# Traffic Control Devices Manual Part 8

# Code of practice for temporary traffic management (CoPTTM)

manual number: SP/M/010

# Section G

© NZ Transport Agency

www.nzta.govt.nz

Fourth edition, Amendment 4 of Code of practice for temporary traffic management

Date of issue: February 2017

Effective date: 1 April 2017

ISBN 978-0-478-40772-3 (print)

ISBN 978-0-478-40773-0 (online)

# Copyright information

This publication is copyright © NZ Transport Agency. Material in it may be reproduced for personal or in-house use without formal permission or charge, provided suitable acknowledgement is made to this publication and the NZ Transport Agency (NZTA) as the source. Requests and enquiries about the reproduction of material in this publication for any other purpose should be made to: NZ Transport Agency Private Bag 6995 Wellington 6141

The permission to reproduce material in this publication does not extend to any material for which the copyright is identified as being held by a third party. Authorisation to reproduce material belonging to a third party must be obtained from the copyright holder(s) concerned.

# Disclaimer

The NZTA has endeavoured to ensure material in this document is technically accurate and reflects legal requirements. However, the document does not override governing legislation. The NZTA and its employees and agents involved in the preparation and publication of this document do not accept liability for any consequences arising from the use of this document. Users of this document should apply and rely upon their own skill and judgment, and should not rely on the manual's contents in isolation from other sources of advice and information. In applying their own skill and judgment, the standards of safety and serviceability explicitly required or implied by this manual shall not be reduced. If the user is unsure whether the material is correct, they should make direct reference to the relevant legislation or regulations and contact the NZTA.

# More information

Published 2013 ISBN 978-0-478-40772-3 (print) ISBN 978-0-478-40773-0 (online)

#### LEVEL 2 DIAGRAMS LIST

#### STATIC OPERATIONS

JIANO	OPERATIONS									
No.	LEVEL 2 ROADS									
FOOTP	FOOTPATH									
G1.1	Footpath diverted onto berm behind working space	First preference								
G1.2	Footpath diverted onto berm between working space and carriageway	Second preference								
G1.3	Footpath diverted onto carriageway	Third preference								
SHOUL	DER AND ROADSIDE ACTIVITIES									
G1.4	Work on berm and or footpath Permanent speed less than 65km/h									
G1.5	Shoulder closure									
	LANE									
G1.6	Traffic crossing road centre	Diverted cycle lane - coned lane control								
	AY TWO-LANE ROAD									
G1.7	Traffic crossing road centre	Two-lane diversion								
G1.8	Single-lane alternating flow	Manual traffic control (Stop/Go or Stop/Slow)								
G1.9	All traffic stopped temporarily	Manual traffic control (Stop/Go or Stop/Slow)								
G1.10	Single-lane alternating flow	Portable traffic signals								
G1.11	Work in centre of road									
G1.12	New-chip seal or road construction	Attended worksite								
	Road closures and detours									
G1.13	Road closure - detour route	Example								
	Other hazard									
G1.14	Shallow flooding, washout, slip, slippery surface									
	Unattended worksites									
G1.15	New seal	Unattended and/or unswept worksite								
SITE A	CCESS									
G1.16	Forms part of a larger worksite									
ONE-W	AY TWO-LANE DIVIDED OR TWO-LANE ROAD									
G1.17	Left-lane closure									
G1.18	Right-lane closure									
G1.19	Right-lane closure	One-lane temporary diversion								
G1.20	One-lane closure	Two-lane temporary diversion								
TWO-W	AY FOUR-LANE ROAD									
G1.21	Left-lane closure	With chicane								
G1.22	Two-lane closure	One-lane contraflow								
G1.23	Centre-lane closures									
ONE-W	AY THREE-LANE DIVIDED OR THREE-LANE ROAD									
G1.24	One-lane closure	Left lane								
G1.25	One-lane closure	Right lane								
G1.26	Two-lane closure	Left and centre lanes								
G1.27	Two-lane closure	Right and centre lanes								
G1.28	Two-lane closure	Two-lane temporary diversion								
		· · · · · · · · · · · · · · · · · · ·								

# LEVEL 2 DIAGRAMS LIST

#### MOBILE OPERATIONS

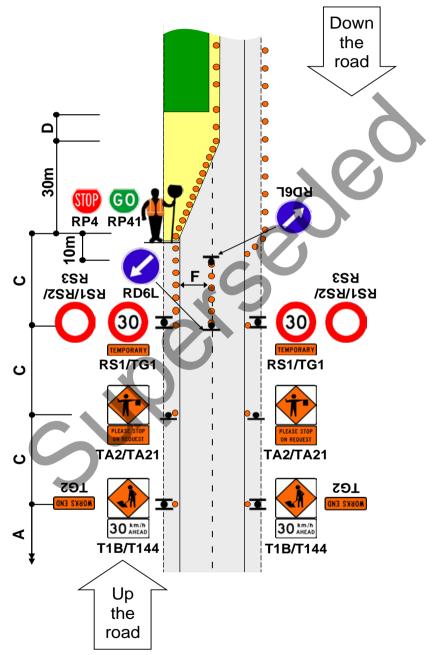
Ne								
No.	LEVEL 2 ROADS							
	AY TWO-LANE ROAD							
G2.1	Work vehicle is more than five (5) metres from the edgeline	Any speed						
G2.2	Work vehicle is between two (2) and five (5) metres of the edgeline							
G2.3	Work vehicle is between two (2) and five (5) metres of the edgeline	Permanent speed greater than 65km/h						
G2.4	Work vehicle is between zero (0) and two (2) metres of the edgeline	Permanent speed under 65km/h						
G2.5	Work vehicle is between zero (0) and two (2) metres of the edgeline	Permanent speed greater than 65km/h						
G2.6	Work vehicle on live lane	Permanent speed less than 65km/h						
G2.7	Work vehicle on live lane	Permanent speed greater than 65km/h						
G2.8	Personnel on the live lane							
ONE-WAY TWO-LANE DIVIDED OR TWO-LANE ROAD								
G2.9	Work vehicle is between zero (0) and two (2) metres from the edgeline	Permanent speed less than 65km/h						
G2.10	Work vehicle is between zero (0) and two (2) metres from the edgeline	Permanent speed greater than 65km/h						
G2.11	Work vehicle is on the live lane	Permanent speed less than 65km/h						
G2.12	Work vehicle is on the live lane	Permanent speed greater than 65km/h						
G2.13	Part or all of lane occupied – Semi-static closure (work for up to 1 hour)	Permanent speed less than 65km/h						
G2.14	Part or all of lane occupied – Semi-static closure (work for up to 1 hour)	Permanent speed greater than 65km/h						
	SUR							

# **READING A TRAFFIC MANAGEMENT DIAGRAM (TMD)**

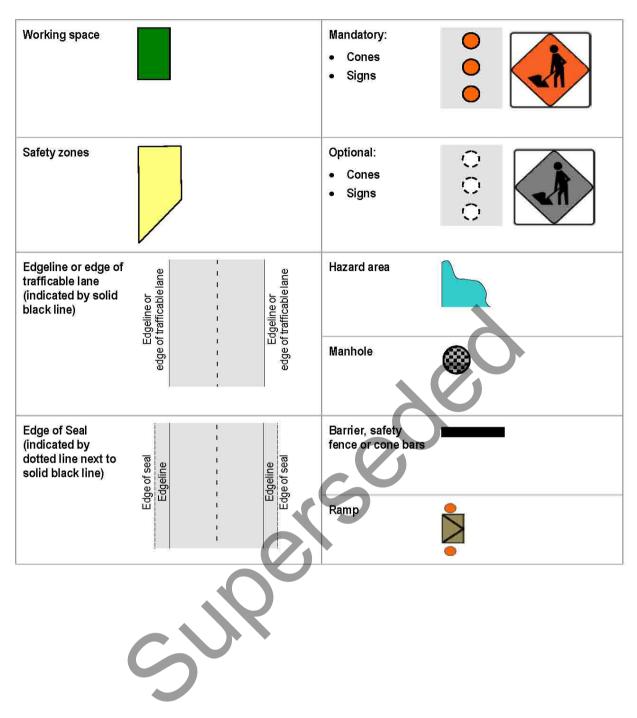
Usually contractors place the signs on left-hand side of the road first with the TMD the right way up. When signs are placed for the right-hand side of the road the contractor tips the TMD upside down and reads which signs have to be placed for that side of the road.

To make this process easier:

- Signs going up the page are shown closest to the road
- Signs going down the page are shown further away from the road
- Sign icons and sign numbers for layout down the road (from top to bottom of the TMD) are turned upside down.



# LEGEND FOR DIAGRAMS

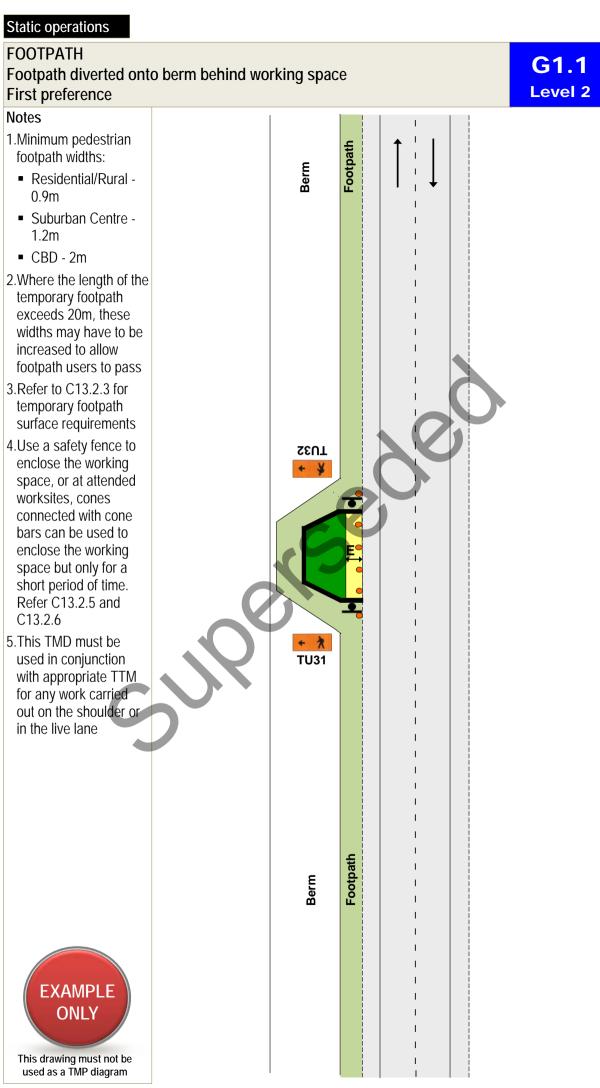


# LEVEL 2 LAYOUT DISTANCES TABLE

Per	manent/TSL (km/h)			≤50	60	70		80	90/100		
Traffic signs											
A	Sign visibility distance (m	)		60/50 <sup>+</sup>	70/60+	80	· ·	100	120		
В	Warning distance (m)			100/75+	120/90⁺	140		160	200		
С	Sign spacing (m)	50/35*	60/45+	70		80	100				
Safe	ety zones										
D	Longitudinal (m)*			15	20	30		45	60		
E	Lateral (m)										
	1. Behind cones			1	1	1		1	1		
	2. Behind barrier installations As specified by the Installation Designer										
Tapers											
н	Initial taper length per lan	ie (m)**		90/50 <sup>+</sup>	100/60+	120		150	180		
Ι	Subsequent taper length	per lane (	(m)	50	60	70		80	100		
К	Minimum distance betwe	50	60	70		80	100				
Del	ineation device										
	All tapers (m)			2.5	2.5	2.5		2.5	2.5		
Spacing (centres)	Cones parallel to the lane (eg between tapers and alongside the working space) (m)			5	5	10		10	10		
	At merge and diverge points for ramps and slip lanes, intersecting road entry and exit points, and worksite access points			2.5m for 1 side of a c alignment	hange in		2.5m for 20m either side of a change in alignment				
* A longitudinal safety zone is not required when a barrier completely protects the approach end of the worksite.											
**	Taper length is based on	a single	ane shif	t of 3.5m.							
<ul> <li>The longer distance is the desirable distance, the shorter distance is the minimum distance required. The longer distances must be used wherever possible. The shorter distances may only be used where there are road environment constraints.</li> </ul>											
Lane widths											
Spe	Speed (km/h) 30 40			50	60	70	80	90	100		
F	Lane width (m)	2.75	2.75	3.0	3.0	3.25	3.25	3.5	3.5		

Except for delineation device spacings, which are maximum values, the distances specified in the above tables are minimum values.

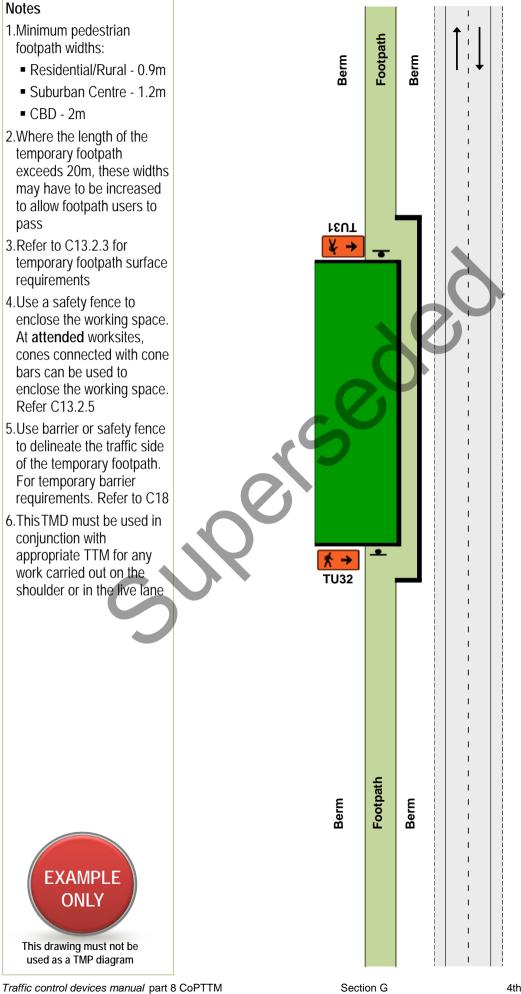
Approach sign distances and spacings, the initial taper(s) and any longitudinal safety zone associated with that taper must be based on the permanent speed limit. The layout distances of the remainder of the worksite, including any subsequent tapers, may be based on the TSL, provided the TSL is applied prior to the first taper.



# FOOTPATH

# Footpath diverted onto berm between working space and carriageway Second preference

**G1.2** Level 2

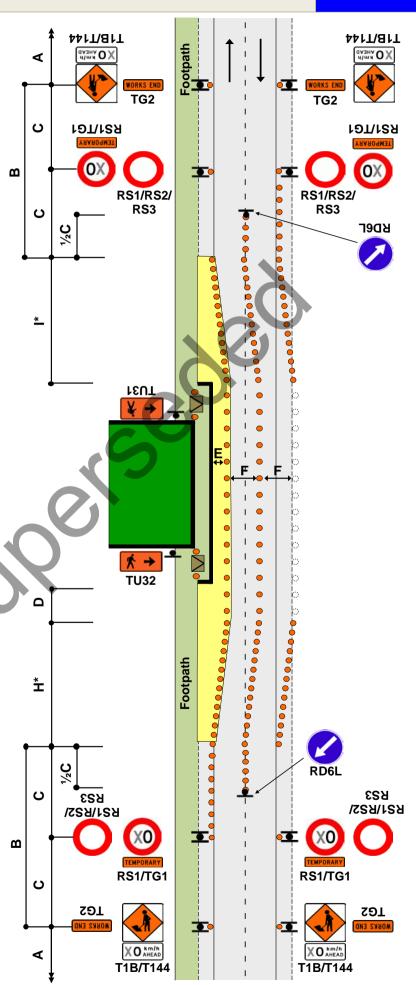


# FOOTPATH Footpath diverted onto carriageway Third preference

#### Notes

- 1.Minimum pedestrian footpath widths:
  - Residential/Rural 0.9m
  - Suburban Centre 1.2m
  - CBD 2m
- 2.Where the length of the temporary footpath exceeds 20m, these widths may have to be increased to allow footpath users to pass
- 3.Use a safety fence to enclose the working space, or at attended worksites, cones connected with cone bars can be used to enclose the working space but only for a short period of time. Refer C13.2.5 and C13.2.6
- 4. Use temporary barrier or safety fence to delineate the traffic side of the temporary footpath. For temporary barrier requirements refer to C18. For safety fence requirements refer to C13.2.6
- 5. There must be a lateral safety zone between the traffic side of the temporary footpath and the live lane:
  - 0.5m for temporary barrier
  - 1m for safety fence or cone bars
- 6.Use kerb ramps to assist mobility vehicles, pushchairs, etc.
- 7.At night, corners of safety fence may be illuminated with flashing amber warning lights
- 8. This TMD must be used in conjunction with appropriate TTM for any work carried out on the shoulder or in the live lane

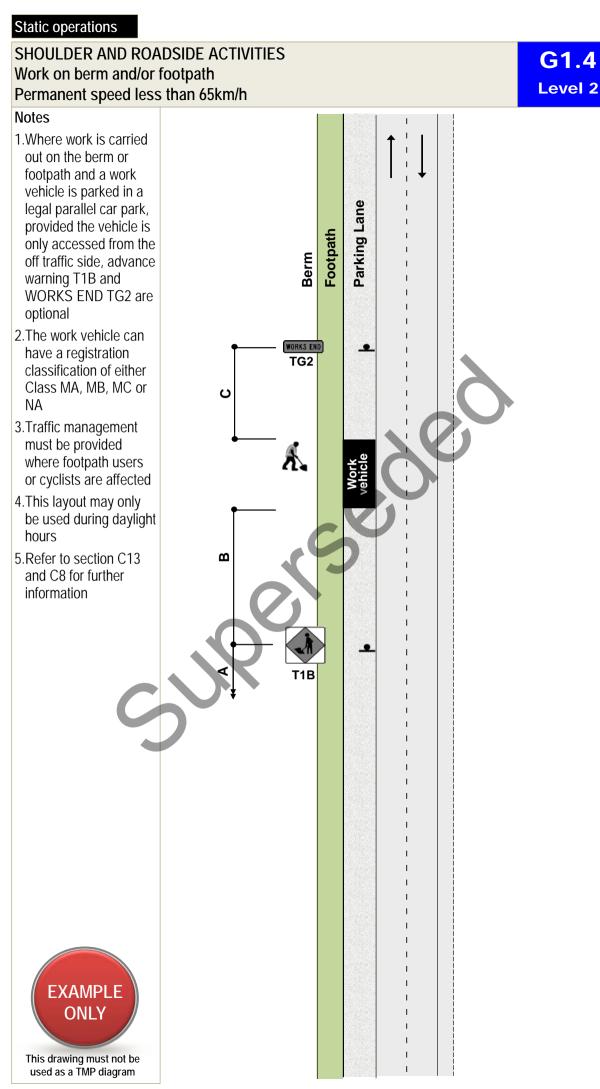
# EXAMPLE ONLY This drawing must not be used as a TMP diagram



Traffic control devices manual part 8 CoPTTM

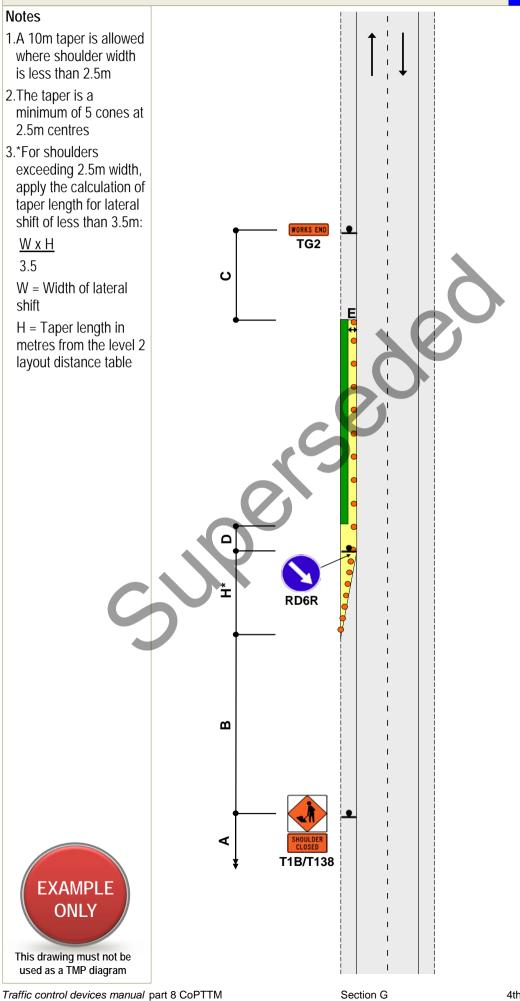
G1.3

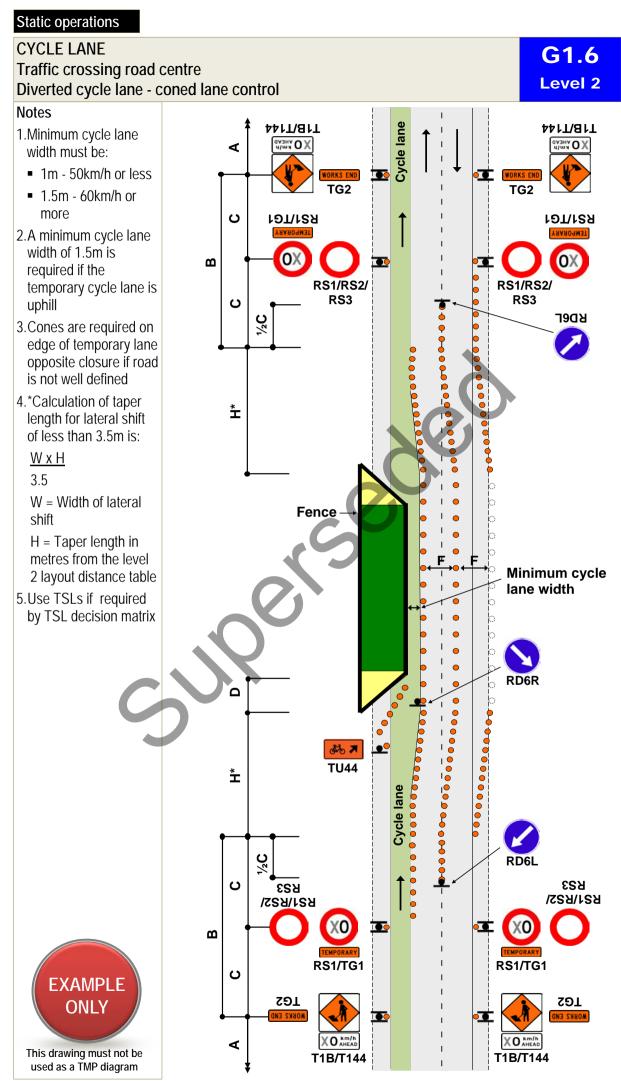
Level 2

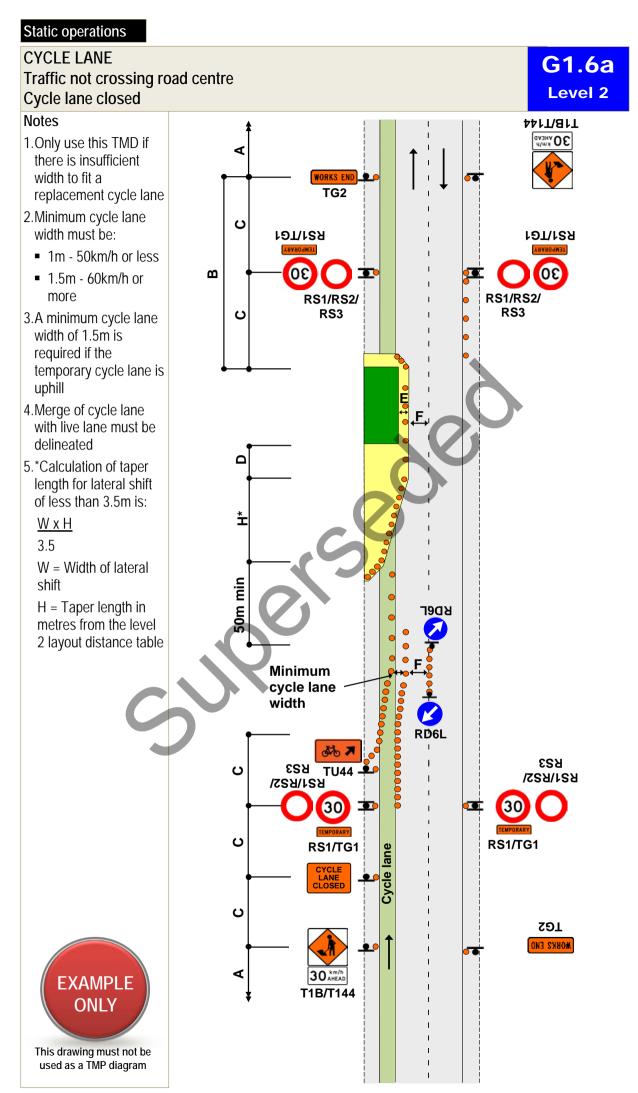


# SHOULDER AND ROADSIDE ACTIVITIES Shoulder closure

G1.5 Level 2







Traffic control devices manual part 8 CoPTTM

# TWO-WAY TWO-LANE ROAD Traffic crossing road centre **Two-lane diversion**

#### Notes

- 1.Cones are required on edge of temporary lane opposite closure if road edge is not well defined
- 2.\*Return taper at end of closure may be reduced using the calculation of taper length for lateral shift of less than 3.5m:

WхН

3.5

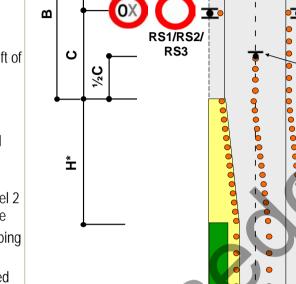
W = Width of lateral shift

H = Taper length in metres from the level 2 layout distance table

3.Use PN11 No Stopping signs, if necessary

4.Use TSLs if required by TSL decision matrix

ONLY



T1B/T144

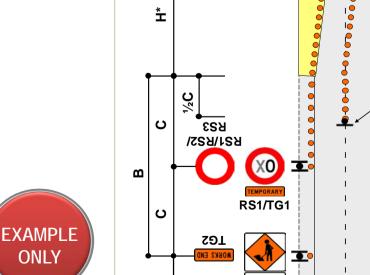
ХО кш/н

готлга

∢

C

Δ Ť 1/₂C υ



-RS1/RS2/

Т

RKS END

TG2

Ť

WORKS EN

TG2

RS3

G1.7 Level 2

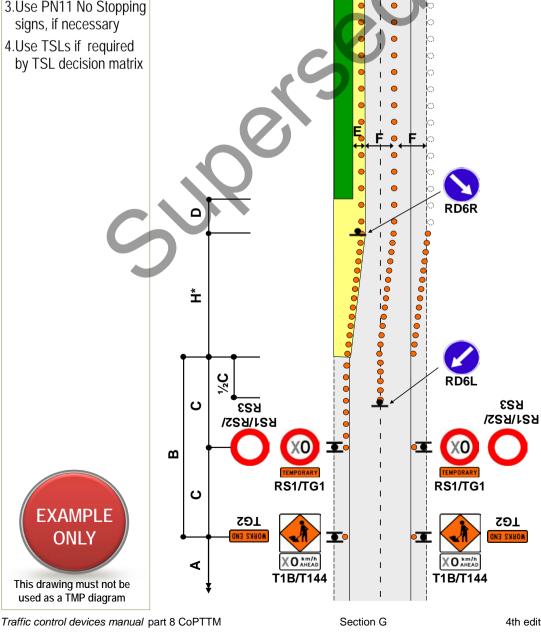
T18/T144

ХО кш/н

rst/rsa

OX

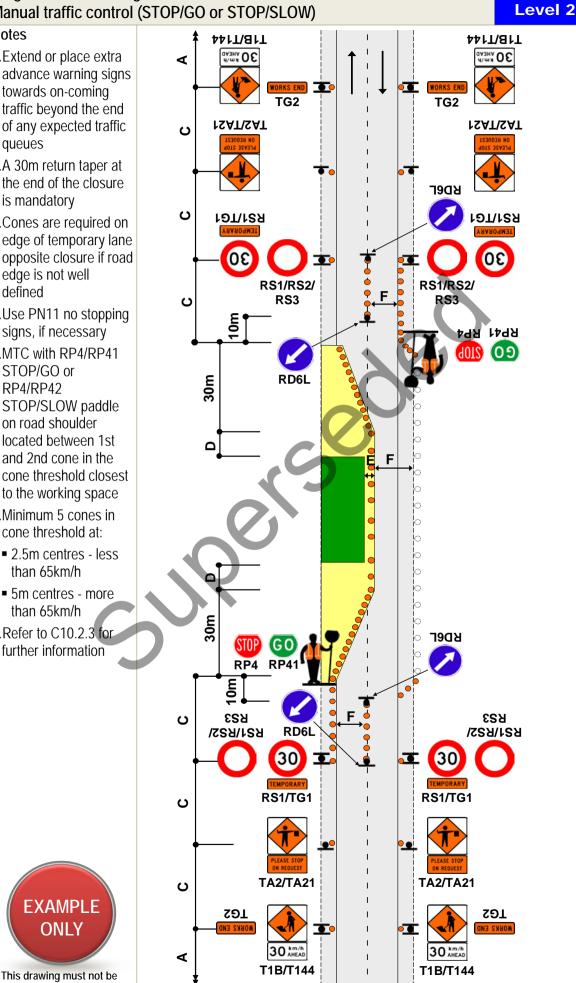
в рег



# TWO-WAY TWO-LANE ROAD Single-lane alternating flow Manual traffic control (STOP/GO or STOP/SLOW)

# Notes

- 1.Extend or place extra advance warning signs towards on-coming traffic beyond the end of any expected traffic queues
- 2.A 30m return taper at the end of the closure is mandatory
- 3.Cones are required on edge of temporary lane opposite closure if road edge is not well defined
- 4.Use PN11 no stopping signs, if necessary
- 5.MTC with RP4/RP41 STOP/GO or RP4/RP42 STOP/SLOW paddle on road shoulder located between 1st and 2nd cone in the cone threshold closest to the working space
- 6.Minimum 5 cones in cone threshold at:
- 2.5m centres less than 65km/h
- 5m centres more than 65km/h
- 7.Refer to C10.2.3 for further information



Traffic control devices manual part 8 CoPTTM

ONLY

used as a TMP diagram

# TWO-WAY TWO-LANE ROAD All traffic stopped temporarily Manual traffic control (STOP/GO or STOP/SLOW)

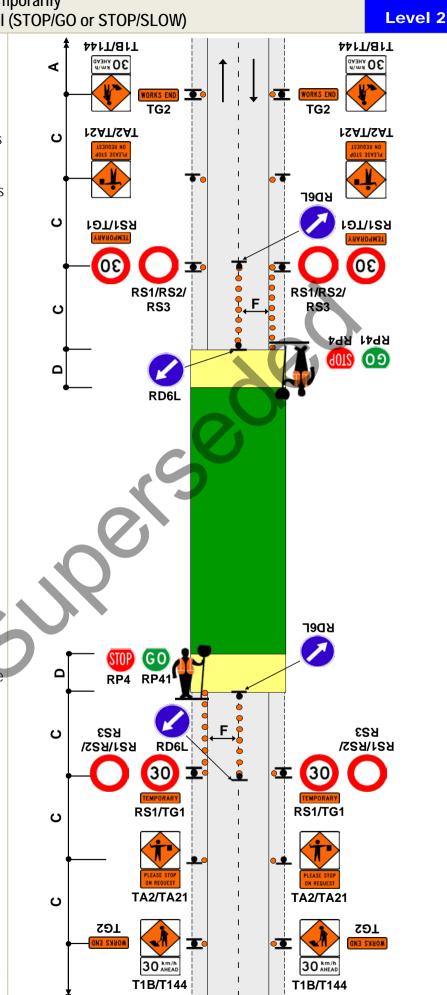
#### Notes

- 1.Closure period not to exceed the limit set or approved by the RCA
- 2.Extend or place extra advance warning signs towards on-coming traffic beyond any expected traffic queues

#### 3.MTC with RP4/RP41 STOP/GO or RP4/RP42 STOP/SLOW paddle on road shoulder located between 1st and 2nd cone in the cone threshold closest to the working space

- 4.Minimum 5 cones in cone threshold at:
- 2.5m centres less than 65km/h
- 5m centres more than 65km/h
- 5.MTCs must show same message to oncoming traffic (eg STOP/STOP or GO/GO)
- 6.Refer to C10.2.3 for further information
- 7.Work vehicle movement must cease whenever road users are moving through the site unless there is full delineation separating the closure and the traffic

EXAMPLE ONLY This drawing must not be used as a TMP diagram



Traffic control devices manual part 8 CoPTTM

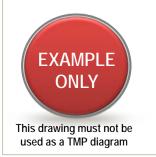
# TWO-WAY TWO-LANE ROAD Single-lane alternating flow Portable traffic signals

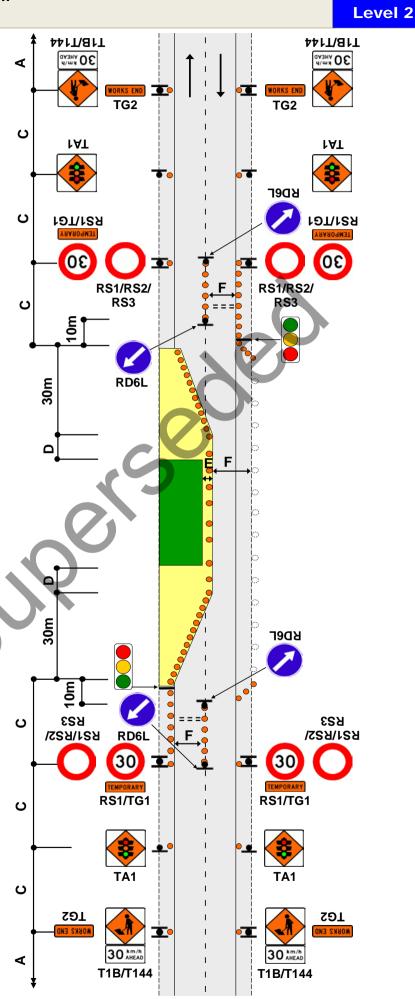
# Notes

- 1.Provide details of make and model of portable traffic signals in the TMP
- 2.Install temporary limit lines (must be able to be removed upon completion) or use RP61/RP62 signs



- 3.Approved temporary speed humps may also be used
- 4.A 30m return taper at the end of the closure is mandatory
- 5. Cones are required on edge of temporary lane opposite closure if road is not well defined
- 6.The STMS should monitor queues during the worksite operation and extend or place extra advance warning signs towards on-coming traffic beyond the end of any expected traffic queues
- 7.Use PN11 No Stopping signs, if necessary
- 8.Minimum 5 cones in cone threshold at:
  - 2.5m centres less than 65km/h
  - 5m centres more than 65km/h





Traffic control devices manual part 8 CoPTTM

# TWO-WAY TWO-LANE ROAD Work in centre of road

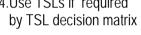
## Notes

- 1.Cones are required on edge of temporary lane opposite closure if road is not well defined
- 2.\*Calculation of taper length for lateral shift of less than 3.5m is:

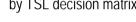
WxH

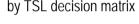
3.5

- W = Width of lateral shift
- H = Taper length in metres from the level 2
- 3.Use PN11 No Stopping signs, if necessary
- 4.Use TSLs if required



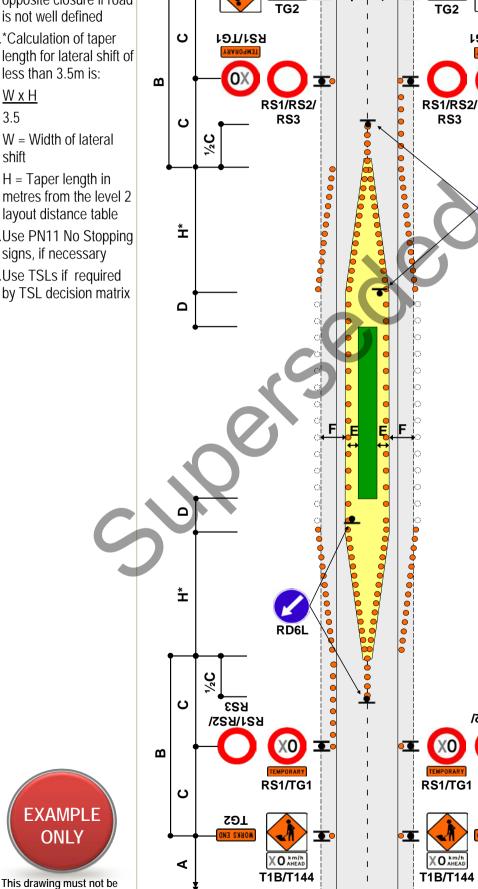












11B/T144

ХО кш/н

Т

RKS END

Ť

WORKS EN

∢

used as a TMP diagram Traffic control devices manual part 8 CoPTTM RS3

RS1/RS2/

29T

G1.11

Level 2

11B/1144

ХО кш/н

гот\гся

OX

RD6L

# TWO-WAY TWO-LANE ROAD New-chip seal or road construction Attended worksite

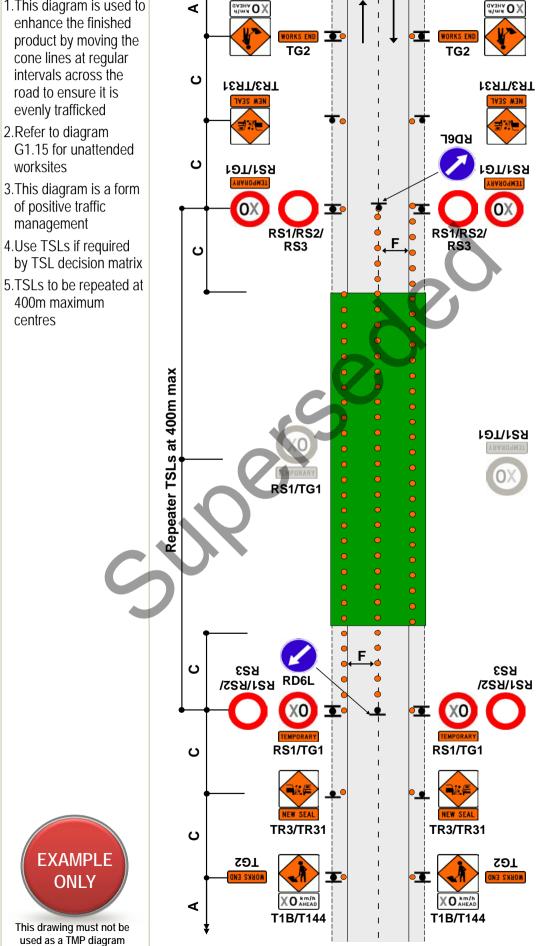
#### Notes

1. This diagram is used to enhance the finished product by moving the cone lines at regular intervals across the road to ensure it is





T1B/T144



1.Block access to road

2.If a long term site, use chevron sight board to

3.On multilane roads the detour directional

arrows (eg TDA1)

signs will need to be

with barricade

direct traffic

# TWO-WAY TWO-LANE ROAD Road closure - detour route Example

# Notes

G1.13 Level 2

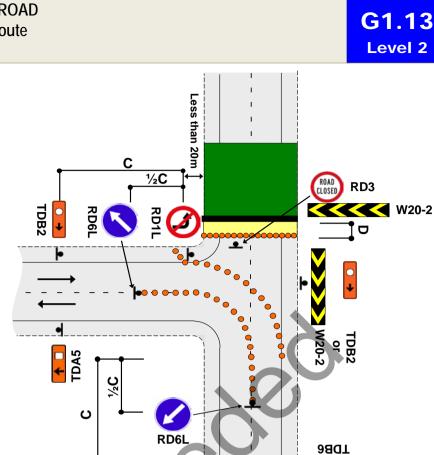
↓ ○

TD3A

TD1

T1B

**CD5** DETOU



+

TDA1

AHEAD

TD3A

AHEAD TD1

T1B

υ

ပ

∢

**TD** 

HOOLS



5.Use TSLs if required by TSL decision matrix

Traffic control devices manual part 8 CoPTTM

EXAMPLE ONLY

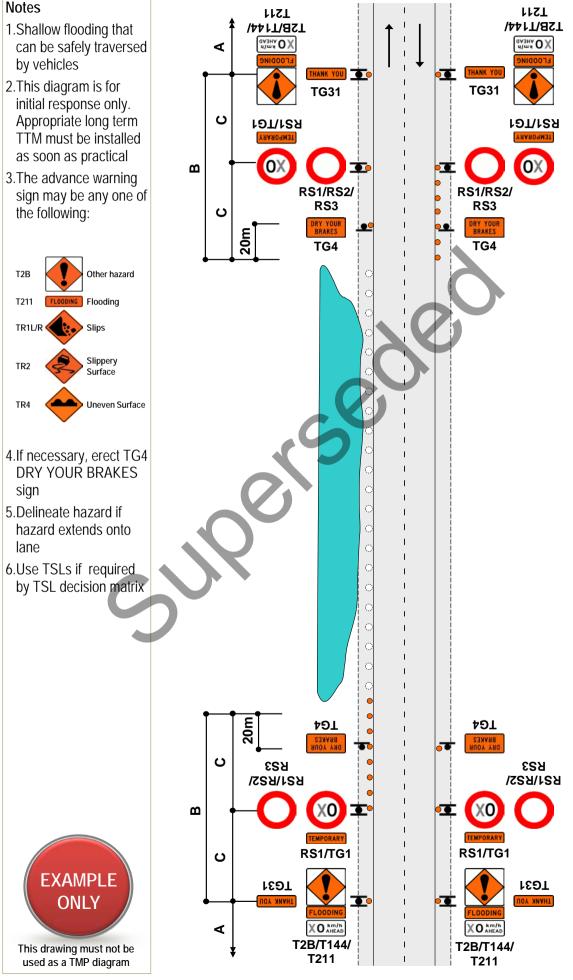
This drawing must not be used as a TMP diagram



# Other hazard

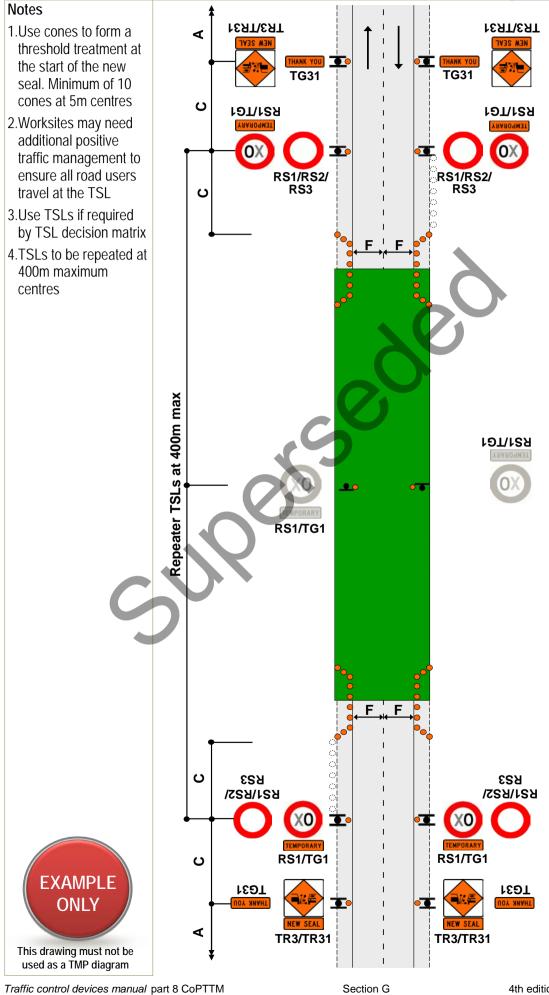
Shallow flooding, slip, slippery surface

G1.14 Level 2

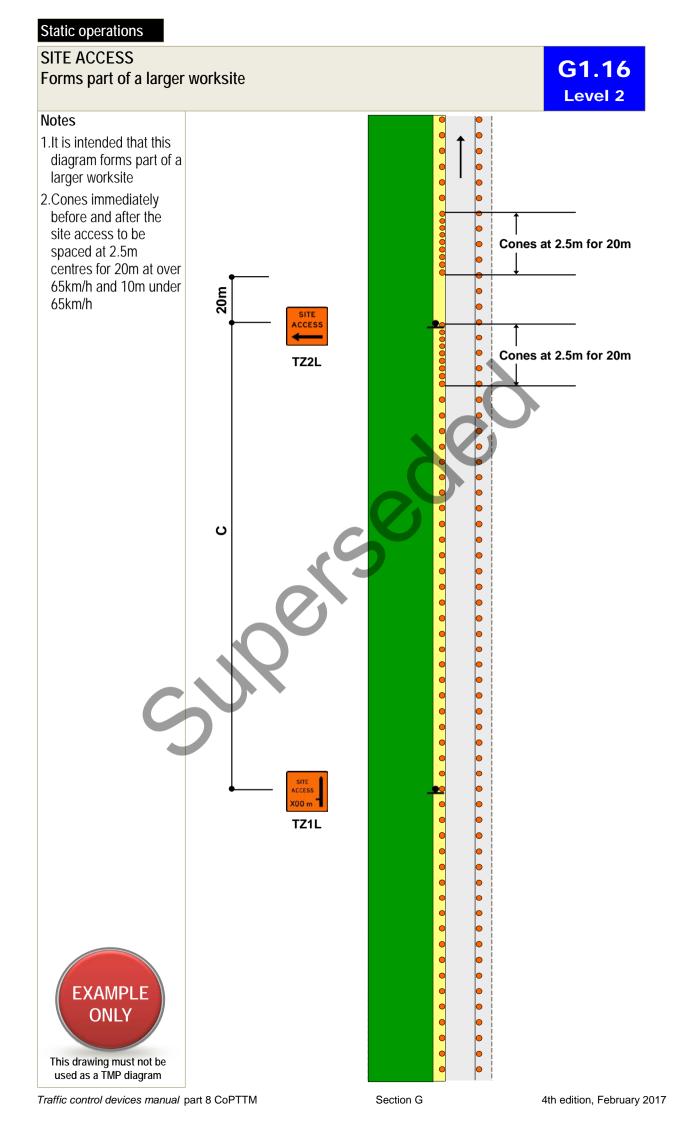


# TWO-WAY TWO-LANE ROAD New seal - unattended and/or unswept worksite

G1.15 Level 2

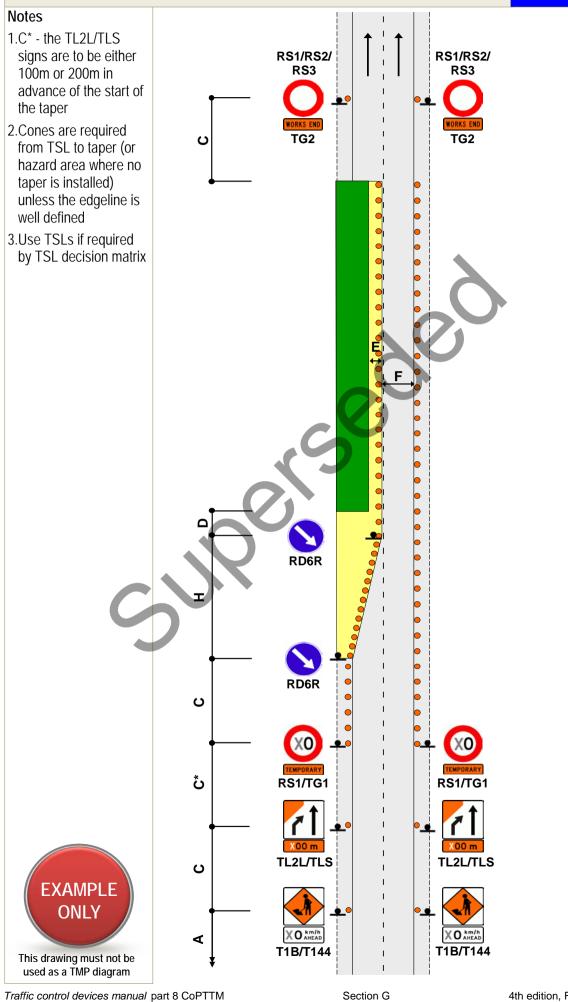


4th edition, February 2017



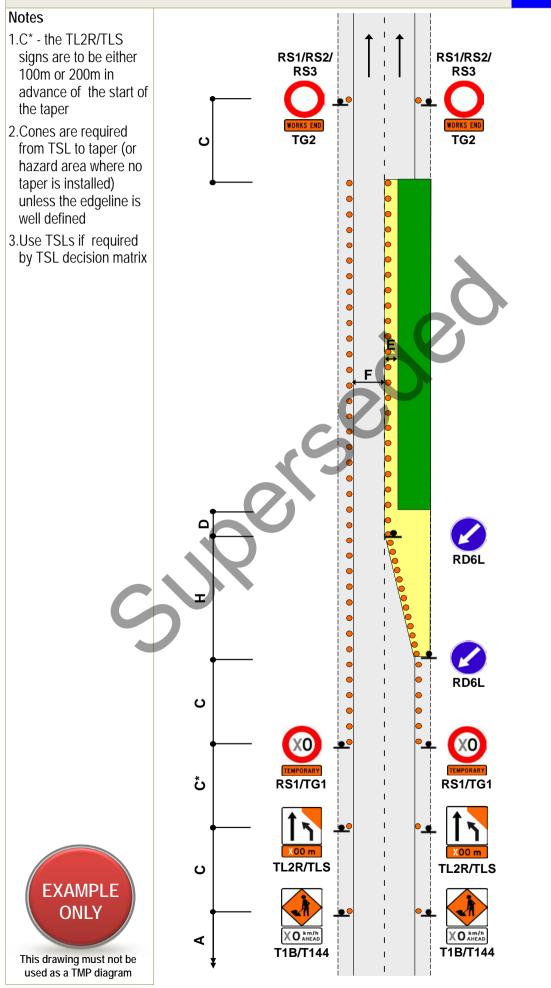
# ONE-WAY TWO-LANE DIVIDED OR TWO-LANE ROAD Left-lane closure

G1.17 Level 2



# ONE-WAY TWO-LANE DIVIDED OR TWO-LANE ROAD Right-lane closure

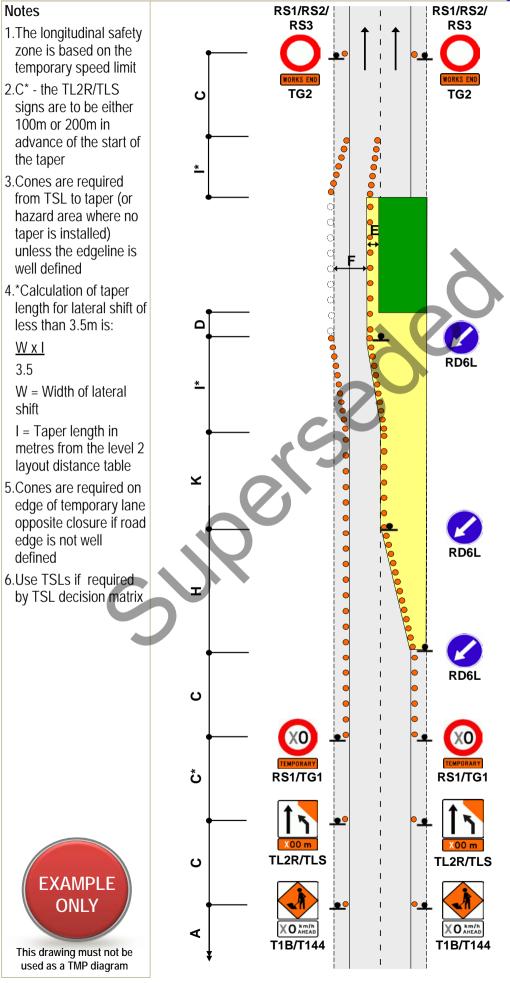
G1.18 Level 2

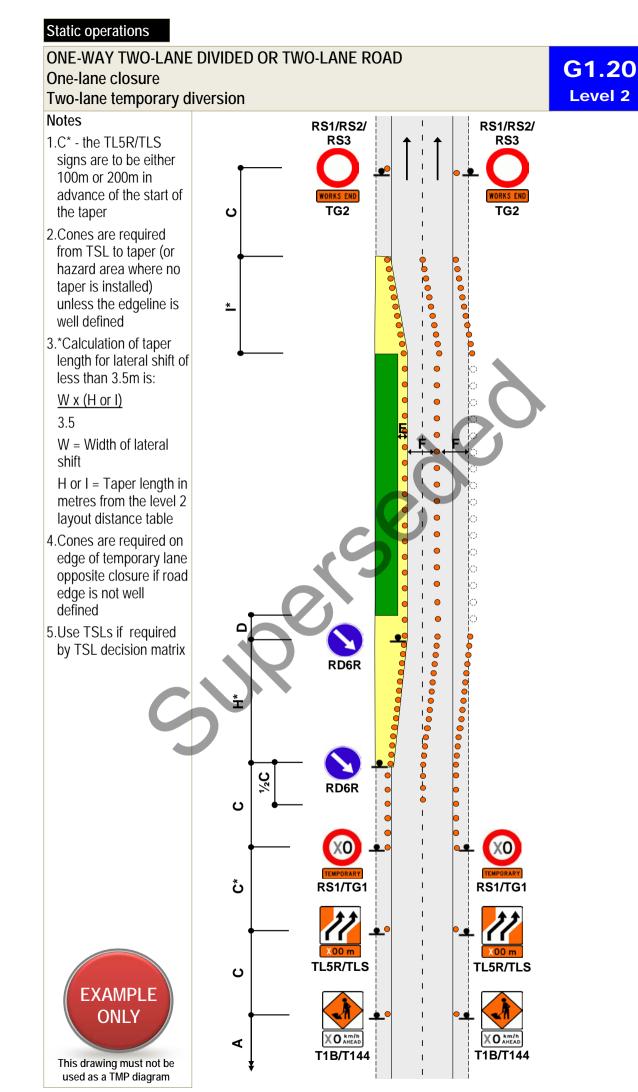


# ONE-WAY TWO-LANE DIVIDED OR TWO-LANE ROAD Right-lane closure

One-lane temporary diversion

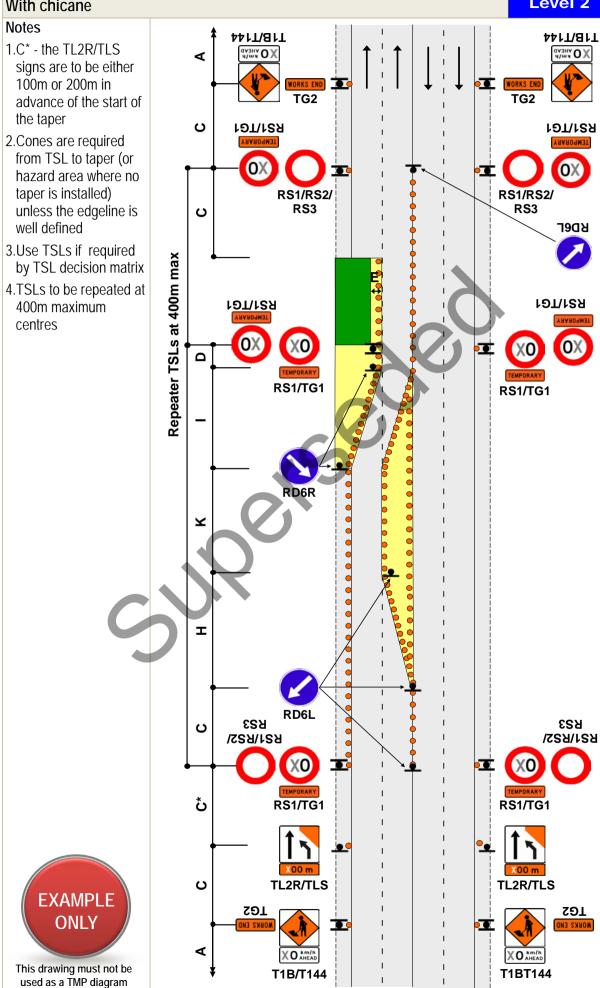
G1.19 Level 2





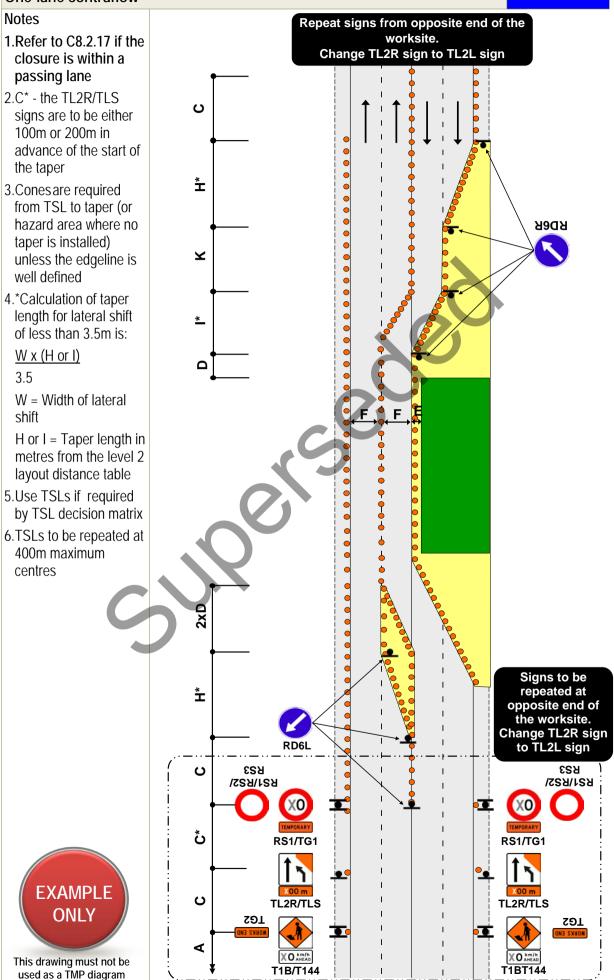
# TWO-WAY FOUR-LANE ROAD Left-lane closure With chicane





# TWO-WAY FOUR-LANE ROAD Two-lane closure One-lane contraflow

# G1.22 Level 2



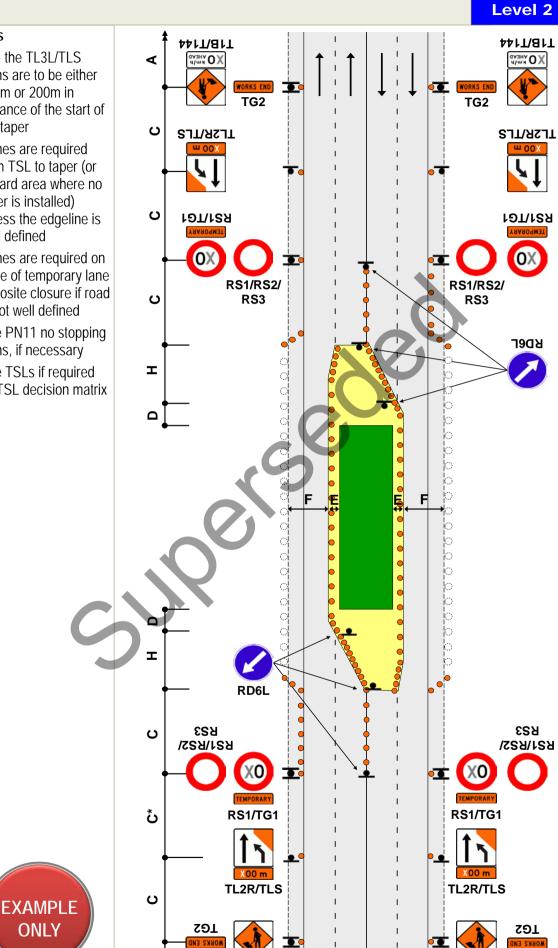
Traffic control devices manual part 8 CoPTTM

Section G

# **TWO-WAY FOUR-LANE ROAD** Centre-lane closures

# Notes

- 1.C\* the TL3L/TLS signs are to be either 100m or 200m in advance of the start of the taper
- 2.Cones are required from TSL to taper (or hazard area where no taper is installed) unless the edgeline is well defined
- 3. Cones are required on edge of temporary lane opposite closure if road is not well defined
- 4.Use PN11 no stopping signs, if necessary
- 5.Use TSLs if required by TSL decision matrix



Traffic control devices manual part 8 CoPTTM

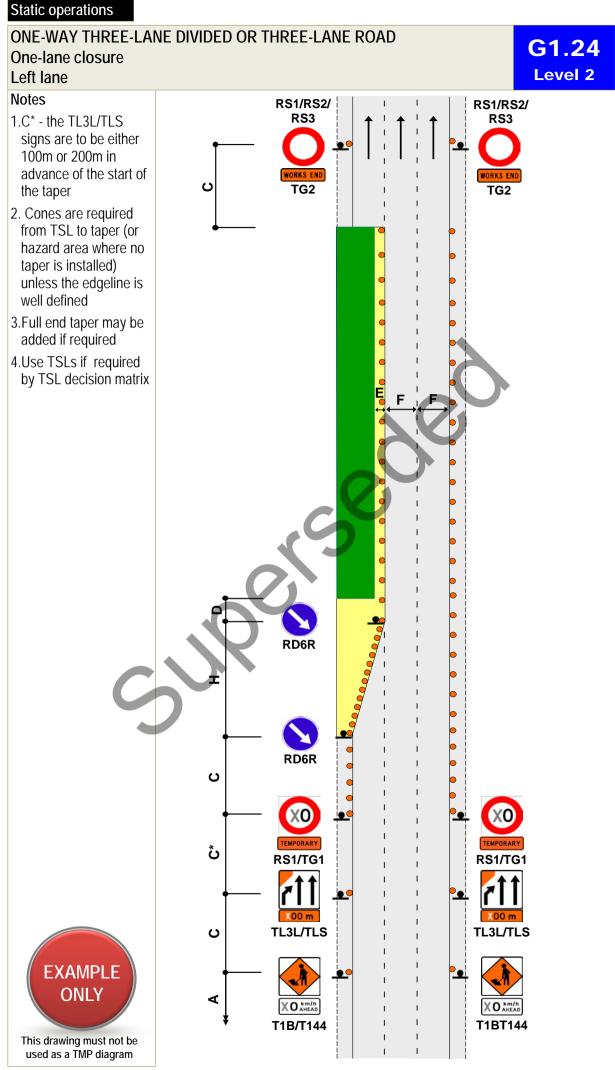
This drawing must not be

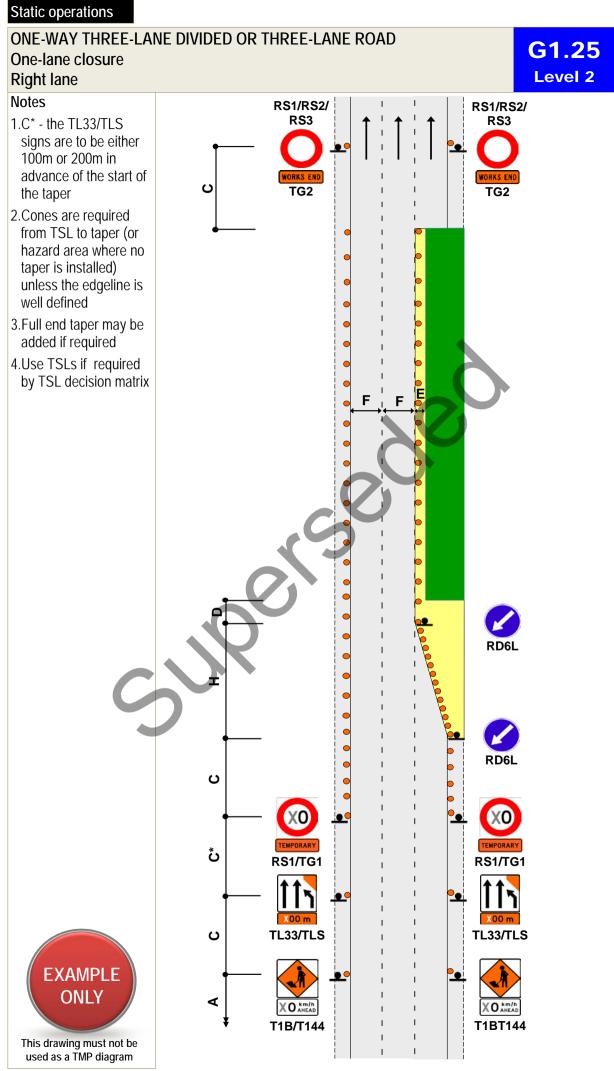
used as a TMP diagram

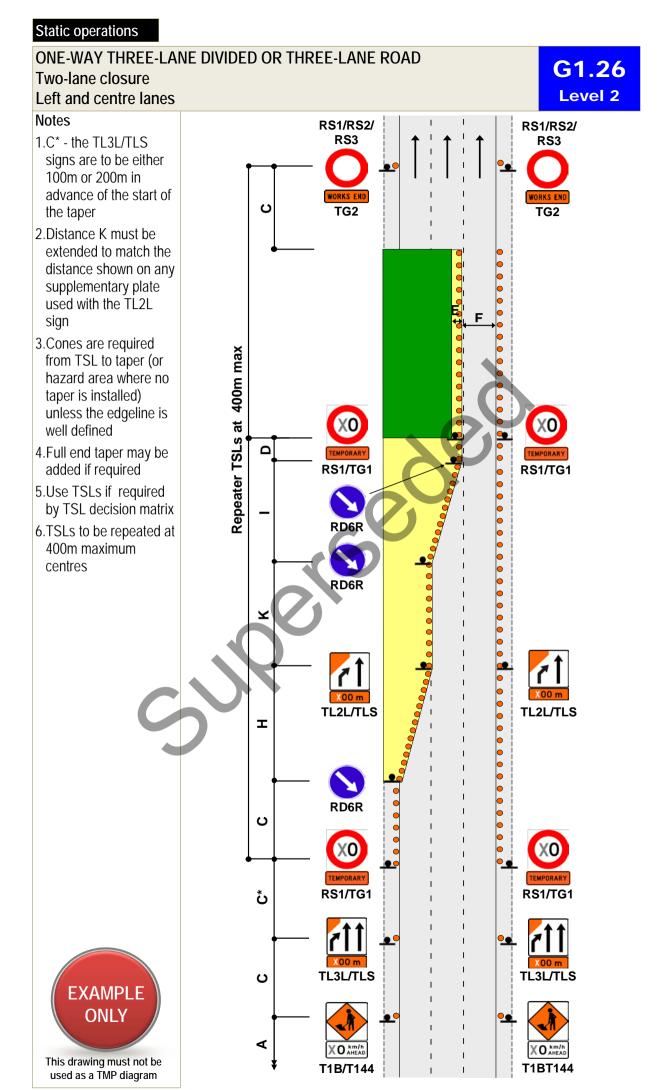
∢

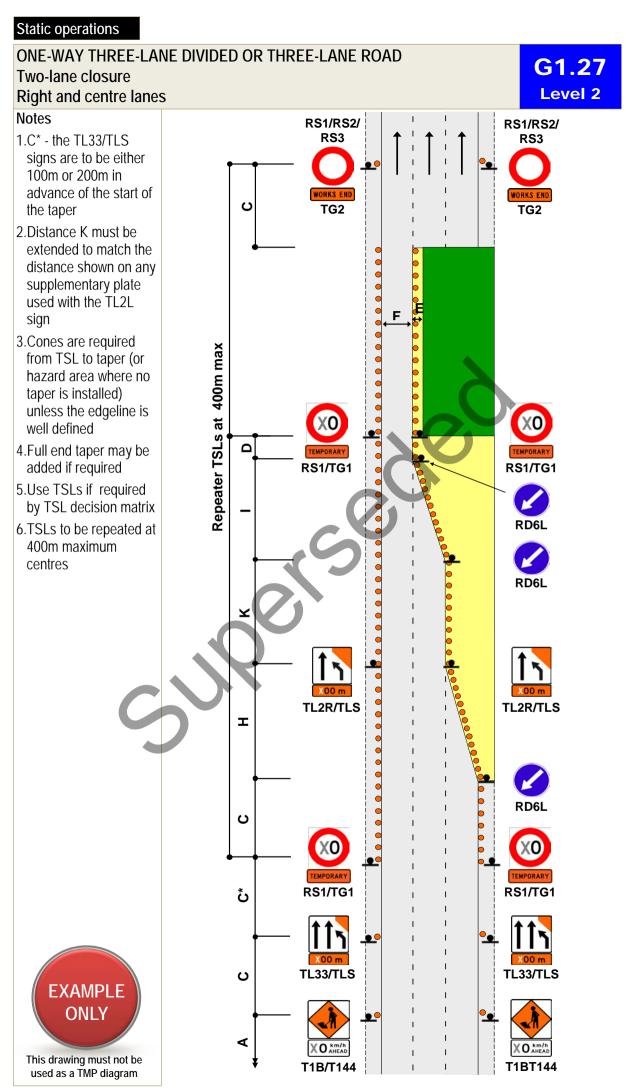
T1B/T144

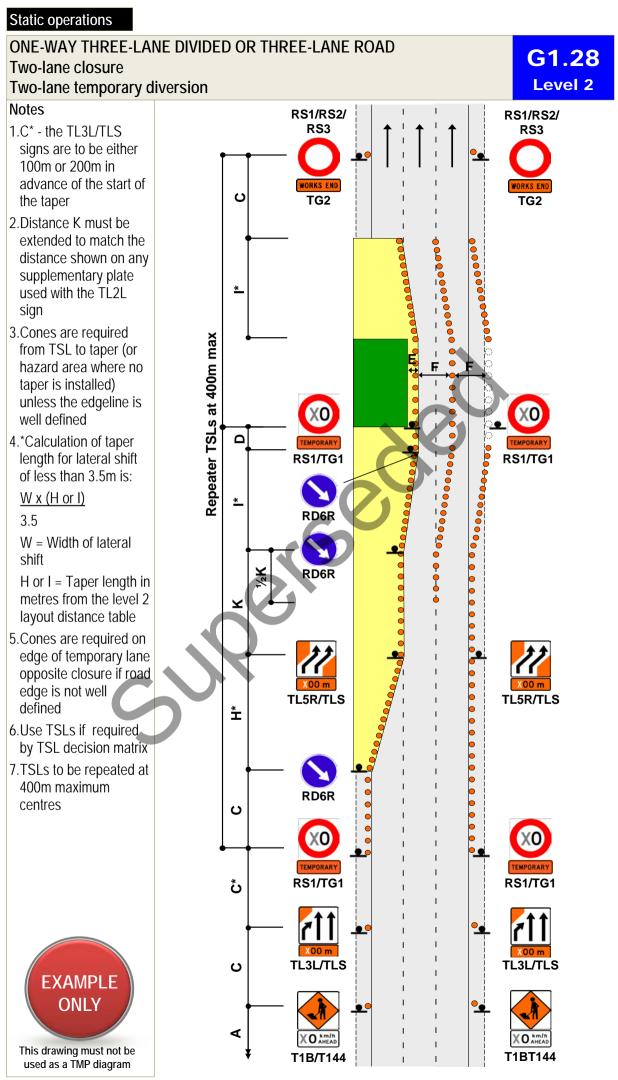
T1B/T144

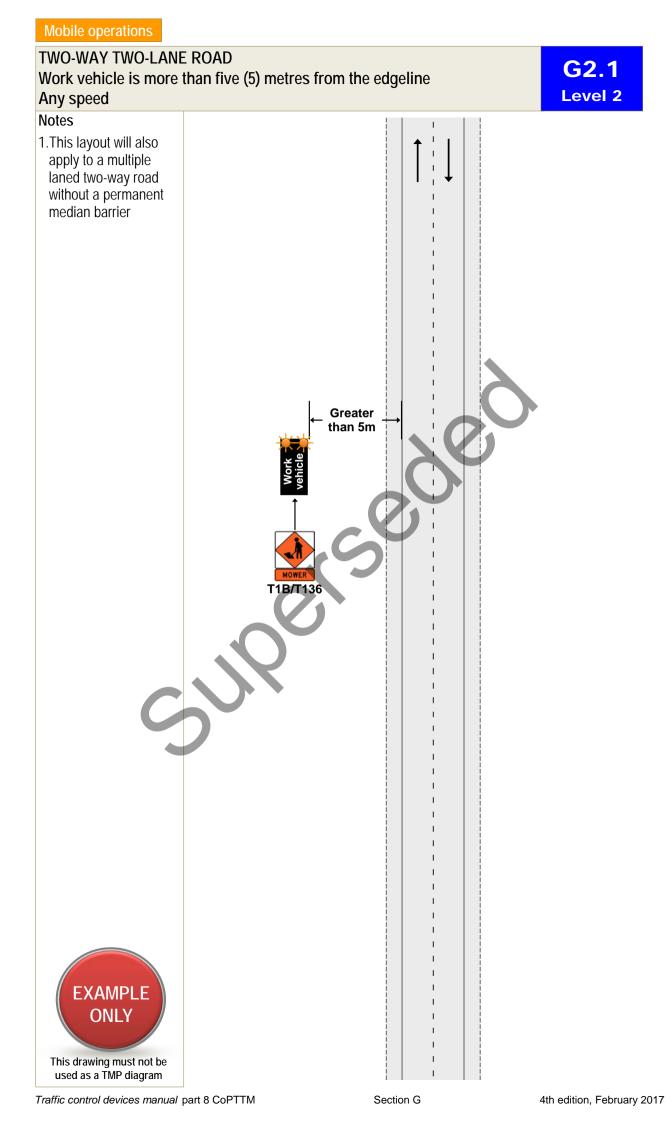










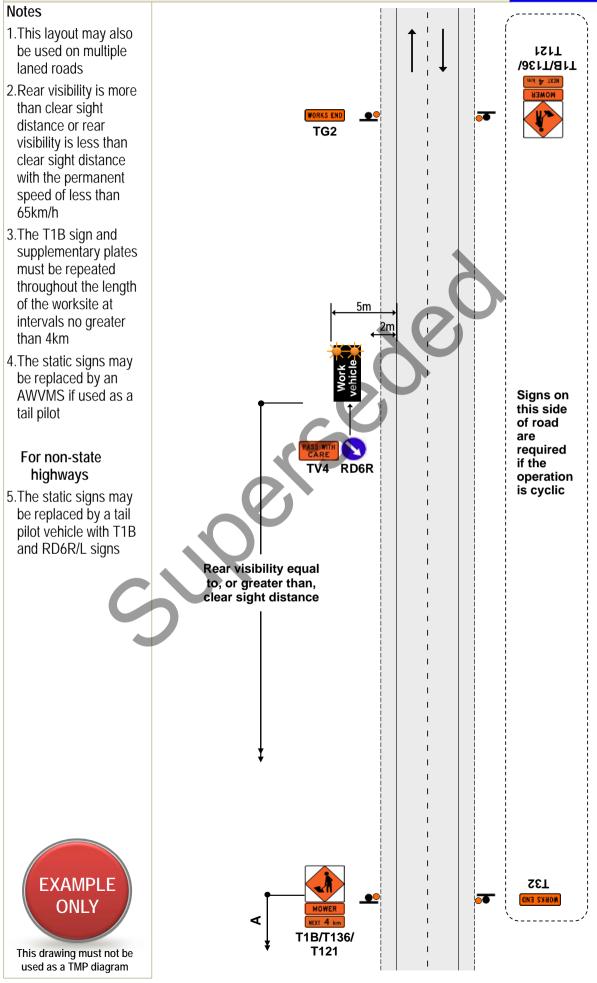


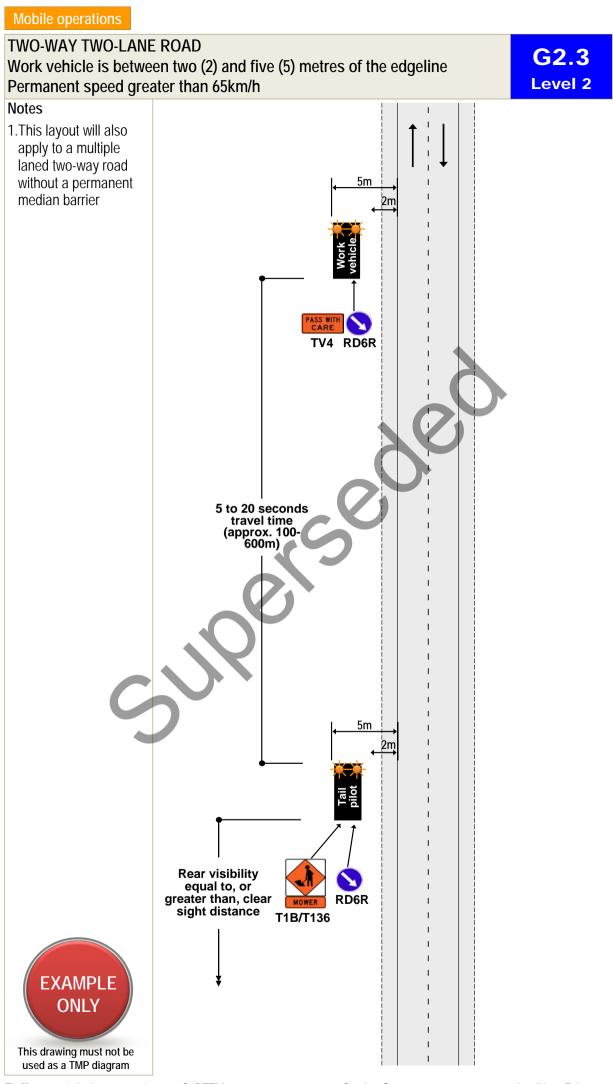
### Mobile operations

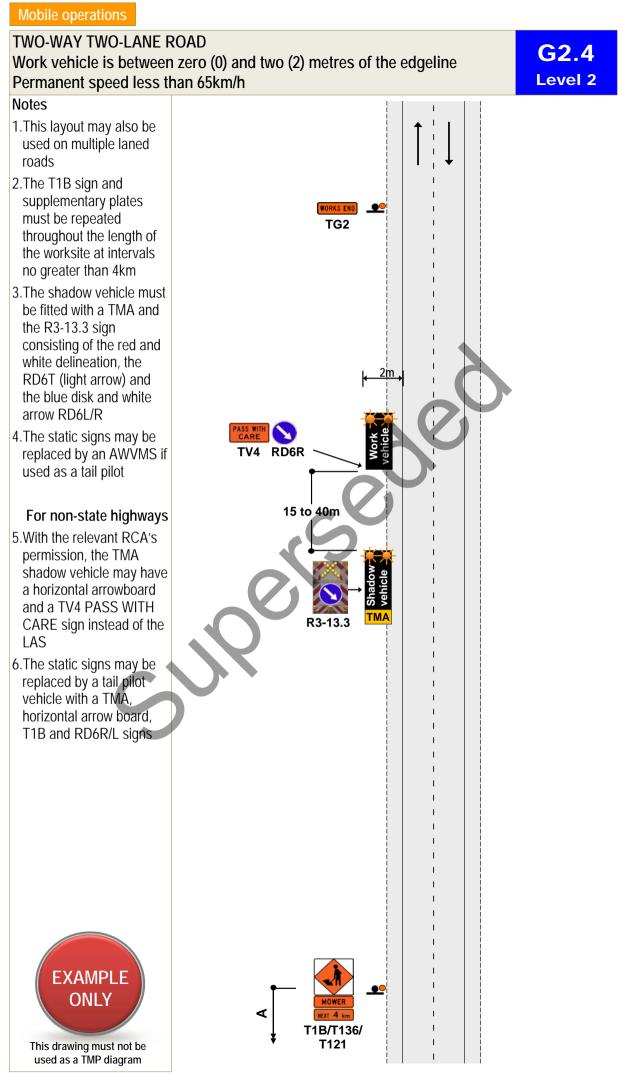
# TWO-WAY TWO-LANE ROAD

Work vehicle is between two (2) and five (5) metres of the edgeline

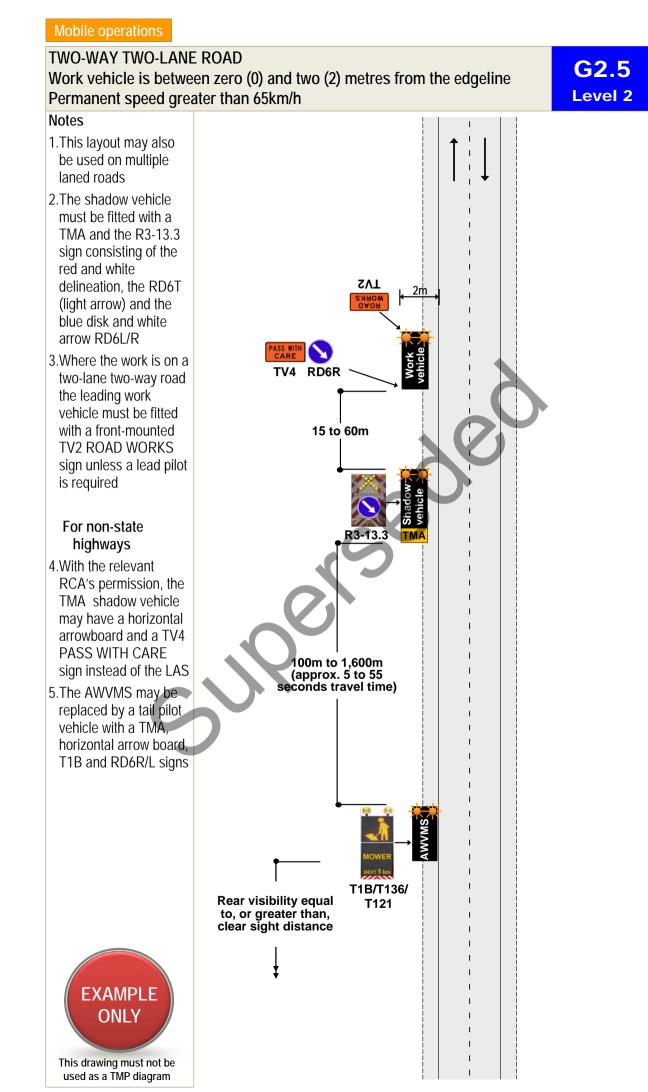
G2.2 Level 2

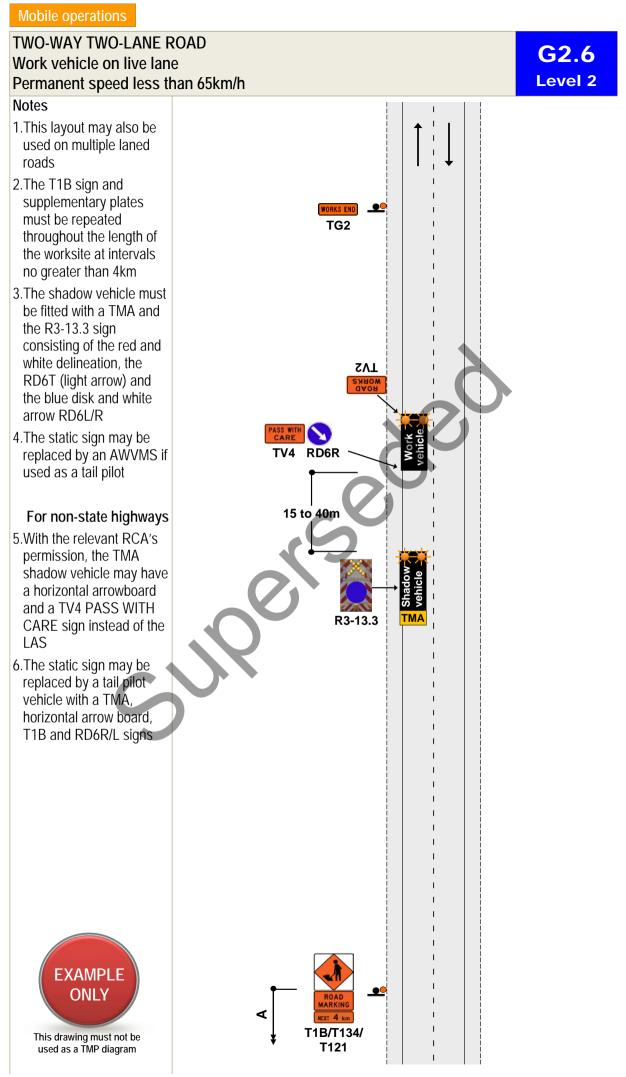






Traffic control devices manual part 8 CoPTTM





#### Mobile operations

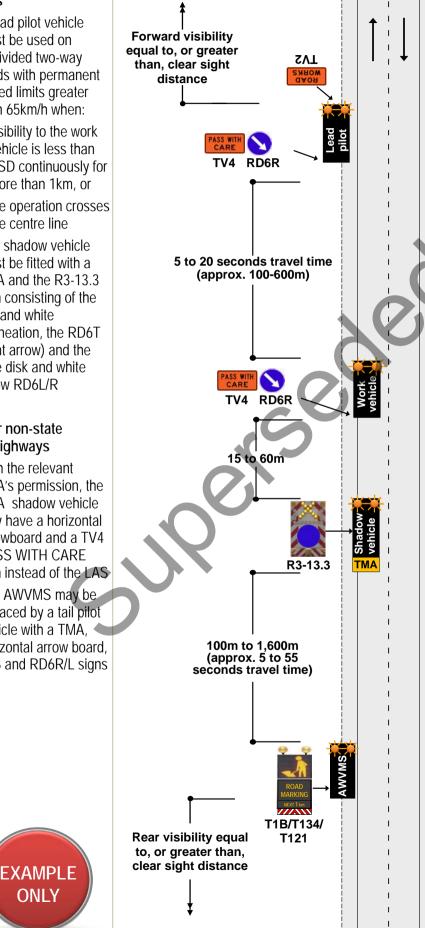
# TWO-WAY TWO-LANE ROAD Work vehicle on live lane Permanent speed greater than 65km/h

#### Notes

- 1.A lead pilot vehicle must be used on undivided two-way roads with permanent speed limits greater than 65km/h when:
  - visibility to the work vehicle is less than CSD continuously for more than 1km, or
- the operation crosses the centre line
- 2. The shadow vehicle must be fitted with a TMA and the R3-13.3 sign consisting of the red and white delineation, the RD6T (light arrow) and the blue disk and white arrow RD6L/R

# For non-state highways

- 3. With the relevant RCA's permission, the TMA shadow vehicle may have a horizontal arrowboard and a TV4 PASS WITH CARE sign instead of the LAS
- 4.The AWVMS may be replaced by a tail pilot vehicle with a TMA, horizontal arrow board, T1B and RD6R/L signs



ONLY

This drawing must not be used as a TMP diagram

#### Mobile operations

# TWO-WAY TWO-LANE ROAD Personnel on the live lane

Forward visibility equal to, or

greater than,

clear sight

distance

TV2

# Notes

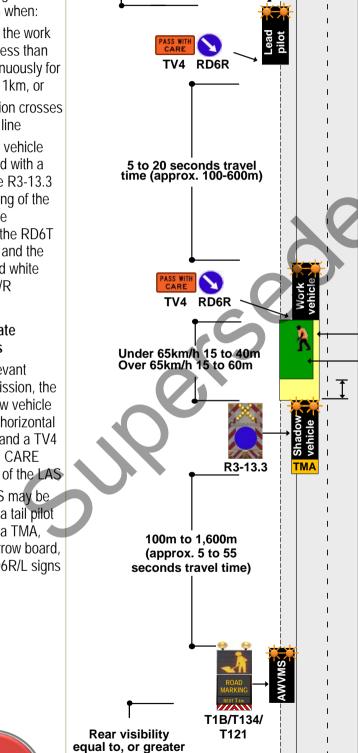
- 1.A lead pilot vehicle must be used on undivided two-way roads with permanent speed limits greater than 65km/h when:
  - visibility to the work vehicle is less than CSD continuously for more than 1km, or
- the operation crosses the centre line
- 2.The shadow vehicle must be fitted with a TMA and the R3-13.3 sign consisting of the red and white delineation, the RD6T (light arrow) and the blue disk and white arrow RD6L/R

# For non-state highways

- 3.With the relevant RCA's permission, the TMA shadow vehicle may have a horizontal arrowboard and a TV4 PASS WITH CARE sign instead of the LAS
- 4.The AWVMS may be replaced by a tail pilot vehicle with a TMA, horizontal arrow board, T1B and RD6R/L signs

EXAMPLE ONLY

This drawing must not be used as a TMP diagram

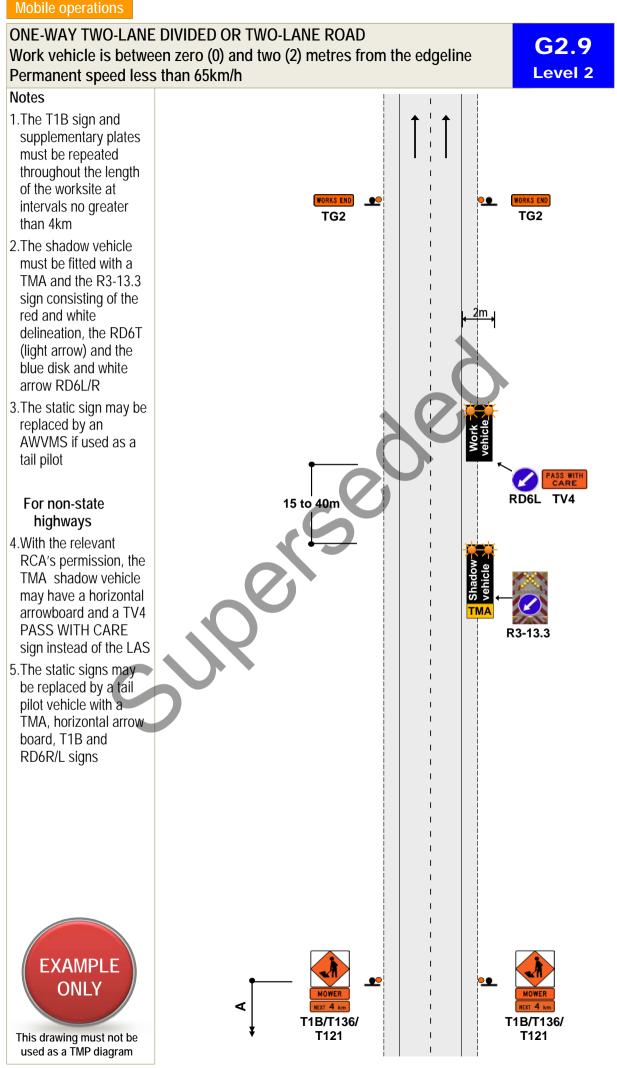


than, clear sight distance

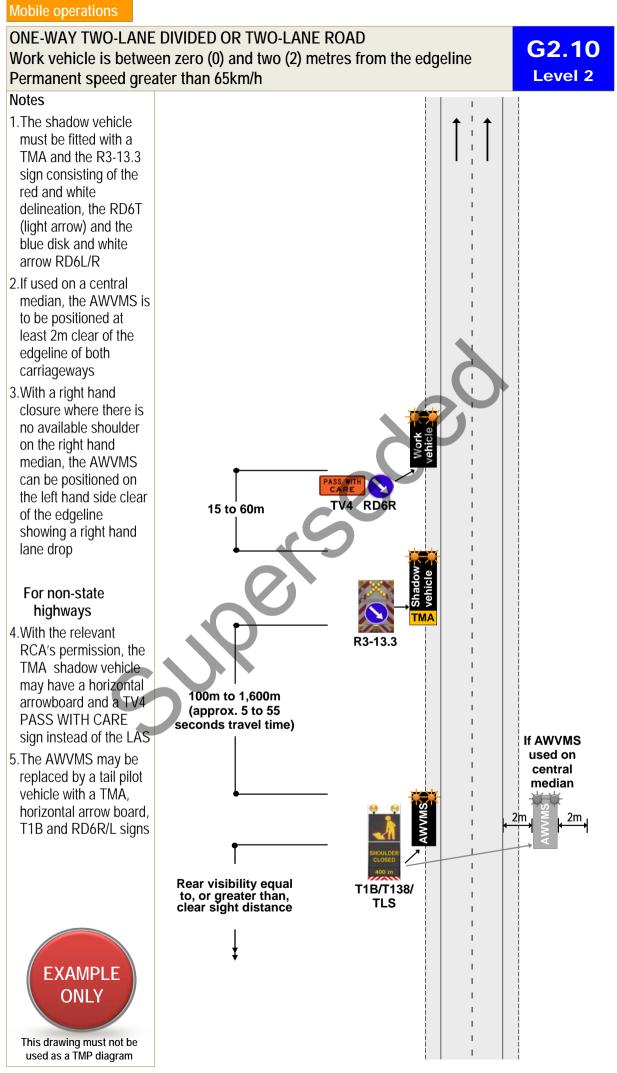
G2.8

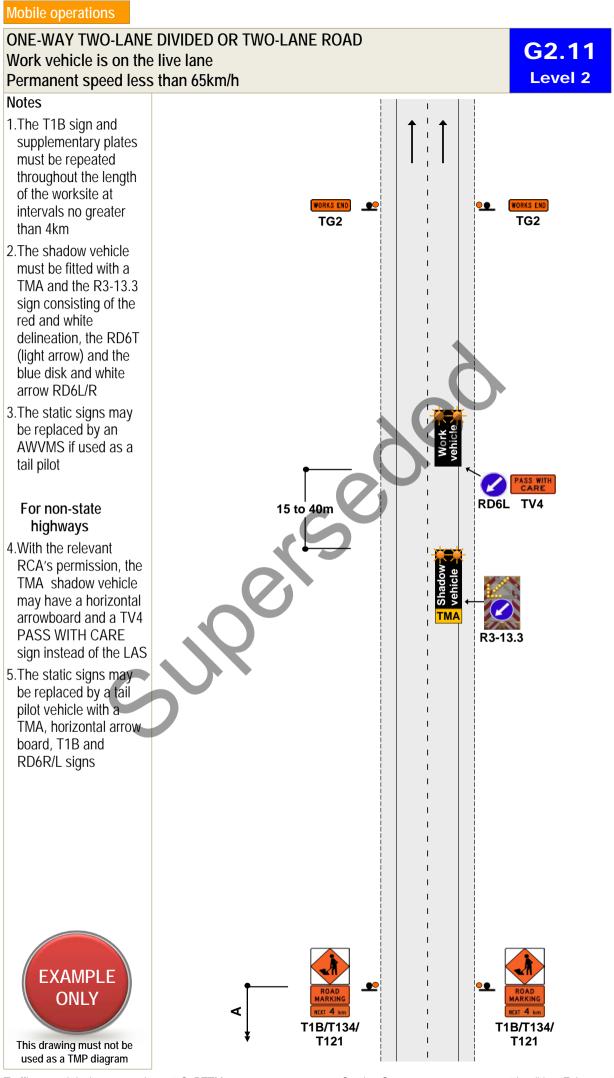
Level 2

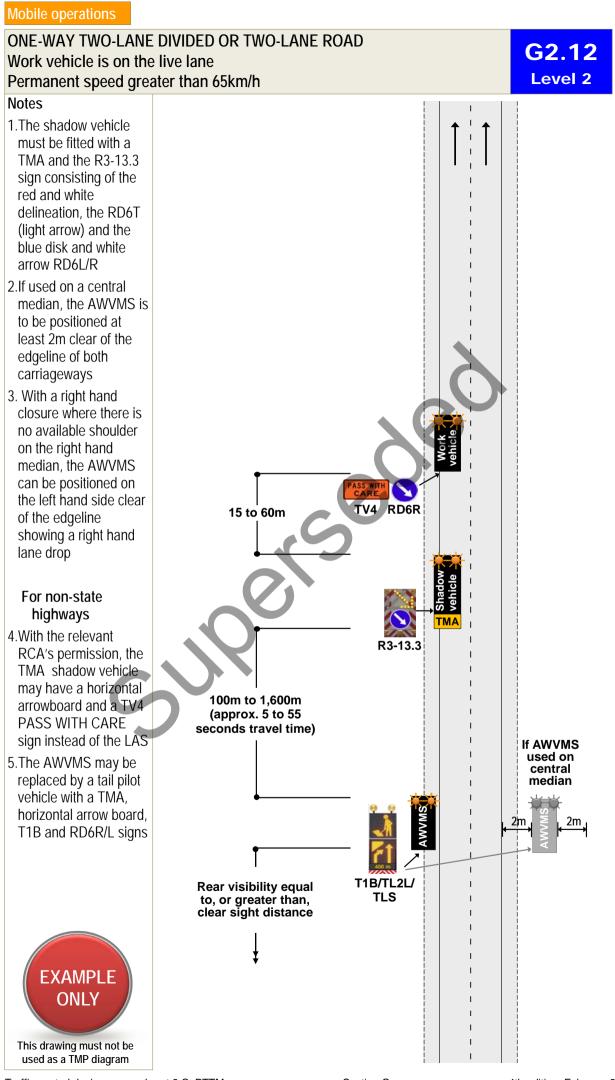
1m lateral safety zone
Working space
10m roll ahead distance

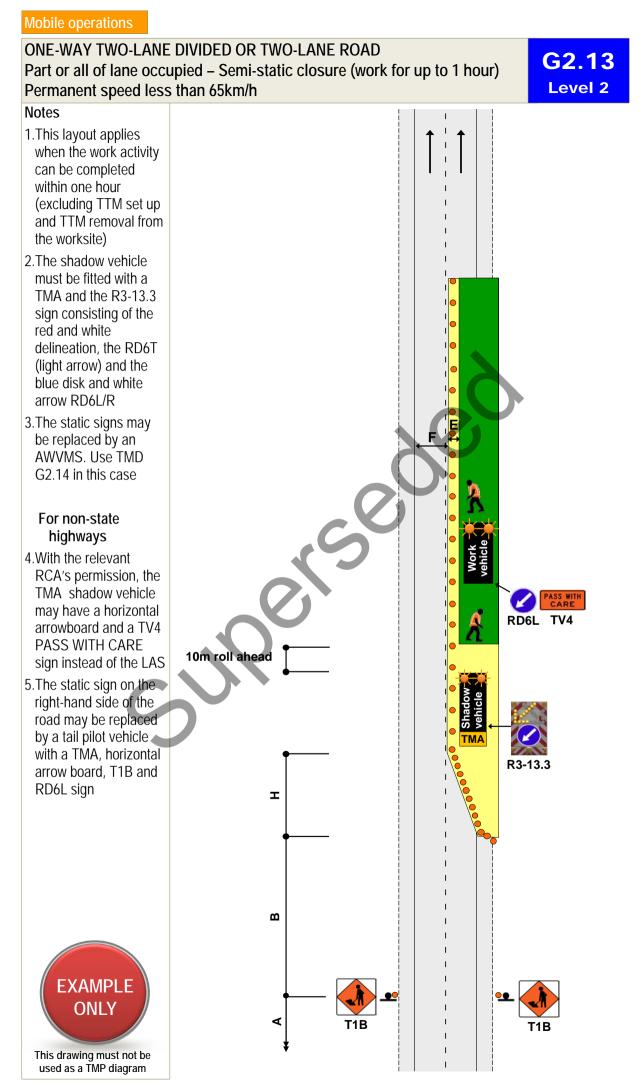


Traffic control devices manual part 8 CoPTTM



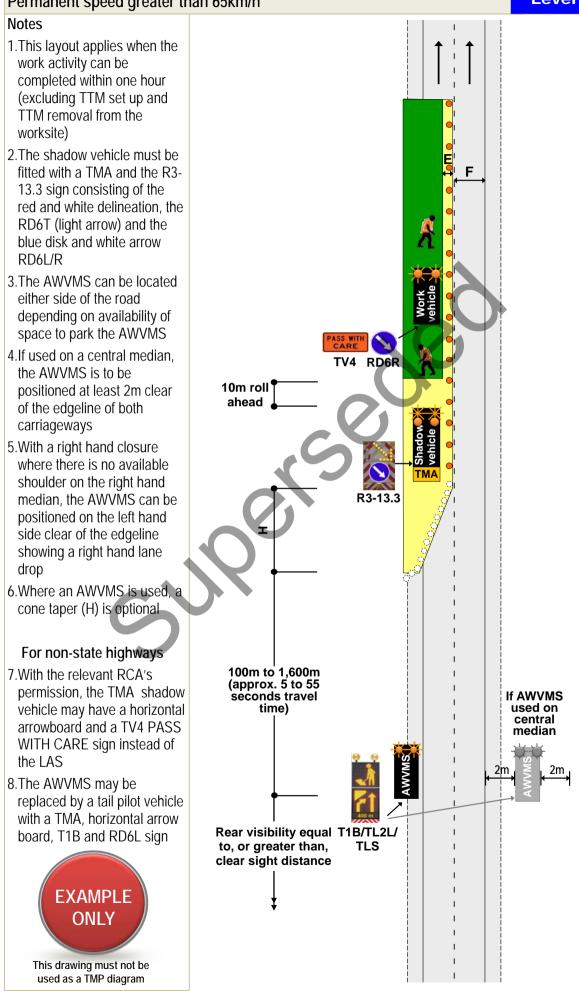






# ONE-WAY TWO-LANE DIVIDED OR TWO-LANE ROAD Part or all of lane occupied – Semi-static closure (work for up to 1 hour) Permanent speed greater than 65km/h

# G2.14 Level 2

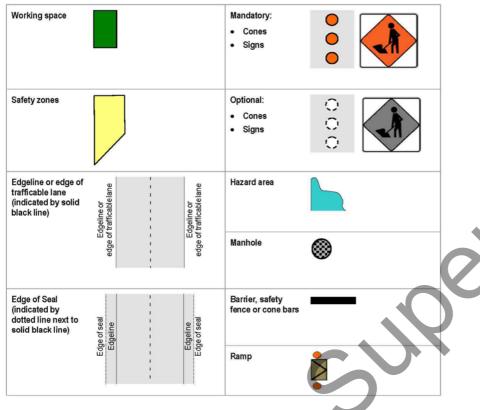


#### Note:

This page is to be used as the layout distances table for the level 2 static and mobile diagrams. Print this page on A3 paper and fold it to fit an A4 page.

Unfold this page when you want to view the layout distances table and a diagram at the same time.

#### LEGEND FOR DIAGRAMS



#### LEVEL 2 LAYOUT DISTANCES TABLE

Perr	nanent/TSL (km/h)	≤50	60	70	80	90/100				
Traf	fic signs									
А	Sign visibility distance (m)	60/50*	70/60*	80	100	120				
В	Warning distance (m)	100/75*	120/90*	140	160	200				
С	Sign spacing (m)	50/35*	60/45*	70	80	100				
Safety zones										
D	Longitudinal (m)*	15	20	30	45	60				
Е	Lateral (m)									
	1. Behind cones	1	1	1	1	1				
	2. Behind barrier installations	As specified by the Installation Designer								
Тар	ers									
н	Initial taper length per lane (m)**	90/50*	100/60*	120	150	180				
Т	Subsequent taper length per lane (m)	50	60	70	80	100				
К	Minimum distance between tapers (m)	50	60	70	80	100				
Delineation device										
	All tapers (m)	2.5	2.5	2.5	2.5	2.5				
Spacing (centres)	Cones parallel to the lane (eg between tapers and alongside the working space) (m)	5	5	10	10	10				
Spacing	At merge and diverge points for ramps and slip lanes, intersecting road entry and exit points, and worksite access points	2.5m for 10m either side of a change in alignment		2.5m for 20m either side of a change in alignment						
*	A longitudinal safety zone is not required when a barrier completely protects the approach end of the worksite.									
**	Taper length is based on a single lane shift of 3.5m.									

 The longer distance is the desirable distance, the shorter distance is the minimum distance required. The longer distances must be used wherever possible. The shorter distances may only be used where there are road environment constraints.

Lar	Lane widths													
Speed (km/h)		30	40	50	60	70	80	90	100					
F	Lane width (m)	2.75	2.75	3.0	3.0	3.25	3.25	3.5	3.5					

Except for delineation device spacings, which are maximum values, the distances specified in the above tables are minimum values.

Approach sign distances and spacings, the initial taper(s) and any longitudinal safety zone associated with that taper must be based on the permanent speed limit. The layout distances of the remainder of the worksite, including any subsequent tapers, may be based on the TSL, provided the TSL is applied prior to the first taper.