3.04 Designated Construction Zones

In December 2013, the Government of Manitoba passed Highway Traffic Act (HTA) amendments intended to <u>double the set fines</u> for speeding in a Designated Construction Zone (DCZ). The amendments authorize double fines for speeding:

- Whether or not there are workers/equipment present; and
- Whether or not there is a reduction in the maximum speed within the DCZ.

The amendments require construction agencies to establish DCZs in some circumstances and allow for optional use of DCZs in other circumstances. Wherever DCZs are established they must be identified using the signage prescribed in the Provincial Designated Construction Zones Regulation 145/2014.

The DCZ requirements were implemented on May 16, 2014. Traffic authorities, or Construction Agencies working on their behalf, are responsible to establish DCZs and to identify them in accordance with the regulation. Note that posted speed limits remain unchanged when a DCZ is established unless authorized as described in the following sections.

3.04.01 Roadwork Conditions that Require a Designated Construction Zone

A Construction Agency must set up a work zone as a DCZ if the work being undertaken on a road meets **ALL** of the following conditions:

- 1. Work is on the roadway portion of a street, i.e. the area of a street where vehicles travel, this does not include the shoulder, sidewalk or ditch/median;
- 2. Work is 4 hours or more in duration;
- 3. Work is on a paved roadway; and
- 4. Work is on a roadway where the maximum posted speed is 80 km/h or more.

If one or more of the above conditions does not apply to the work being undertaken, then the Construction Agency is not required to establish a DCZ. For example, a Construction Agency is not required to establish a DCZ if the work is taking place on a gravel road; or on a road where the regular maximum speed is 50 km/h; or when the work is on the shoulder/sidewalk.

The Traffic Services Branch or a Construction Agency authorizeed by the Traffic Management Branch are the only agencies permitted to set up and remove DCZ signs. The Construction Agency is responsible for the signage within the DCZ. To request a DCZ, the Construction Agency must submit the DCZ request form found on the sidebar at <u>winnipeg.ca/publicworks/trafficcontrol/laneclosures</u> at least 2 weeks ahead of the closure. The request form collects the following information:

- Closure location including cross streets
- Current posted speed and proposed speed reduction
- Closure start and end dates
- Contact information
- Other closure details including specifying lanes to be closed and hazards

3.04.02 Optional Designated Construction Zone

When roadwork conditions do not meet the criteria for a required DCZ, the Construction Agency may request an optional DCZ. To request an optional DCZ, the Construction Agency must submit the *Designated Construction Zone Request Form*, found on the sidebar at <u>winnipeg.ca/publicworks/</u> <u>trafficcontrol/laneclosures</u>, for approval by the Traffic Management Branch. To be considered as an optional DCZ, the work being undertaken must be road construction, reconstruction, widening, improvement, repair, or other similar work in relation to the road.

3.04.03 Designated Construction Zone Sign Setup

The following diagram shows the basic DCZ sign setup with an associated reduction in maximum speed. This set up also applies where the maximum speed is not reduced but flagpersons and appropriate associated signs (as detailed in Section 3.06) are used to slow traffic.

The City of Winnipeg Traffic Management Branch may reduce the maximum speed in all or part(s) of a DCZ if it meets the requirements set out in Section 3.05.01 of this Manual. In these cases, The City of Winnipeg Traffic Services Branch or a Construction Agency authorized by the Traffic Management Branch is responsible for erecting/placing all associated DCZ signs in accordance with the regulation, as well as any speed limit signs. Please refer to Section 3.05 to request an optional DCZ and/or posted speed limit reduction.

DCZ and reduced speed signs are to be installed on both sides of the road on a one-way roadway and on the right side and median of divided roadways. Where medians are not wide enough for sign installation, signs can be placed only on the right side of the roadway.

The Traffic Services Branch or Authorized Construction Agency is responsible to erect/place signs identifying the beginning and end of a DCZ in accordance with the regulation, as follows:

a. 'Designated Construction Zone' Sign:

On the roadway under construction, the beginning of a DCZ must be identified with the 'Designated Construction Zone' (MC-1D) sign (minimum size 900 mm x 900 mm). This sign is used in place of the 'Roadwork' (TC-2) sign indicated elsewhere in this manual. It is recommended to install 'Designated Construction Zone' signs along the turning lanes on side streets entering a DCZ.



If the DCZ is located in the City's Bilingual Signing Area, as outlined in Section 3.02, the bilingual version of the 'Designated Construction Zone' (MC-1DB) sign must be used (minimum size 900 mm x 900 mm).



b. 'Construction Ends' Sign:

On the roadway under construction, the end of a DCZ must be marked with the 'Construction Ends' (TC-4) sign. If the DCZ is located in the City's Bilingual Signing Area the bilingual version of the 'Construction Ends' (TC-4F) sign must be used (minimum size of 600mm along each side).



c. 'Speed Fines Double' Sign:

At least one 'Speed Fines Double' (MR-179 / MR-179F) sign (minimum size 600 mm x 600 mm) must be placed within a DCZ and be no more than 150 m after the 'Designated Construction Zone' sign which marks the beginning of the DCZ. The 'Speed Fines Double' sign is not required on cross streets or driveways entering the DCZ.



DESIGNATED CONSTRUCTION ZONE WITH REDUCED SPEED AND ZIPPER MERGE SIGNS

	V (km/h)	# Barrels in Taper	A (m)	L (m)		В (m)	D (m)			
	50		50	30		35				
	60	Э	50	40	Ť	45	9			
	70		75	60	1	50				
	80	8	100	80	1	60	12			(
	90		100	105	Ì	65				
	Where:						1			(
V = Permanent posted speed limit										
A = Spacing between signs										
L = Length of taper										(
B = Length of longitudinal buffer										
	D = Space	cing between								<u> </u>
	delin	leation devices								
Т	The start of the DCZ and reduced									
s	speed signage may be located									
fu	irther ah	nead of the	e work z	zone						
due to visibility concerns and										
spatial constraints of intersections										
а	nd vertic	al/horizonta	I curves	·						
lr	reduced	speed zone	es, maxir	num			1		•	
s	peed sig	gns must l	be repe	ated			I			
а	t minimu	um 1km in	tervals,	and						
fc	ollowing i	ntersections	5.				1		-	
Δ	ctivity	area and	adva	hced						
\ \\	arnina si	ions are to h	ne sneci	fic to						
w	ork takin	igns are to t	Je speci							
~		ig place.								
							1		•	
							1			
									•	



3.04.04 Zipper Merge Signage

The zipper merge strategy, also known as a late merge, is effective when there are high traffic volumes and low speeds. This strategy directs drivers to remain in the closed lane until they reach a designated merge point. Upon reaching the merge point, they will merge with drivers in the open lane in an alternating pattern. The benefits of a late merge strategy include a reduction in travel time as the merging is in a consistent pattern, and shorter queue lengths upstream of the closure as the queue is equally shared by two lanes.

Zipper merge signs are required in a work zone when all of the following criteria are met:

- The normal posted speed is 80 km/h or greater
- The duration of work is two (2) days or longer
- The work zone reduces two (2) lanes to one (1)

Locations that do not meet the above criteria may still benefit from zipper merge signs, and the signage may be included in the work zone at the discretion of the Traffic Management Branch. Zipper merge signs must be bilingual in the area designated in Section 3.02.

Appropriate signage placement is shown in the figure above. The use of variable message signs (VMS) instead of static signs is preferred due to increased visibility, and a shorter work zone.

The "Zipper merge ahead" and "Use both lanes" signs can be replaced by a single VMS.

The "Take turns merging" sign can also be replaced by a single VMS.



3.05 Speed Control and Reduced Speed Limits

Prohibited Use of 'MAXIMUM 60 WHEN PASSING WORKERS' Sign

In the past, Construction Agencies commonly used the 'MAXIMUM 60 WHEN PASSING WORKERS' sign to inform drivers to reduce their speed as per Section 3.02.B2 of the 2011 Manual of Temporary Traffic Control. This sign, and any similar sign that links a speed reduction to the presence or absence of workers/equipment, is now *prohibited* from use on all highways throughout Manitoba, including all City of Winnipeg streets.



With the prohibition of the 'MAXIMUM 60 WHEN PASSING WORKERS' sign there are currently three options in The City of Winnipeg available to explicitly control speeds in construction zones:

- Full Time Reduced Speed Limits with or without DCZs
- Daily Shift Reduced Speed Limits with DCZs
- Flagpersons equipped with 'SLOW' paddles

Any posted reduction in speed limit in a construction zone, both full time and daily shift, must be approved and authorized by the Traffic Management Branch. The Traffic Management Branch may issue a work order to the Traffic Services Branch or provide written permission to a Construction Agency to install any speed reductions.

Note: For work zones without a posted speed limit reduction but where photo enforcement of the posted speed limit is desired, a 'Construction Ends' (TC-4) sign must be placed at the end of the work zone as per Section 11(1)(b) of Manitoba Regulation 220/2002.

If a construction agency desires a posted reduction in speed, the *Designated Construction Zone Request Form* must be submitted to the Traffic Management Branch at least **2 weeks** prior to the requested implementation date. If approved, the Traffic Management Branch will provide written authorization for a reduced speed limit as per the March 19, 2008 Council approval delegating authority to the Director of Public Works to set speed limits in construction zones.

If advanced warning flashers are located within the limits of the speed reduction, the advanced warning flashers must be covered by the Traffic Services Branch.

Temporary rumble strips can be installed as part of a reduced speed zone to increase driver alertness. Temporary rumble strips are further explained in Section 5.02.08.

3.05.01 Reduced Speed Signage

Reduced Maximum Speed signs (RB-1) are to be installed after each intersection. The Maximum Speed Ahead sign (WB-9), all Maximum Speed signs for the reduced speed limit, and the first Maximum Speed sign of the original speed limit after the reduced speed zone require warning flags above each sign.

3.05.02 Full Time Reduced Speed Limits

Full time reduced speed limits, i.e. speed limits reduced to 50 or 60 km/h posted 24 hours a day, are generally limited to construction projects with full time lane closures on streets with speed limits of 60, 70, 80 or 90 km/h. Factors considered in determining if a full time reduced speed limit is warranted include:

- Restrictive road geometry resulting from detours, diversions, crossovers or narrow lanes;
- Proximity and exposure of workers to open traffic lanes;
- Proximity of hazards such as pavement edge drop-offs to open traffic lanes;
- Length of construction zone.

3.05.03 Daily Shift Reduced Speed Limits

Daily shift reduced speed limits can be used in conjunction with DCZs when full time reduced speed limits are not warranted. The posted reduction in speed limit is set up and removed daily by the Traffic Services Branch or an Authorized Construction Agency prior to work commencing and after work has been completed for the day. These projects generally do not have full time lane closures or any hazards in the work zone when workers are not present.

3.05.04 Flagging

In circumstances where a full time or a daily shift reduced speed limit is not warranted, and there is a desire to control speed through the construction zone, the Construction Agency can employ flagpersons equipped with 'SLOW' paddles on the approaches to the work area. Further details on flagging are presented in Section 3.06.

3.06 Flagperson Practices

Flagpersons are used when it is necessary to stop and direct approaching motorists or to stop them momentarily. Flagpersons can also be used to signal motorists to reduce speed through a work zone. In all circumstances, the flagperson must be able to communicate effectively. To be effective, the flagperson must be kept aware of the changing conditions in the work zone so that he/she is able to communicate with the motorist respecting:

- a. The road conditions ahead;
- b. The path to follow;
- c. When the potential for interaction between workers and traffic exists; and
- d. When the approach sight distance to the work area is limited.

'FLAGPERSON AHEAD' signs (MC-64) as illustrated in Section 5.02 shall be placed between 90 m and 120 m in advance of the flagperson (see Figure 19) who must be equipped with flagperson's tools as described in Section 5.02.07. In the majority of work zones, the flagperson shall be stationed 60 m in advance of the work area or start of taper. Flagpersons must always be visible to the motorists for a distance of at least 150 m.

When flagpersons are not present, the 'FLAGPERSON AHEAD' sign(s) must be removed or hidden from the motorists' view.

All flagpersons must have completed a Flagperson Training Course and carry with them a training certificate at all times. Training material, including the Flagperson Training Workbook, is available from Manitoba Infrastructure. A list of training providers can be found on the Safe Work Manitoba website (<u>www.safemanitoba.com</u>). Furthermore, all flagpersons must adhere to the regulations of the Workplace Safety and Health M.R. 217/2006 and The Highway Traffic Act.

3.07 Work Zone Considerations

3.07.01 Pedestrian and Bicycle Travel

Reasonable efforts must be made to refrain from closing bicycle facilities and sidewalks. Different streets provide different levels of accomodation for cyclists. Closing a segment of the City's bike network is frequently more harmful than closing a street or lane to motorized traffic due to the lack of safe and accessible alternate routes. It is important to indicate on lane closure requests when bicycle facilities are being closed.

The temporary traffic control chosen for the closure of an active transportation facility should match the level of safety provided by the facility that is being closed. For example, when closing a protected bike lane, it is expected that the adjacent travel lane be closed and used as a bike detour around the workzone. This is particularly important for one-way streets with bi-directional bike lanes such as McDermot Avenue or Garry Street. Cyclists using the counter-flow direction of the bike lane are put in a dangerous situation when the they come to a bike lane closure that forces them onto the sidewalk or into oncoming traffic. When applicable, on-street parking should be removed to facilitate safe travel for vehicles and cyclists.

When there is no active work being completed on a sidewalk, the sidewalk should be restored to a point where it is safe and traversable using a sturdy, non-slip material. Small excavations in the pedestrian travel path can often be temporarily restored using packed granular that allows pedestrians to mount curbs and access crosswalks.

New signs have been developed for sidewalk closures to be placed at the location of the closure and at a adjacent crossings to indicate the need to cross the street. When travel lanes are too narrow for vehicles and bicycles to safely share the road, single file signs can be installed to direct drivers and cyclists to operate in a single file through a work zone. Share the lane and take the lane strategies are illustrated in Figures 22a and 22b. Signs for bicycle lane and sidewalk closures are shown in Section 5.02.01.

3.07.02 Transit Stops and Transit Users

Winnipeg Transit has the authority to determine the level of accomodation at bus stops in work zones. Bus stops may be closed, relocated out of, or maintained in a work zone. Figure 19 illustrates a typical temporary transit stop when loading and unloading from the second lane or median.

When bus stops are to be maintained from the second lane due to work in the curb lane, precautions must be taken to ensure the safety of transit users and the accessibility of the stops. Barricades or pedestrian chanellization devices must be used to separate the bus stop area from the active work areas, and temporary platforms must extend from the curb to the edge of the lane where transit will be loading and unloading. Prefabricated temporary bus platforms are available and provide simple products that snap together to form platforms of any size.

When a work zone requires traffic to cross over a median and transit loading and unloading to take place on the median, a separated pedestrian path with curb ramps must be provided for accessibility. The area of the median used for loading must have non-slip surface.

3.07.03 Lateral and Vertical Position of Traffic Control Devices

Traffic control devices must be well within the normal field of vision of the motorist to be effective. This is particularly necessary at night when motorists are not able to see the whole roadway environment and must depend upon the reflected light from traffic signs and other devices to provide necessary information. Appropriate lateral and vertical placement of temporary signs helps to ensure that the necessary information is available.

In general, motorists in urban areas travel with their headlights on low beam. Signs and other devices that are placed too low or high, or too far left or right, are not fully reflected. As a result, these types of traffic control devices located on the roadway, boulevard or shoulder should be:

- Between 0.3 m and 2.5 m from the edge of the travel lane;
- Installed so that the bottom of the sign is no less than 1.5 m above the roadway, or 1.0 m above the roadway for 900 mm x 900 m or larger signs; and
- Cleaned regularly.

Signs on the boulevard should be placed in a location that does not obstruct the pedestrian or cyclist travel path.

3.07.04 Warning Flags

As illustrated in Section 5.04, warning flags shall be installed on the first warning or temporary traffic control sign in a taper within a long term sign setup and on any portable sign used in a short term sign setup. Use of warning flags increases the visibility of the temporary traffic control devices that define obstructions on the roadway, thereby assisting motorists in selecting the proper traffic lane. Flags shall be:

- Red or orange in colour;
- Shall be no less than 0.16 square metres; and
- Shall be placed so that the top of the flag is a minimum of 0.5 m above the top of the sign.

3.07.05 Traffic Lane Clearances

A traffic lane on a major thoroughfare is normally about 3.5 m wide and in no case less than 3.0 m. When traffic lanes are open, these lane widths should remain clear of traffic control devices, construction materials and equipment. Placement of large objects close to the edge of a traffic lane effectively reduces the lane width. Material and equipment placed close to either side of a traffic lane should be avoided where possible, particularly on high speed (70, 80 or 90 km/h) routes.

3.07.06 Construction Equipment

The location of equipment, material, construction vehicles, and personnel shelters within the work zone must not interfere with the ability of motorists, cyclists and pedestrians to see workers or traffic control devices. The movement of vehicles and equipment into and out of the work zone shall be undertaken with the least possible interference to traffic movements on the street. In many instances, a flagperson will be required for this purpose. **Parking of personal vehicles within the work zone is generally not permitted.**

4 MAINTENANCE

4.01 General

It is the responsibility of the Construction Agency to inspect and undertake the necessary maintenance or replacement of traffic control signs as well as all other devices, and to ensure that they are legible and in their proper place at all times. All signs and devices must be regularly reviewed to ensure that legibility and colour (daytime or nighttime) is approximately equivalent to new devices. For this purpose, reflectorized signs or devices will be deemed to be acceptable if they are clearly visible and legible when illuminated with normal vehicle lights on low beam from a distance of 100 metres. Additionally, their general daytime condition should be such that they command respect. Damaged, defaced or dirty signs lose their authority as traffic control devices, and are a discredit to the Construction Agency responsible for them.

Signs with conflicting messages must be removed from view. Obstructions such as shrubbery, construction materials or parked vehicles, must not obscure the visibility of temporary traffic control devices. When devices are not required they must either be removed or hidden from the motorists' view.

4.01.01 Work Area Enclosures

It is the responsibility of the Construction Agency to safely enclose the work area when required, in accordance with the Workplace Safety and Health Regulation 217/2006.

The work area must have a sign prominently identifying the name and emergency telephone number of the Construction Agency.



4.02 Removal of Traffic Control Devices

Under Section 77(9) of The Highway Traffic Act, traffic control devices at a construction site must be removed when it is no longer necessary for the devices to remain in place. In some cases, a detour or street closure will be in effect only during certain hours of the day, in which case the affected section of street should be restored to normal use at other times. It is essential that all the devices which are not applicable when the street is restored to normal use be either removed or otherwise hidden from the motorists' view.

5 TEMPORARY TRAFFIC CONTROL DEVICES AND ILLUSTRATIONS

5.01 General

The following sections detail the approved signs and devices required to implement the requirements of this Manual. Figures 1 through 41 in Section 5.04 show typical traffic control details for many circumstances. Adjustments to traffic control may be required to suit site specific conditions.

To be effective during hours of darkness, all signs, barricades, delineators, cones and other similar devices must be reflective. To optimize this reflectivity, these devices must be regularly cleaned and well maintained. As of January 1, 2012 all retroreflective sheeting on temporary traffic signs, barricades and devices must use a minimum Type VIII retroreflective sheeting, with the exception of reboundable devices specifically channelization barrels, tall cones and traffic cones which shall use a minimum Type IV retroreflective sheeting (ASTM D4956).

Under no circumstances are signs with hand painted lettering, diagrams, or symbols permitted. Similarly, yellow or orange caution tape is not an approved traffic control device in this manual. The use of caution tape or non-approved signs is an illegal violation of the City's Streets By-Law 1481/77 and Traffic By-Law 1573/77, and is subject to prescribed fines.

Construction Agencies are REQUIRED to provide contact information on the back of temporary traffic control devices to allow recovered property to be returned. Temporary traffic control devices without contact information may be removed by a City of Winnipeg Streets Constable.

5.02 Traffic Control Devices

This section describes the most commonly used traffic control devices for road work operations and other temporary conditions.



- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless otherwise specified.
- Reduced size signs are only permitted when the sign is placed on a lane line marking and traffic is allowed to operate on the adjoining traffic lanes.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.



- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless specified otherwise.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.



- Tabs shall be 300mm x 600mm reflectorized orange or white.
- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless specified otherwise.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.



- Tabs shall be 300mm x 600mm reflectorized orange or white.
- Diamond shaped warning signs shall be 750mm x 750mm reflectorized orange unless specified otherwise.
- Bike Lane signs are to be 450mm x 450mm reflectorized orange.
- Signs which are larger than the minimum sizes specified in Section 5.02 and 5.03 may be desirable to increase conspicuity of the work area and enhance safety of workers.

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5.02.02 Barrels, Cones, Markers and Panels

Device & Uses	Illustration	Description							
All devices in the table, with the exception of road edge delineators, shall be fluorescent orange with stripe colours and widths as indicated in the drawings.									
All devices shall have a minimum Type VIII high intensity retroreflective sheeting except channelization barrels, tall cones and traffic cones which shall have a minimum Type IV high intensity retroreflective sheeting, in orange and/or white as required.									
Channelization Barrel TC-63 • Tapers • Along work areas	→ ≥ 300mm→ → ≥ 100mm ≥ 100mm ≥ 100mm ≥ 100mm ≥ 100mm ≥ 100mm	Barrels may be used in tapers and along work areas in place of construction markers, where channelization devices will remain in place for prolonged periods of time.							
Chevron TC-31	+ 600mm +	The Chevron sign may be used in place of channelization barrels in tapers, however channelization barrels are preferred.							
• Tapers	21.0m and 21.5m								
Tall Cone Along work areas 	≥ 100mm ≥ 100mm	Tall Cones may be used to delineate traffic space alongside the work area in place of construction markers and traffic cones only. Tall cones are not to							
Lane delineation		be used in tapers. The base should weigh a minimum of 5kgs.							
Construction Marker TC-62		Construction markers may be used as a delineation device for high-speed/ high-volume work zones in place of							
Along work areasLane delineation	2 m 100 m 900 m 200 m	tall cones and barrels (barrels are preferred). Construction markers are not to be used to channelize traffic through tapers.							
	* >1.0 h for sign 960 fm x 900mm or larger								

 Construction Panel Along work areas Lane delineation 		Construction panels may be used as a delineation device for high-speed/ high-volume work zones in place of tall cones and barrels (barrels are preferred). Construction panels are not to be used to channelize traffic through tapers.			
Traffic Cone		Traffic Cones ≥ 700 mm in height may			
TC-61		be used as a delineation device for short term lane closures.			
Lane delineation	100mm 1000mm	The use of smaller traffic cones (not less than 450 mm in height) may be used for a special event (i.e. parade, marathon) where delineation of traffic is required. These cones may only be used during daylight hours.			
Road Edge Delineator	100 mm WHITE REFLECTORIZED SHEETING SHEETING VARIES ↓ 21.2 m ≤ 3.6 m	Road edge delineators may be used to identify the edge of the usable roadway for motorists. Where diversions or detours are undertaken on streets where artificial street lighting is not available or with low levels of street lighting, delineators must be used.			
Portable Sign Support		Portable sign supports may use weighted bases or folding frames, provided that the signs are held securely and maintained in proper			
To advise of temporary roadway conditions for short term projects and maintenance operations.		position. Use of folding frames should be avoided on sidewalks where their larger footprint can pose a tripping hazard. Portable signs with round bases (i.e. tire rims) are illegal and are not permitted for use on City streets.			