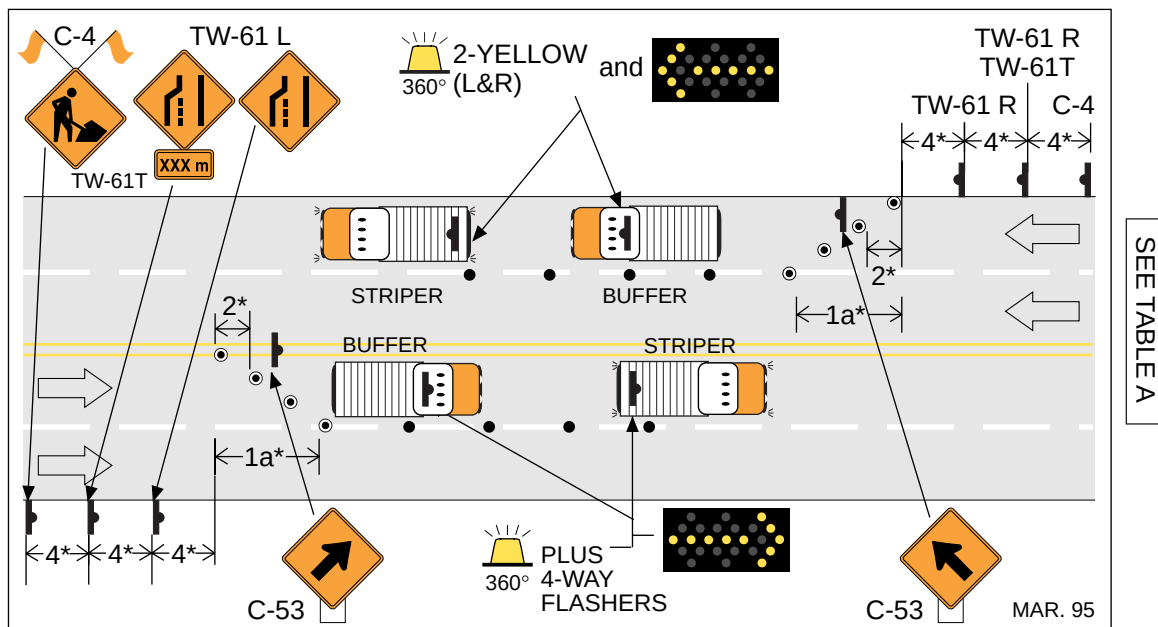
Figure B.2 indicates traffic control for painting pavement markings on a multilane rural road.

Figure B.1 Marking – Two Lane Two-way Rural Roadway



- Distance on C-41 chalk board must not exceed 10 km.
- C-41S sign may be used in place of or to supplement C-41 or C-45S signs.

Figure B.2 Marking – Multilane Rural Roadway



APPENDIX C

FALLING WEIGHT DEFLECTOMETER

This pavement testing device is mounted on a small trailer towed by a van. The test unit typically stops for a maximum of 45 seconds per test and does not require personnel to leave the vehicle. Test are usually taken at intervals of between 20 m and 100 m.

On two lane tow-way roadways with light traffic volumes and good visibility, traffic control as illustrated in Figure 3.2.2 (with C-38 sign in place of a C-44) may be used. If traffic volumes are high or visibility poor, traffic control as illustrated in Figure 3.2.1 should be used.

On multilane roadways traffic control as illustrated in Figure 3.2.3 (with a C-38 sign in place of a C-44) may be used provided that the speed limit is 70 km/h or higher, a shadow vehicle must be used, and if considered necessary a buffer vehicle as well.

C-38 signs when used for Falling Weight Deflectometer operations on rural highways may indicate a distance not exceeding 8 km.

APPENDIX D

PAVING AND SEALCOATING

GENERAL

Paving and sealcoating operations present a variety of traffic control situations which are frequently changing and constantly moving. It is, therefore, not practical to provide detailed traffic control proposals for all situations. Figures D.1 (a) and (b) and D.2 (a) and (b) illustrate minimum signing required for two typical situations.

If work is not in progress, and the roadway and shoulders are clear of machinery and obstructions, and the condition of the unfinished roadway is such that traffic can proceed safely without the aid of TCPs or a pilot car, all non applicable signs should be removed or covered. If there are potential dangers such as loose gravel, dust, low shoulders, bumps, fresh oil, uneven lifts of pavement, grooved pavement, no pavement markings, etc., then each should be signed accordingly and the construction speed zone should be left in effect.

Particular attention should be given to signing for low shoulders and uneven lifts of pavement as they are not easily detected in darkness or poor weather. On long sections, warning signs should be repeated as necessary.

Construction speed zones should be altered as necessary to keep them as short as possible and to not require drivers to proceed at unreasonably low speeds. Long zones will require that R-4/C-22 assemblies be repeated as necessary. The ends of construction speed zones are marked with R-4 signs showing normal speed limits.

Figure D.2(a) and (b) illustrates typical signing for a pilot car operation. This signing can be incorporated into that shown in Figure D.1(a) and (b).

Care must be taken to ensure that signs are moved to keep up with moving paving and sealcoating operation.

If TCPs must be employed during hours of darkness and difficulty is experienced getting traffic to stop, an oversized (75 cm x 75 cm) R-1 STOP sign may be placed on a barricade across the closed lane where the TCP is located.

Figure D.1(a) Paving – Work Not In Progress

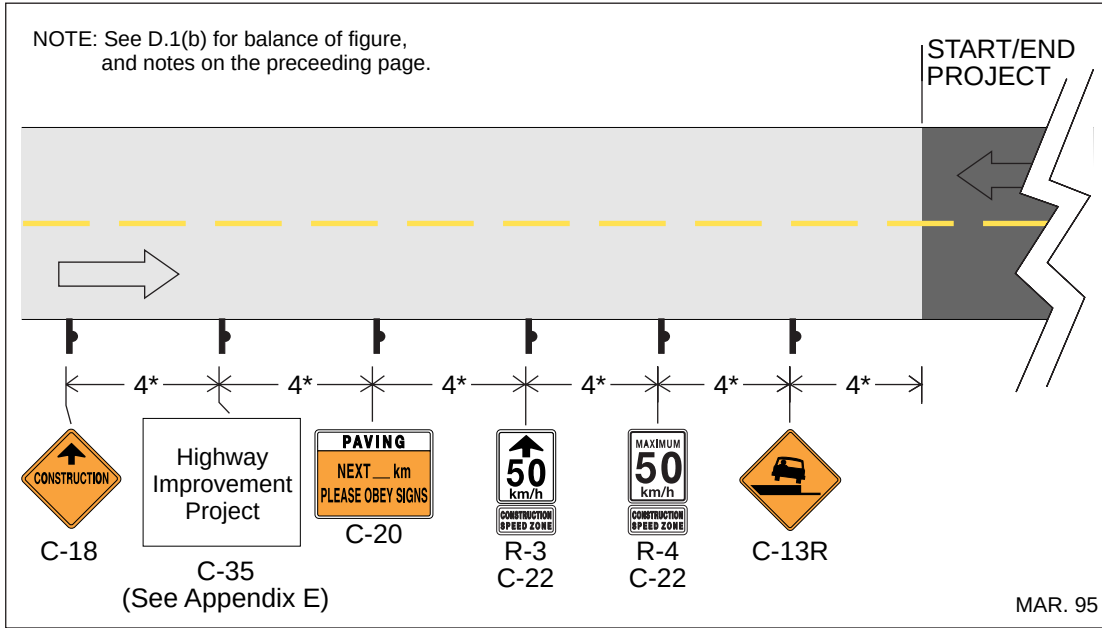
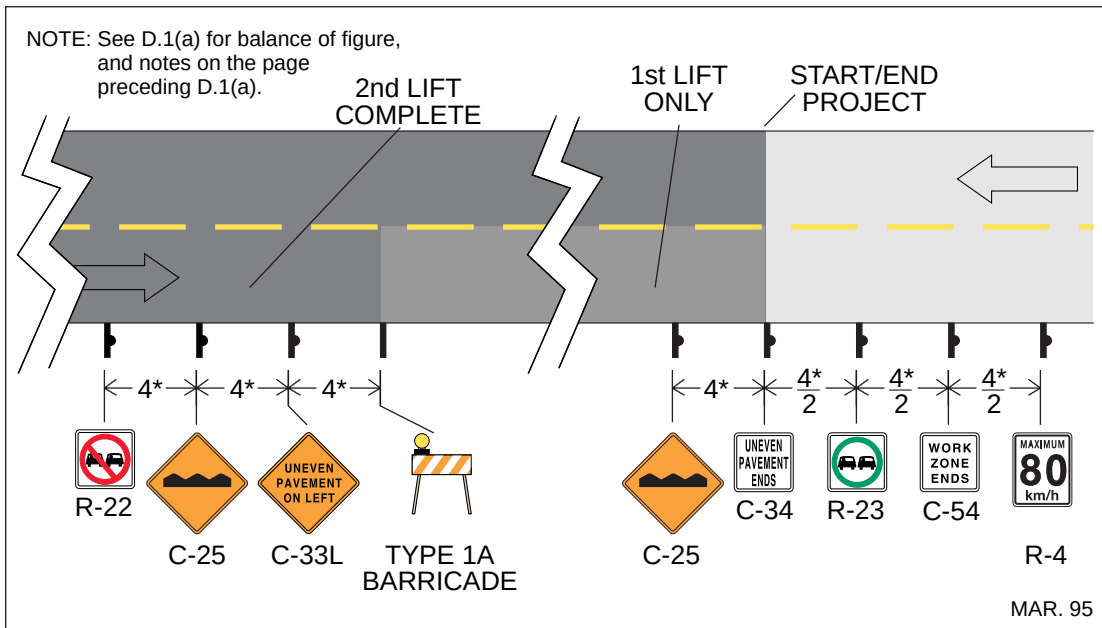


Figure D.1(b)



- Repeat applicable signs for other direction.
- At night:
 - Add Type 1A Barricades with Type A Flashing Yellow Lights to all sign locations in Advance Warning Area.
- As required throughout the work area, repeat signs such as:
 - R-4/C-22, C-8, C-12, C-14, C-24, C-37, C-46, C-49, TW-27, TW-36, TW-49, TW-50/TW-24 etc.

Figure D.2(a) Sealcoating in Progress

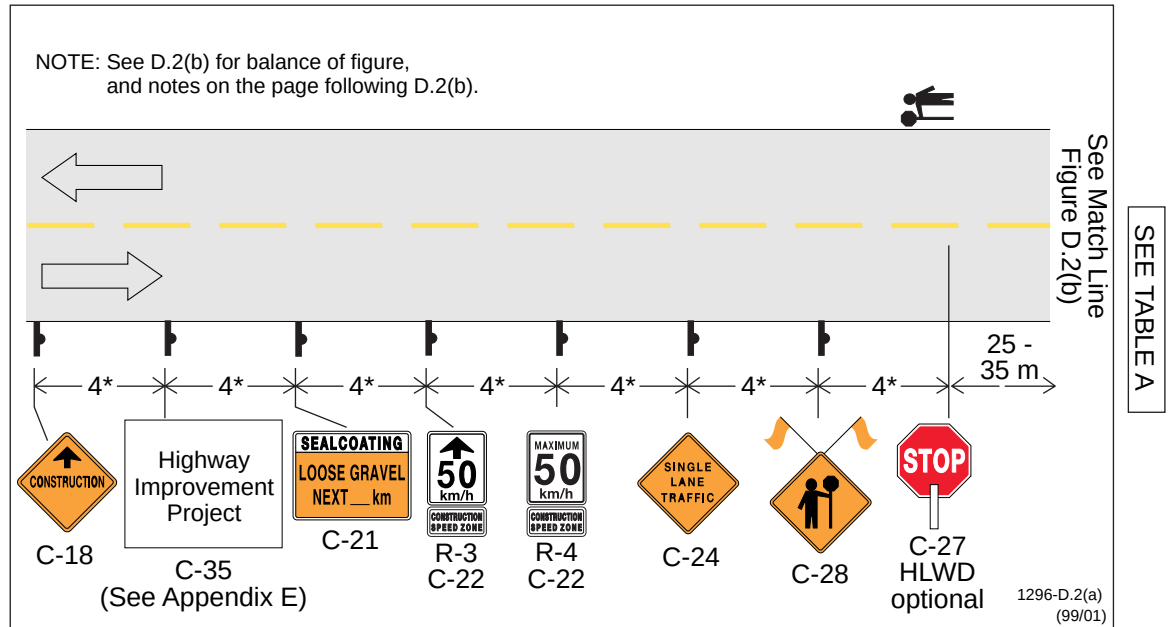
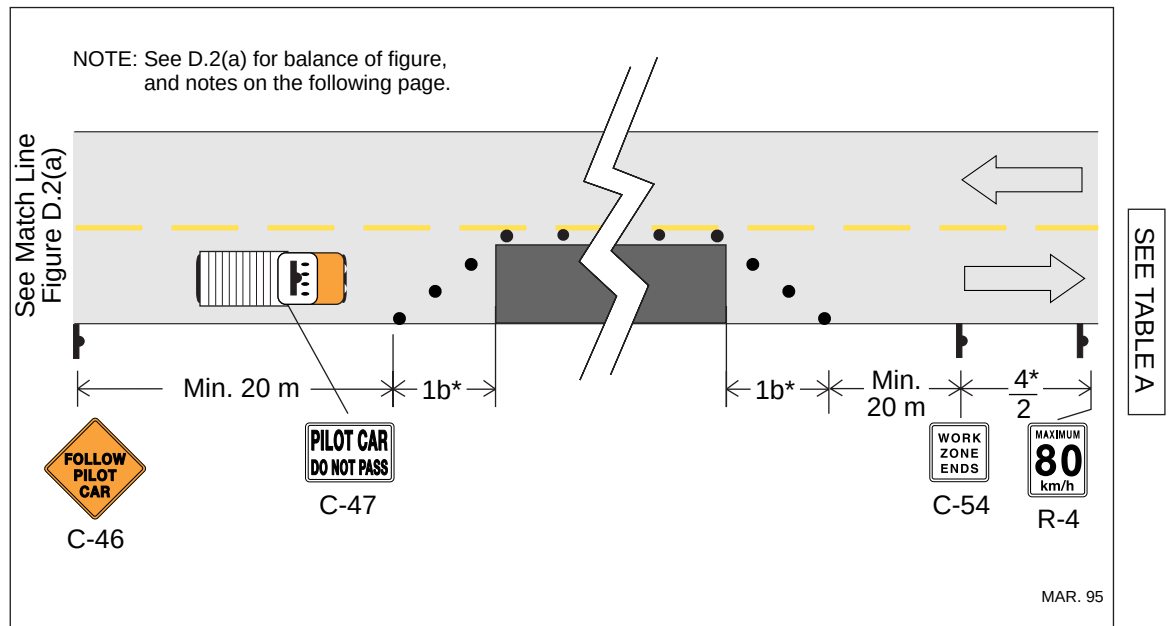
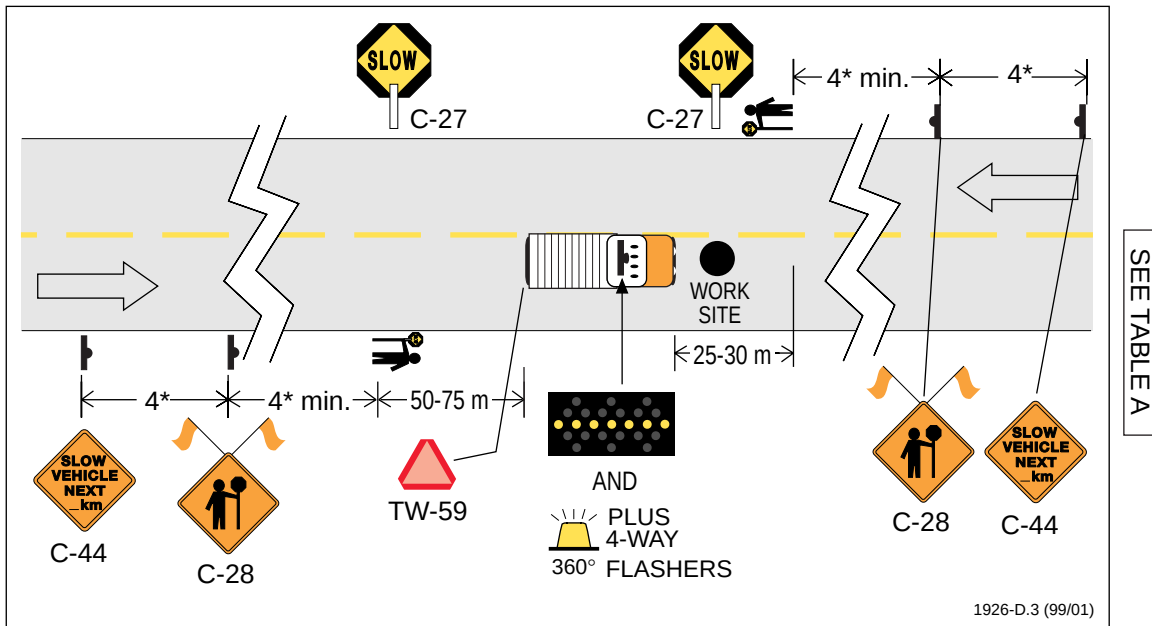


Figure D.2(b) Sealcoating in Progress



- Repeat applicable signs for opposite direction.
- At night:
 - Add Type 1A Barricades with Type A Flashing Yellow Lights to all sign locations in Advance Warning Area.
 - Add floodlights to illuminate TCPs station.
- As required throughout the work area:
 - Repeat signs such as R-4/C-22, C-4, C-14, C-37, C-46, C-49, TW-27, TW-36 etc.
- Every 5 km repeat C-21 sign showing decreasing distances.
- The pilot car operator and TCPs should be in radio contact.

**Figure D.3 Removing Temporary Reflectors from Sealcoat
– Two Lane Two-way Roadway**



- Distance on C-44 signs should not exceed 8 km.
- A Type B flashing yellow light or flags shall be used with C-44 signs. Addition of a HLWD is optional.
- all signs should be removed or covered when work is not underway and work vehicles can travel at posted speeds.
- A shadow vehicle with a C-45 or other appropriate sign on the rear may be required by the road authority.
- A C-42R PASS THIS SIDE (Right Arrow) sign may be displayed on the rear of the work vehicle only if there is consistently sufficient through lane and shoulder width for following traffic to pass safely on the work vehicle's right side.

APPENDIX E

MINISTRY HIGHWAY IMPROVEMENT PROJECT (HIP) SIGNS

(Various colours, not refl.)

An appropriate HIP sign is required in the Advance Warning Area of all major Ministry capital highway construction and rehabilitation projects and cost-shared municipal road projects that are in public view. A locational example is shown in Figure 4.1.1.

For those HIP signs with two sizes, the larger are for multilane highways with maximum speed limits of 80 km/h and higher. The smaller signs are used on all other highways.

The type of HIP sign required depends on the program(s) through which project funds are provided. The three categories are listed below.

- Federal Government funded
- Major Project
- Rehabilitation Project

The C-35 SHIP and C-35 INFA signs are used when projects are jointly funded by Federal Government programs.

C-35 MP signs are used for designated major and other capital-funded highway construction projects. The middle (green) panel shows the name of the project. If the project is not named, the panel shows HIGHWAY/IMPROVEMENT PROJECT. The bottom (yellow) tab shows the project segment on the first line and the type of improvement on the second.

C-35 RP signs are used on highway rehabilitation projects. The project boundaries or feature name are placed on the green portion of the sign.

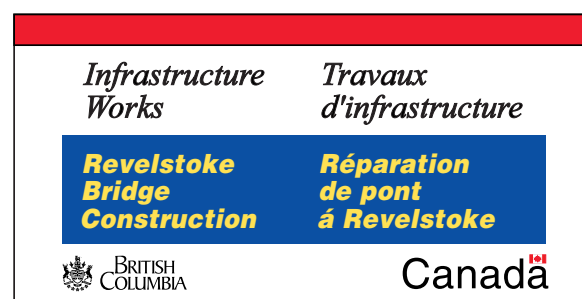
C-35 SHIP

(240 x 120) (300 x 150)



C-35 INFA

(240 x 120)



C-35 MP

(240 x 170) (300 x 210)



C-35 RP

(240 x 170) (300 x 210)

