Ministry of Transportation
Provincial Traffic Office
Highway Operations Management Branch

Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions

Summary of Changes

April 2022

OD
Operations Division

Ontario

OTM Book 7

- The 2022 edition replaces the 2014 edition.
- All OTMs can be downloaded from the Ministry of Transportation Library site and the Technical Publication portal or from Publications Ontario.
- Hard copies of the OTM Book 7 Office and Field Editions will also be made available to purchase from Publications Ontario.
- Since the January 2014 edition, there have been significant developments in Ontario regarding traffic management.
    - AFADs added to O. Reg. 185/22: PORTABLE TRAFFIC CONTROL SYSTEM

New to OTM Book 7, 2022 Edition

The 2022 OTM Book 7 includes:

- New chapter – Transportation Management Planning Process
- Graphical Table of Contents for Traffic Control Devices
- Revised format and style, simpler language and reorganized.
- Layouts for roundabouts, pedestrians and cycling facilities, as well as HOV lanes.
- Inclusion of relevant information from the Temporary Conditions Traffic Management (TCTM) manual.
- Linear Space Restrictions.

Updates to OTM Book 7, 2022 Edition

The 2022 OTM Book 7 includes:

- Automated Flagger Assistance Devices (AFADs) including the distinction of regulatory requirements vs guidelines for use.
- Implementation of longer tapers to help traffic safely manoeuvre through temporary work zones.
- Addition of a layout table to help users determine the most appropriate table to use within their traffic management plan.
- New 110 km/h regular posted speed added to tables

Updates to OTM Book 7, 2022 Edition

The 2022 OTM Book 7 includes:

- Accommodation for cyclists, consistent with new OTM Book 18
- Training, Section 1.3
- Sign reflectivity – Type I signs changed to Type III/IV
- Decision matrices for regulating traffic
- Queue end warning
- Unplanned events layouts

Layouts
(previously referred to as Typical Layouts)

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Layouts

- New layout numbers.
- Re-organized based on facility type (Intersection, roundabout, freeway……).
- New Table F –Nomenclature of Layouts outlines.
- New Cyclist, Pedestrian and Roundabout layouts.
- New document size for Field Edition to improve readability

Table F - Nomenclature for Layouts

Layouts organized based on facility type;

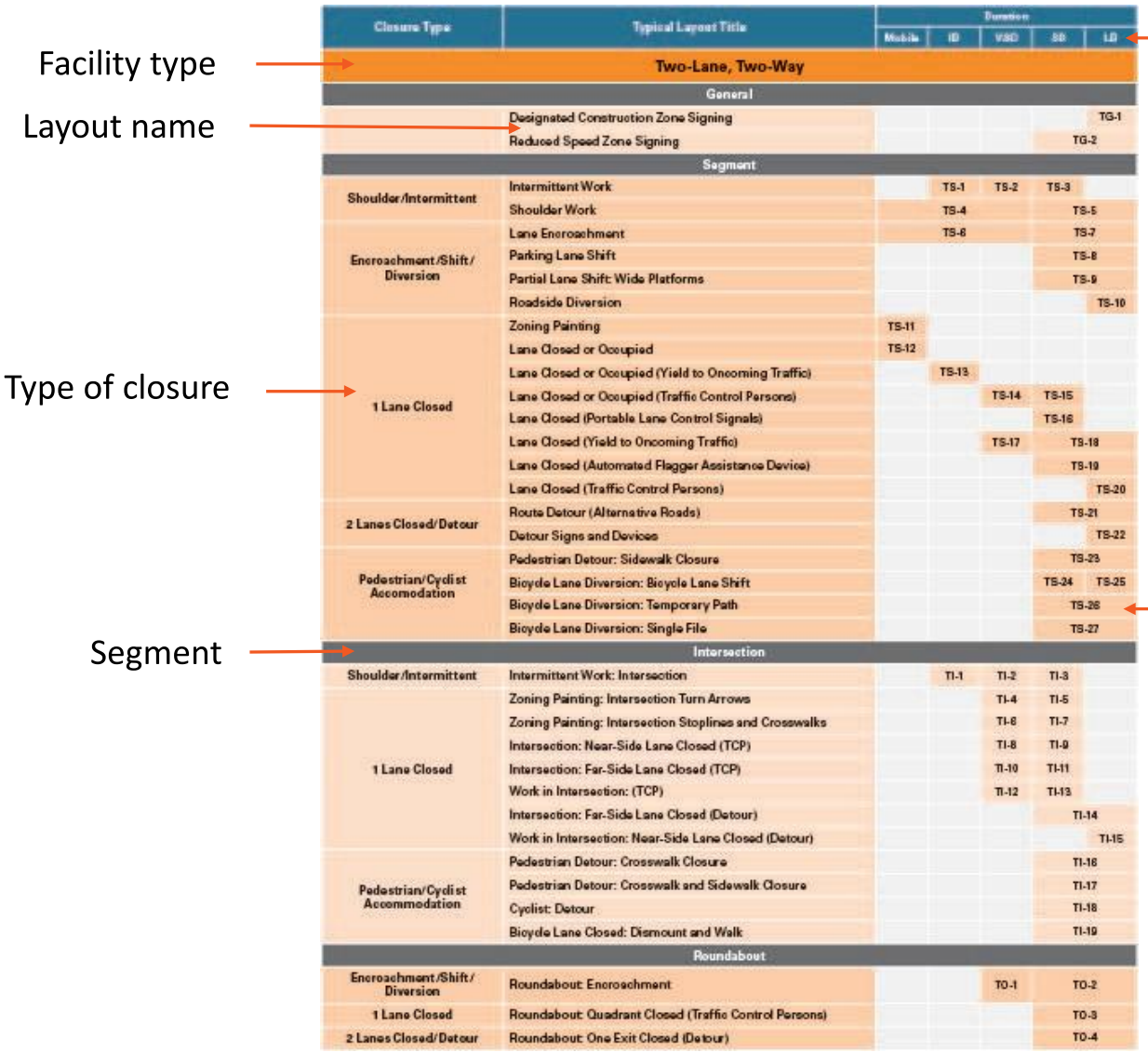
- Two-Lane, Two-Way
- Multi-Lane Undivided
- Multi-Lane Divided
- Freeway

Colour coded for easier finding.

Table F - Nomenclature for Layout Decision Matrix

Abbreviation	Explanation
Two-Lane, Two-Way	
TG	Two-Lane, Two-Way - General
TS	Two-Lane, Two-Way - Segment
TI	Two-Lane, Two-Way - Intersection
TO	Two-Lane, Two-Way - Roundabout
Multi-Lane Undivided	
UG	Multi-Lane, Undivided - General
US	Multi-Lane, Undivided - Segment
UI	Multi-Lane, Undivided - Intersection
UO	Multi-Lane, Undivided - Roundabout
UR	Multi-Lane, Undivided - Ramp
Multi-Lane Divided	
DG	Multi-Lane, Divided - General
DS	Multi-Lane, Divided - Segment
DI	Multi-Lane, Divided - Intersection
DO	Multi-Lane, Divided - Roundabout
DR	Multi-Lane, Divided - Ramp
Freeway	
FG	Freeway - General
FS	Freeway - Segment
FR	Freeway - Ramp

Table G – Decision Matrix



Closure Type	Typical Layout Title	Duration				
		Mobile	ID	VSD	SD	LD
Two-Lane, Two-Way						
General						
	Designated Construction Zone Signing					TG-1
	Reduced Speed Zone Signing				TG-2	
Segment						
Shoulder/Intermittent	Intermittent Work		TS-1	TS-2	TS-3	
	Shoulder Work		TS-4		TS-5	
Encroachment/Shift/ Diversion	Lane Encroachment		TS-6		TS-7	
	Parking Lane Shift				TS-8	
	Partial Lane Shift: Wide Platforms				TS-9	
	Roadside Diversion					TS-10
1 Lane Closed	Zoning Painting	TS-11				
	Lane Closed or Occupied	TS-12				
	Lane Closed or Occupied (Yield to Oncoming Traffic)		TS-13			
	Lane Closed or Occupied (Traffic Control Persons)			TS-14	TS-15	
	Lane Closed (Portable Lane Control Signals)				TS-16	
	Lane Closed (Yield to Oncoming Traffic)			TS-17	TS-18	
	Lane Closed (Automated Flagger Assistance Device)				TS-19	
	Lane Closed (Traffic Control Persons)					TS-20
2 Lanes Closed/Detour	Route Detour (Alternative Roads)				TS-21	
	Detour Signs and Devices					TS-22
Pedestrian/Cyclist Accomodation	Pedestrian Detour: Sidewalk Closure				TS-23	
	Bicycle Lane Diversion: Bicycle Lane Shift				TS-24	TS-25
	Bicycle Lane Diversion: Temporary Path				TS-26	
	Bicycle Lane Diversion: Single File				TS-27	
Intersection						
Shoulder/Intermittent	Intermittent Work: Intersection		TI-1	TI-2	TI-3	
1 Lane Closed	Zoning Painting: Intersection Turn Arrows			TI-4	TI-5	
	Zoning Painting: Intersection Stoplines and Crosswalks			TI-6	TI-7	
	Intersection: Near-Side Lane Closed (TCP)			TI-8	TI-9	
	Intersection: Far-Side Lane Closed (TCP)			TI-10	TI-11	
	Work in Intersection: (TCP)			TI-12	TI-13	
	Intersection: Far-Side Lane Closed (Detour)				TI-14	
	Work in Intersection: Near-Side Lane Closed (Detour)					TI-15
Pedestrian/Cyclist Accommodation	Pedestrian Detour: Crosswalk Closure				TI-16	
	Pedestrian Detour: Crosswalk and Sidewalk Closure				TI-17	
	Cyclist Detour				TI-18	
	Bicycle Lane Closed: Dismount and Walk				TI-19	
Roundabout						
Encroachment/Shift/ Diversion	Roundabout Encroachment			TO-1	TO-2	
1 Lane Closed	Roundabout Quadrant Closed (Traffic Control Persons)				TO-3	
2 Lanes Closed/Detour	Roundabout One Exit Closed (Detour)				TO-4	

Facility type

Layout name

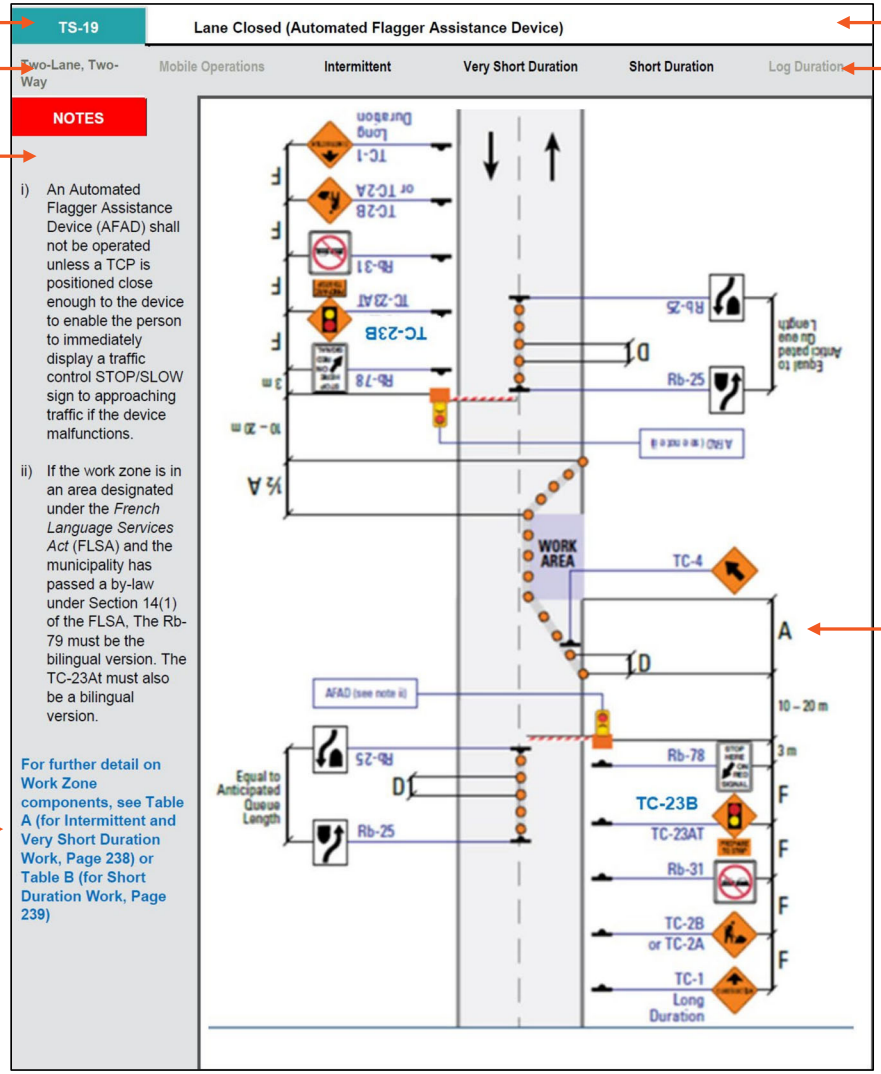
Type of closure

Segment

Duration

Layout number

Layouts - Office Edition



Layout number
Facility type
Notes specific to the layout

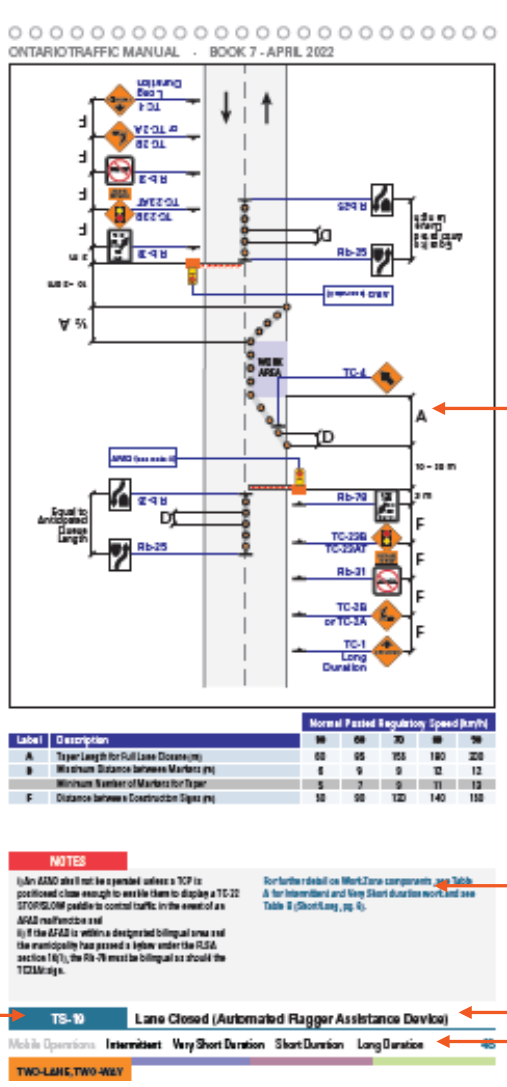
Layout name
Duration

Label for components found in the Table(s).

Reference to Tables for component distances.

Layouts
Field Edition

Values for components now located directly on the layout.



Label for components found in the Table(s).

Table specific to layout. Identifies only the Labels used on the layout.

Notes specific to the layout

Reference to Tables.

Layout number

Layout name

Duration

Facility type

Automated Flagger Assistance Devices (AFAD)

Ministry of Transportation

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Moving Ontarians More Safely Act 2021

- To improve road safety by introducing measures to protect vulnerable road users, including workers on or near highways.

- Included changes to HTA Section 146.1 for AFADs:
  - Identifies the use of an AFAD as a supplement to a TCP where construction or maintenance work is being carried out.
  - Identifies rules of the road when a driver encounters an AFAD.
  - Defines an AFAD as a self contained, portable traffic control system that is operated remotely by a TCP to control traffic movement and features a circular red lens, a circular yellow (amber) lens and a gate arm .
  - Allows the creation of LGIC Regulations prescribing the type, design and specifications for AFADs.

AFAD General Information

- Definition changed to be consistent with HTA 146.1(7).
  - A self contained, portable traffic control system that is operated remotely by a TCP to control traffic movement and features a circular red lens, a circular yellow lens and a gate arm.
- Per the HTA, an AFAD is may be used as a supplement for a TCP to control traffic on a two-lane, two way highway reduced to one lane.
  - To be used only for Intermittent, Very Short or Short Duration work.
- TCPs should be trained on the use of AFADs and shall not leave an AFAD unattended while operational.
- Safety benefits of AFADs include:
  - Allows TCP to stand off the highway and away from danger from passing vehicles and construction vehicles.
  - Increased visibility as compared to a TCP.

AFAD Signs - Regulatory

- As a minimum the following signs shall be installed in front of an AFAD in the order listed below as a driver approaches:
  - An Rb-31 DO NOT PASS sign as prescribed in Regulation 615 of the HTA.
  - A TC-23B AUTOMATED FLAGGER ASSISTANCE DEVICE AHEAD sign.
  - An Rb-78 “STOP HERE ON RED SIGNAL sign indicating the location where the driver approaching an AFAD device is to bring their vehicle to a stop.
- The above signs shall have a retroreflective background and be located to the right of, facing and clearly visible to approaching traffic.
- If sign is ground mounted, the bottom of the sign shall be between 1.5 and 2.5 metres above the roadway.
- If sign is mounted on a portable stand, the bottom of the sign shall be between 1.5 and 2.5 metres above the roadway.

AFAD Design - Regulatory

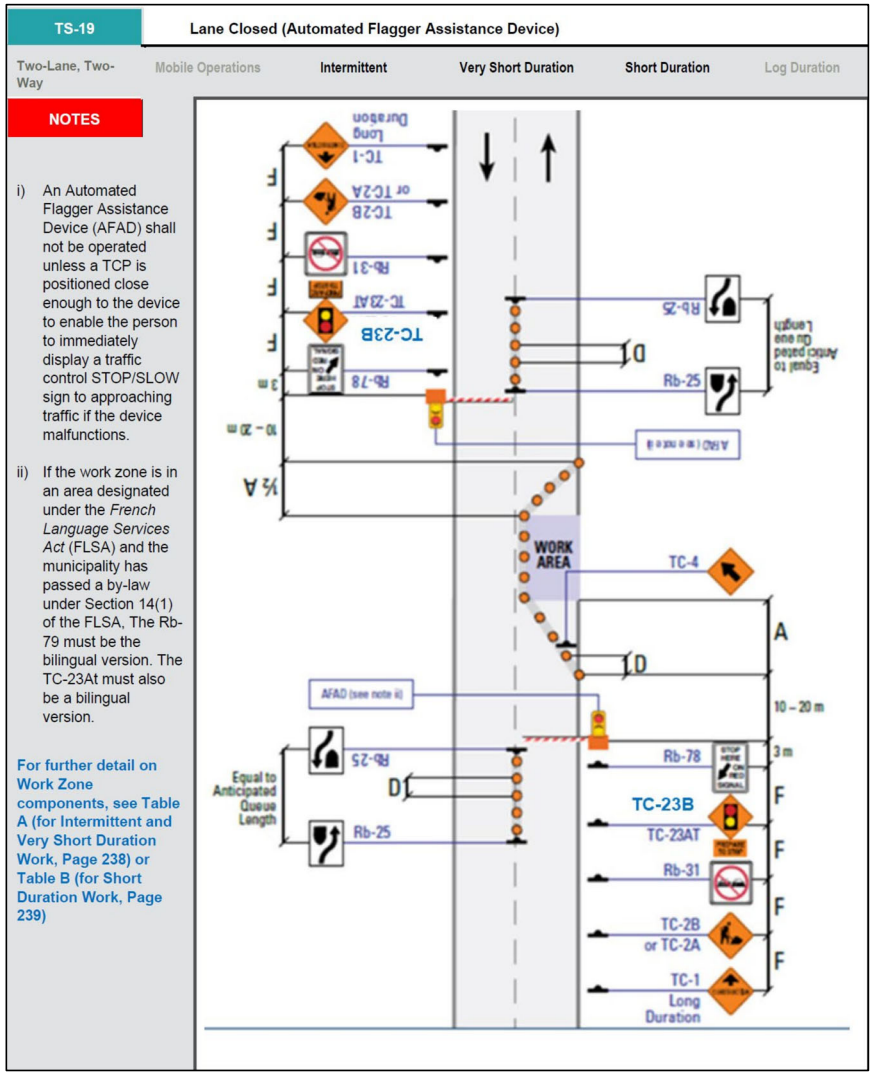
- Every AFAD shall have a gate arm and a signal head with one red lens mounted above one amber lens with each lens at least 30 cm in diameter.

- A black backboard is required:
  - Not less than 85 cm in height and not less 50 cm in width.
  - Orange retro-reflective border at least 2.5 cm in width.
  - Bottom of backboard at least 2 metres above the level of the roadway.

- The gate arm shall be:
  - At least 2 m in length and 10 cm in width.
  - Covered on both sides with alternating vertical stripes and at least one set of stripes must be made of retro-reflective sheeting (effective July 1, 2027 these shall be alternating orange and black stripes).
  - When lowered, must be not less than 110 cm but not more than 140 cm above the level of the roadway.

Revised Layout TS-19

- Identifies use of AFADs only for:
  - Intermittent.
  - Very Short Duration.
  - Short Duration work.
- Notes:
  - Legal requirement that AFAD shall not be operated unless a TCP is positioned close enough to allow them to immediately display a stop/slow paddle should the AFAD malfunction.
  - FLSA requirements for worded signs.
  - TC-23B AFAD ahead sign shown in layout.



OTM Book 7 AFAD Recommended Practices

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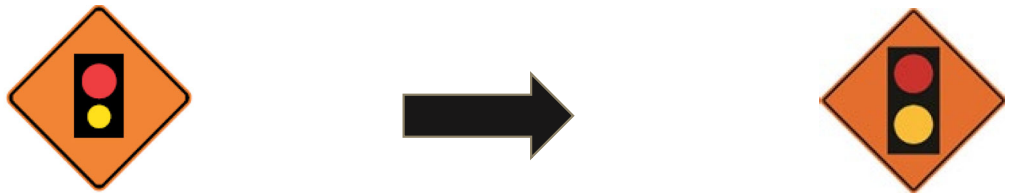
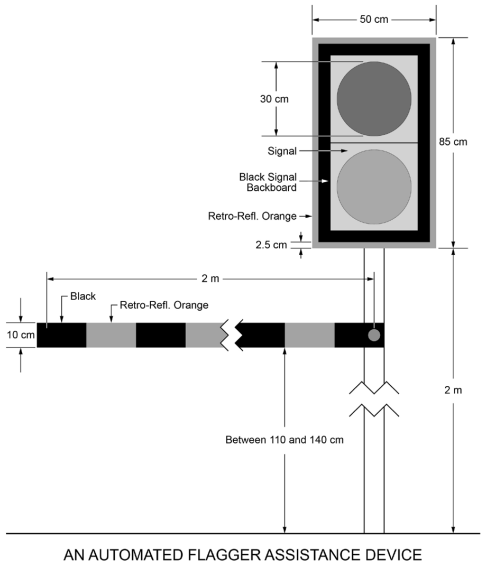
AFAD Signs Recommended Practice

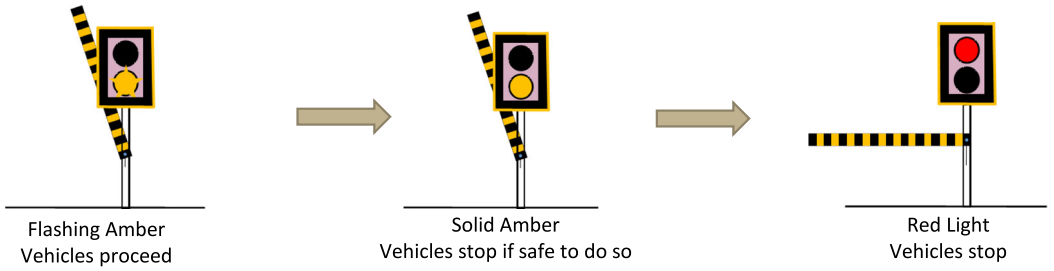
- Full signing requirements for AFADs shall be according to Typical TS-19 (in OTM Book 7 2022).
- Note:
- Changed sign from a “Remote Control Device Ahead” sign to an “Automated Flagger Assistance Device Ahead” sign, number is now TC-23B.
- Symbol in new sign shows red and amber lenses to be the same size.



AFAD Design – Recommended Practice

- AFAD should have conflict monitoring capability to ensure red and amber lenses are not on simultaneously.





AFAD Operation and Maintenance – Recommended Practice:

- Two TCPs can operate an AFAD at either end of the work zone or one TCP can operate an AFAD at one end of the work zone while the other TCP uses a STOP/SLOW paddle at the other end of the work zone.
- The solid amber change interval shall be between 4 and 6 seconds.
- TCPs should always be in communication with each other.
- When two AFADs are being used, each TCP can operate their respective AFAD or one TCP can control both AFADs as long as the other TCP is present with a STOP/SLOW paddle.
- AFADs can operate in manual mode where the TCP advances the display by remote control or they can operate in automatic mode using pre-set times for the red, flashing and solid amber display, in both cases a TCP is still required to be near each AFAD.
- A TCP shall not activate the flashing amber display until the last vehicle from the opposing direction has cleared the work zone.

AFAD Placement - Regulatory

- An AFAD shall be placed on a highway such that the signal is to the right of, facing and clearly visible to approaching traffic.
- An AFAD shall not be located at an intersection, or pedestrian crossover and shall not be placed in any manner so as to conflict with a traffic signal.
- **If a contractor leaves the site the AFADs must be removed and two way flow of traffic resumed.**

AFAD Placement – Recommended Practice

- Traffic should be channeled into a single lane in advance of the AFAD using cones/barrels and Rb-25 Keep Right sign.
- Proper illumination is required at night.
- The AFAD should be positioned such that the gate arm in the down position extends to at least the centre of the lane being controlled.
- A 60 cm square fluorescent orange flag may be attached at the end or near the end of the control arm.

AFAD Operation and Maintenance - Regulatory

- The gate arm shall be down when the red lens is on and be raised when the amber lens is on solid or flashing.
- The amber and red lens cannot be on at the same time.
- Driver Action:
  - Proceed when the AFAD displays a flashing amber with the gate arm in the up position.
  - Slow down and stop if safe to do so when the AFAD displays a solid illuminated amber signal with the gate arm still up.
  - Stop when the AFAD displays a solid illuminated red signal with the gate arm in the down position.
- When an AFAD lamp is illuminated it must be visible to approaching traffic for a distance of at least 165 m.
- An AFAD shall not be operated unless a TCP is positioned close enough to the device to immediately display a stop/slow paddle to oncoming traffic if the AFAD malfunctions.

Thank you