

Temporary Traffic Control Devices

Crashworthy Testing Compliance

With the exception of Trailer Mounted Devices described below, Temporary Traffic Control devices, including Type A and Type B channelizing devices, Type III barricades, ballast systems, and sign support structures used on any roadway open to public travel, shall be crashworthy when installed facing traffic or turned away from traffic.

FHWA policy requires that all roadside appurtenances, including Temporary Traffic Control devices, have been successfully crash tested in accordance with the [National Cooperative Highway Research Program \(NCHRP\) Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features"](#) or the [American Association of State Highway and Transportation Officials \(AASHTO\) "Manual for Assessing Safety Hardware \(MASH\)."](#)

Trailer Mounted Devices

When required, trailer mounted devices, such as Arrow Boards and Portable Changeable Message Signs shall be installed per [Layout 7](#). When not in use, the devices should not be stored on the shoulder.

High Visibility Clothing

All workers who are exposed to traffic, work vehicles, or construction equipment within the TTC zone shall wear high-visibility safety apparel meeting ANSI/ISEA 107-2004 (or ANSI/ISEA 107-2010) Performance Class 2 or 3 requirements. ANSI/ISEA 107-2015 Type R, Performance Class 2 or 3 is also acceptable. Clothing shall have an attached original label indicating the Performance Class. When working in an area that does not require the use of a hard hat for head protection, a high visibility hat should be worn.

Flashing Warning Lights

Flashing warning lights may be used to supplement road, ramp, and sidewalk closure signing, and other warning signs and/or barricades to attract the road user's attention.

Vehicle Warning Lights

All vehicles shall have approved operating vehicle warning lights when decelerating to enter a TTC zone and again when a vehicle leaves the TTC zone and enters the traveled traffic lane. All vehicles within a mobile TTC operation or working within 15 feet of an open traffic lane should have approved vehicle warning lights. Vehicle warning lights shall be visible for 360 degrees around the vehicle at a minimum height of 3 1/2 feet and a radius of 60 feet or greater.

Optional Devices

Some signs and devices on the TTC layouts are shown as optional or have factors that may make them optional. Some advance warning signs and/or channelizing devices may be omitted for low speed roads and/or if the duration will be less than 1 hour. Read the associated notes on each layout for options. The ONE LANE ROAD AHEAD sign is an example of a sign that is only required for higher speeds. The BE PREPARED TO STOP sign is shown as optional on most TTC layouts. This sign is usually added to the complement of signs when restricted sight distances warrant additional warning to the motorist or the advance warning area becomes extremely long due to sight distances or a move of the operation.

Channelizing Devices

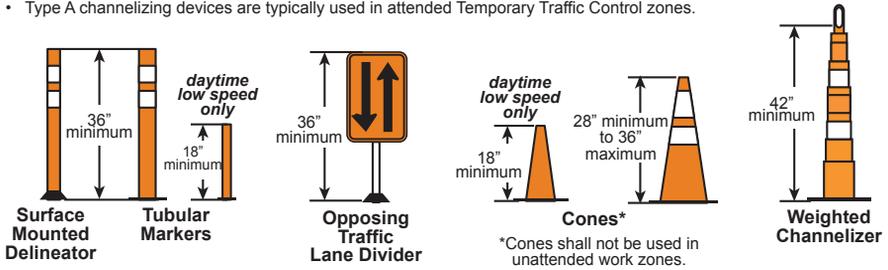
The function of channelizing devices is to delineate a desired vehicle path, mark specific hazards on or near the roadway, separate opposing traffic flows, and partially or totally close the roadway. See Figure [6K-7](#), Longitudinal Drop-off Guidelines (pages [6K-aj](#) through [6K-al](#)) for the use of channelizing devices adjacent to shoulder edge drop-offs or uneven lanes.

Channelizing devices include cones, drums, barricades, temporary raised islands, and various kinds of markers. The devices are broken into two type classifications (Type A and Type B) based upon the nighttime visibility of the device. Visibility is determined based upon the total retroreflective area of the device. Devices with less than 270 square inches are classified as Type A channelizing devices and devices with more than 270 square inches of retroreflective area are Type B channelizing devices.

Type A channelizing devices may be used in attended TTC zones and Type B channelizing devices shall be used if the TTC zone will be left unattended or be in place longer than 12 hours. Where a Type B channelizing device, such as a drum, causes an isolated sight restriction, or is too wide for a space, a 42-inch tall weighted channelizer may be substituted. This substitution may be used in unattended overnight conditions as approved by the road authority. When used, the spacing of the weighted channelizers should be reduced by up to 50 percent. Figure [6K-3](#) shows a breakdown of devices by Channelizer Type (drawn to approximate scale). See the MN MUTCD, Part 6F for additional details on application restrictions.

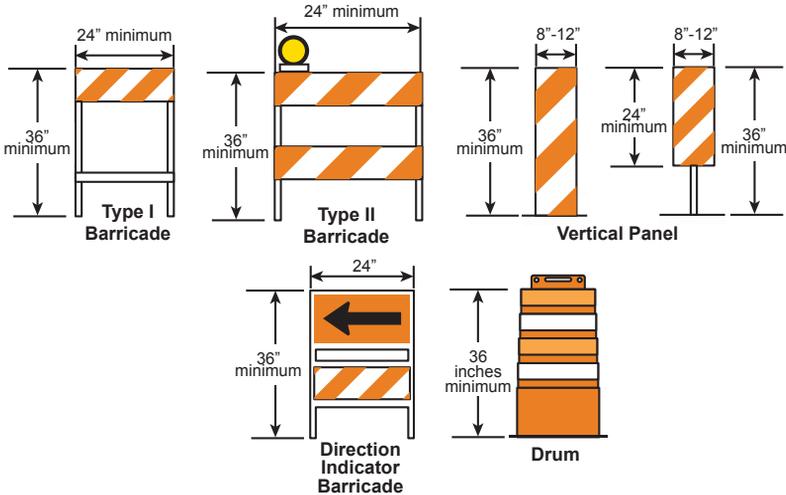
TYPE A CHANNELIZERS

- Type A channelizing devices are typically used in attended Temporary Traffic Control zones.



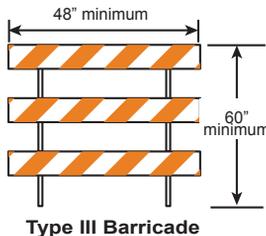
TYPE B CHANNELIZERS

- Channelizers used on high speed roadways shall have a minimum of 270 square inches of retroreflective area facing road users.
- Orange diagonals shall slope down toward the traffic side.
- Type B channelizing devices shall be used if the Temporary Traffic Control zone will be installed for more than 12 hours or if it is left unattended. Weighted channelizers may be used in lieu of a Type B channelizer with the permission of the road authority.
- Type A Flashing Warning Lights may be used - place on the side with traffic.



TYPE C CHANNELIZER

- Orange diagonals shall slope down toward the traffic side.
- Signs mounted on Type III barricades should not cover more than 50 percent of the top two rails or 33 percent of the total area of the three rails.
- Type A Flashing Warning Lights may be used - place on the side with traffic.



Types of Channelizing Devices
Figure 6K-3

Work Zone Signing

As a general rule, signs should be located on the right-hand side of a two-way roadway and on both the right and left sides of a multi-lane divided roadway. See Figure 6K-11, TTC Distance Charts (page [6K-ap](#) or back cover) for the Advance Warning Sign Spacing distance (**A**). When special emphasis is needed, signs may be placed on both the left and right sides of a two-way roadway. Signs, although ordinarily mounted on posts for long term operations, may be mounted on or above barricades or on temporary supports.

Signs mounted on temporary supports should not be placed in the open traveled lane where they pose a hazard to traffic nor where pedestrians are expected to travel. Generally, these signs are placed on the shoulder or in the parking lane of the street or highway. The signs should not be blocked from view by parked vehicles, trees, or other sight obstructions on or near the roadway. Any portable sign or barricade placed in a pedestrian walkway that could be a hazard to a visually impaired pedestrian should have a detectable edge to guide the pedestrian around the hazard.

Signs shall not be mounted on existing traffic signs, posts, or other utility structures without permission from the proper authority. All signs shall be mounted so that the sign face is approximately perpendicular to the roadway and vertically plumb in accordance with Quality Standards (pages [6K-93 through 6K-108](#)). The bottom of signs mounted on barricades or temporary supports shall be no less than 1 foot above the traveled way. All regulatory signs on portable supports shall be mounted with a minimum mounting height of 4 feet measured from the ground to the center of the sign face. Supplemental advisory plaques shall be placed directly below or on the lower side of the warning sign nearest traffic.

Some activity areas move slowly down a roadway and away from the operation's advance signing. The distance from the last advance warning sign to the activity area should not allow the motorist to forget the existence of the Temporary Traffic Control zone. For high-speed streets and rural highways, the maximum distance from the last sign to a point where the driver detects the activity area shall not exceed 1 mile. In urban areas, the number of intersections shall be considered and this distance reduced accordingly.

All advance warning signs shall be at least 48 x 48 inches in size when used on high speed roadways. Warning signs used on low speed roadways shall be at least 36 x 36 inches in size. **Smaller signs may be used as approved by the road authority** where larger signs become an additional hazard to motorists and pedestrians.

Advance warning signs should be installed for drivers entering the TTC zone from cross streets. ROAD WORK AHEAD signs on intersecting roadways shall be installed if the motorist will not encounter another advance warning sign prior to reaching the activity area except for mobile operations.

All signs used at night shall be retroreflective with a material that has a smooth sealed outer surface that shows the same shape and color both day and night. Non-retroreflective mesh signs shall not be used at any time. Retroreflectorized

roll-up signs may be used for daytime and for nighttime only when workers are present to monitor the signs.

On multi-lane divided roadways, where the median shoulder is narrow (less than 6 feet), the 48 x 48 inch advance warning signs, as shown on the TTC layouts, may not fit on the left side of the roadway. Where this situation occurs, one of the following options may be used:

1. Reduce the left side signs sizes, or
2. Eliminate the left side signing, use an additional RIGHT LANE CLOSED (or LEFT as appropriate) sign on the right side, and require the use of an arrow board on the shoulder at the beginning of the lane closure taper.

All advance warning signs shall be removed, covered, or turned to face away from traffic when they are no longer required or appropriate.

 R1-1	 R9-9	 W4-2 (R or L) Lane Ends
 R1-2	 R9-10	 W5-1 RAMP
 R1-X3P	 R9-11 (R or L)	 W6-4 Opposing Traffic Lane Divider
 R2-1	 R10-6 (R or L)	 W7-3aP
 R2-6bP	 R11-2	 W8-1
 R2-12	 R11-4	 W8-1a
 R3-1 No Right Turn	 W1-4 (R or L) Reverse Curve	 W8-2
 R3-2 No Left Turn	 W1-6 One Direction Large Arrow (R or L)	 W8-7
 R3-2 No Left Turn	 W3-1 Stop Ahead	 W8-8
 R3-5 (R or L)	 W3-2 Yield Ahead	 W8-9
 R3-7	 W3-3 Signal Ahead	 W8-11
 R3-18 U-Turn & Left Turn Prohibition	 W3-4	 W8-15
 R4-7c Keep Right	 W3-5 Speed Reduction	
 R4-11 Bikes may use full lane		

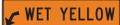
For additional signs and information on typical sizes and usage, see the [Minnesota Manual on Uniform Traffic Control Devices](#).

Sign Codes Quick Reference Figure 6K-4

 W8-15P Motorcycle Plaque	 W20-1a	 W20-X17
 W8-23	 W20-3	 W20-X18
 W8-24	 W20-4	 W20-X19
 W12-1 Double Arrow	 W20-7 Flagger Ahead	 W20-X20
 W13-1P	 W16-3P Distance Plaque	 W20-X21
 W13-4P	 W16-2P Distance Plaque	 W21-1a Worker Ahead
 W14-1	 W20-X3 (R or L)	 W21-X3 Large Arrow (Variable Arrow Angle)
 W14-2	 W20-5 LEFT CENTER 1000 FT 1/2 MILE BIKE	 W20-X10
 W14-X12	 W20-X10	 W21-X4a LEFT CENTER RAMP SHOULDER
 W14-X13	 W20-X11 Reduced Width	 W21-X5 LEFT CENTER BIKE
 W16-7P (R or L)	 W20-X12	 W21-X5a
 W20-1	 W20-X13 (R or L)	 W20-X16
	 W20-X16	 W21-X6

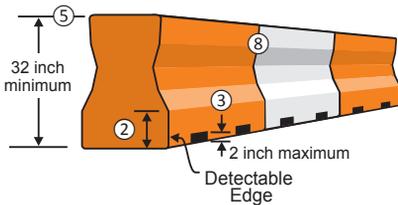
For additional signs and information on typical sizes and usage, see the [Minnesota Manual on Uniform Traffic Control Devices](#).

Sign Codes Quick Reference Figure 6K-4

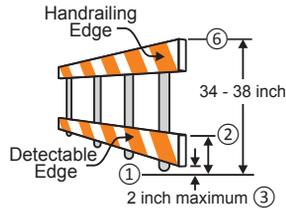
 <p>W21-X7 Flagger Panel</p> 	 <p>G20-X10</p>	
 <p>W21-X9</p>	 <p>G20-X11P</p>	
 <p>W21-X10</p>	 <p>G20-X12P</p>	
 <p>W21-X11 (R or L)</p>	 <p>G20-X14</p>	
   <p>W21-X12</p>	 <p>G20-X15</p> 	
 <p>W24-1 Double Reverse Curve (R or L)</p>	 <p>G20-X17</p>	
 <p>G20-4</p>	 <p>G20-X18</p>	
 <p>G20-5aP</p>	 <p>G20-X18P</p>	
 <p>G20-X1</p>	 <p>D9-6 Handicapped Accessible</p>	
 <p>G20-X7 (Variable Arrow Angle)</p>		
 <p>G20-X9 (Variable Arrow Angle)</p>		

For additional signs and information on typical sizes and usage, see the [Minnesota Manual on Uniform Traffic Control Devices](#).

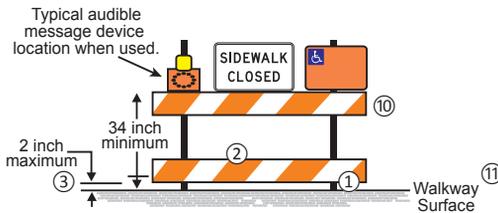
Sign Codes Quick Reference Figure 6K-4



Pedestrian Channelizer
using a Temporary Barrier



Pedestrian Channelizer



Sidewalk Barricade



Detectable Edge
for Portable Sign Stand

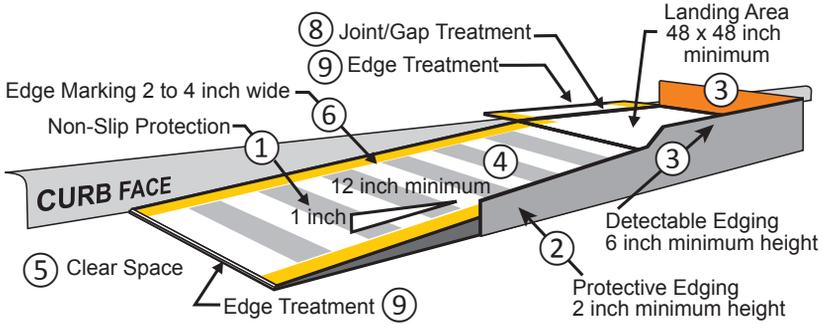
NOTES:

- ① To prevent any tripping hazard to pedestrians, ballast shall be located behind or internal to the device. Any support on the front of the device shall not extend into the 48 inch minimum walkway clear space and shall have 0.5 inch maximum height above the walkway surface with approved beveling (see Note #9 on page 6K-aa for beveling details).
- ② Detectable edges for long canes shall be continuous and 6 inches minimum above the walkway surface and have color or markings contrasting with the walkway surface. The detectable edge around a portable sign stand should be placed in the walkway area in which the sign poses a hazard to a visually impaired pedestrian.
- ③ Devices shall not block water drainage from the walkway. A gap height or opening from the walkway surface up to 2 inch maximum height is allowed for drainage purposes.
4. Railings or other objects may protrude a maximum of 4 inches into the walkway clear space when located 27 inches minimum above the walkway surface.
- ⑤ Longitudinal channelizing devices for pedestrians shall be 32 inches high or greater.
- ⑥ When hand guidance is required, the top rail or top surface shall be:
 - In vertical plane perpendicular to the walkway above the detectable edge,
 - Continuous at a height of 34 to 38 inches above the walkway surface, and
 - Supported with minimal interference to the pedestrian's hands or fingers.
7. All devices shall be free of sharp or rough edges and fasteners (bolts) shall be rounded to prevent harm to hands, arms, or clothing.
- ⑧ All devices used to channelize pedestrian flow should interlock such that gaps do not allow pedestrians to stray from the channelized path.
9. Any pedestrian devices used to provide positive protection (traffic or hazard) for pedestrians or workers shall meet crashworthy requirements appropriate for the barriers' application.
- ⑩ Barricades shall be used to close the entire width of the walkway surface.
- ⑪ A walkway surface shall be firm, stable, and slip resistant.

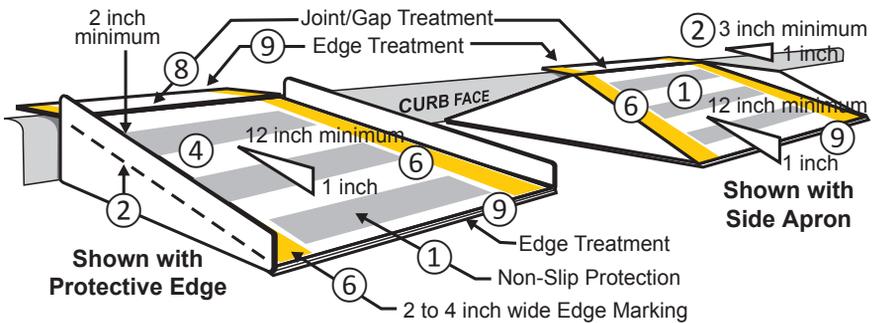
Refer to the MnDOT website [Pedestrian Accommodations Through Work Zones](http://www.dot.state.mn.us/trafficeng/workzone/apr.html) for more information (<http://www.dot.state.mn.us/trafficeng/workzone/apr.html>).

Typical TPAR Devices
Figure 6K-5

Temporary Curb Ramp - Parallel to Curb



Temporary Curb Ramp - Perpendicular to Curb



NOTES:

- ① Curb ramps shall be 48 inches minimum width with a firm, stable, and non-slip surface.
- ② Protective edging with a 2 inch minimum height shall be installed when the curb ramp or landing platform has a vertical drop of 6 inches or greater or has a side apron slope steeper than 1:3 (33%). Protective edging should be considered when curb ramps or landing platforms have a vertical drop of 3 inches or more.
- ③ Detectable edging with 6 inches minimum height and contrasting color shall be installed on all curb ramp landings where the walkway changes direction (turns).
- ④ Curb ramps and landings should have a 1:50 (2%) max cross-slope.
- ⑤ Clear space of 48 x 48 inches minimum shall be provided above and below the curb ramp.
- ⑥ The curb ramp walkway edge shall be marked with a contrasting color 2 to 4 inch wide marking. The marking is optional where color contrasting edging is used.
- 7. Water flow in the gutter system shall have minimal restriction.
- ⑧ Lateral joints or gaps between surfaces shall be less than 0.5 inches in width.
- ⑨ Changes between surface heights should not exceed 0.5 inches. Lateral edges should be vertical up to 0.25 inches high, and beveled at 1:2 between 0.25 inches and 0.5 inches in height.

Refer to the MnDOT website [Pedestrian Accommodations Through Work Zones](http://www.dot.state.mn.us/trafficeng/workzone/apr.html) for more information (<http://www.dot.state.mn.us/trafficeng/workzone/apr.html>).

Typical TPAR Devices
Figure 6K-5

Portable Changeable Message Signs (PCMS)

The primary purpose of Portable Changeable Message Signs (PCMS) is to advise the driver of unexpected traffic and routing situations.

General Guidelines

- A PCMS should be used to supplement conventional signs, pavement markings, and lighting.
- If a PCMS is used as an arrow board, it shall meet all of the requirements of an arrow panel, and shall be used solely as an arrow board.
- Performance specifications can be found in the current version of the Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD), Part 6, Section 6F.
- A PCMS installed on the shoulder of a road shall be accompanied with Type B channelizing devices (see [Layout 7](#)).

Messages

- Each display should contain a single thought. The message should consist of no more than 2 displays on high speed roadways and no more than 3 displays on low speed roadways.
- The entire message should be readable twice at the posted speed limit. See Table 6K-2 (page [6K-ac](#)) for additional requirements.
- An accurate description of the work location or the incident location is critical.
- The PCMS shall have readable up-to-date information. Any delay message should accurately reflect the traffic delay time.
- The PCMS message shall use days of the week not calendar dates unless the PCMS is placed 7 days or greater in advance.
- The use of abbreviations is discouraged. The entire word should be spelled out whenever space permits.
- If abbreviations are used, they should be easily understood (see Table 6K-3: Abbreviations Allowable on PCMS(s), pages [6K-ad](#) through [6K-ag](#) and Table 6K-4: Unacceptable PCMS Abbreviations, page [6K-ah](#)).
- Displays shall not scroll horizontally or vertically across the face of the sign.
- If multiple PCMSs are used, make sure the messages do not conflict.

For more information on the use of PCMSs, see the [CMS Manual of Practice](#) at: <http://dotapp7.dot.state.mn.us/projectPages/pages/projectDetails.jsf;jsessionid=t3PoW79ootelQ8QF9YwBytyc.9773acc1-da1d-30bb-b6a7-70c38c81c330?id=4590&type=CONTRACT>.

Requirements

Specifications for use of a PCMS are in the following table.

Table 6K-2: Specifications for use of a PCMS

Requirements	Type A	Type B	Type C
Line(s) of Message	1 Line	2 Lines	3 Lines
Typical Mounting	Vehicle Mounted	Vehicle or Trailer Mounted	Trailer Mounted
Allowed Usage	Emergency and Incident Management	Advance Warning	Advance Warning and Advance Notice
Legibility Distance Requirements	Legible at 350 feet	Legible at 750 feet	Legible at 900 feet
Minimum Character Height	10 inches	≤ 40 mph* = 14 inches ≥ 45 mph* = 18 inches	18 inches
Maximum Number of Displays	1	≤ 40 mph* = 3 ≥ 45 mph* = 2	≤ 40 mph* = 3 ≥ 45 mph* = 2
Message Cycle	Constant	At least 2 seconds per display	At least 2 seconds per display
Minimum Sign Height to Bottom of Sign Panel	5 feet (rural) 7 feet (urban)	5 feet (rural) 7 feet (urban)	5 feet (rural) 7 feet (urban)
Minimum PCMS Spacing	500 feet	1000 feet	1000 feet

* Posted speed limit prior to work starting.

The width-to-height ratio of the sign characters should be between 0.7 and 1.0. The stroke width-to-height ratio should be 0.2.

Table 6K-3: Abbreviations Allowable on PCMS(s)

Emergency Word Message	Standard Abbreviation	Typical Prompt Word that Precedes the Abbreviation	Typical Prompt Word that Follows the Abbreviation
Access	ACCS	PARKING, STADIUM	ROAD
Afternoon/Evening	PM	---	---
Ahead	AHD	FOG	---
Alternate	ALT	---	ROUTE, ACCESS
Avenue	AVE, AV	---	---
Bicycle	BIKE	---	---
Blocked	BLKD	LANE, ROAD	---
Boulevard	BLVD*	---	---
Bridge	BR	(NAME)*	---
Cannot	CANT	---	---
Center	CNTR	---	LANE
Center (as part of a place name)	CTR	---	---
Chemical	CHEM	---	SPILL
Circle	CIR**	---	---
Closed	CLSD, CLOSD	---	---
Condition	COND	TRAFFIC	---
Congested	CONG	TRAFFIC	---
Construction	CONST	---	AHEAD
County Road Numbered Route	CR	---	ROUTE DESIGNATION*
Court	CT**	---	---
Crossing (other than highway-rail)	X-ING	---	---
Do Not	DONT	---	---
Downtown	DWNTN	---	TRAFFIC
Drive	DR**	---	---
East	E	---	---
Eastbound	E, E-BND, EB	---	---
Emergency	EMER	---	---
Entrance, Enter	ENT	---	---
Exit	EX	NEXT	---
Express	EXP	---	LANE

Table 6K-3: Abbreviations Allowable on PCMS(s), cont.

Emergency Word Message	Standard Abbreviation	Typical Prompt Word that Precedes the Abbreviation	Typical Prompt Word that Follows the Abbreviation
Expressway	EXPRS, EXPWY**	---	---
Feet	FT	---	---
Freeway	FRWY, FWY**	---	---
Friday	FRI	---	---
Frontage	FRNTG	---	ROAD
Hazardous	HAZ	---	DRIVING
Hazardous Material	HAZMAT	---	---
High Occupancy Vehicle	HOV	---	---
Highway	HWY	---	---
Highway-Rail Grade Crossing	RR XING	---	---
Hospital	HOSP	---	---
Hour(s)	HR, HRS	---	---
Information	INFO	---	---
International	INTL	---	---
Interstate Numbered Route	I	---	ROUTE DESIGNATION*
Junction/Intersection	JCT	---	---
Lane	LN, LA	RIGHT, LEFT, CENTER	---
Left	LFT, LF, L	---	---
Local	LOC	---	TRAFFIC
Lower	LWR	---	LEVEL
Maintenance	MAINT	---	---
Major	MAJ	---	CRASH
Maximum	MAX	---	---
Mile(s)	MIL	---	---
Miles Per Hour	MPH	---	---
Minnesota Numbered Route	MN		ROUTE DESIGNATION*
Minimum	MIN	---	---
Minor	MNR	---	CRASH

Table 6K-3: Abbreviations Allowable on PCMS(s), cont.

Emergency Word Message	Standard Abbreviation	Typical Prompt Word that Precedes the Abbreviation	Typical Prompt Word that Follows the Abbreviation
Minute(s)	MIN	---	---
Monday	MON	---	---
Morning/Late Night	AM	---	---
Mount	MT	---	---
Mountain	MTN	---	---
National	NATL	---	---
Normal	NORM	---	---
North	N	---	---
Northbound	N, N-BND, NB	---	---
Oversized	OVRSZ	---	LOAD
Parking	PKING	---	---
Parkway	PKWY**	---	---
Pavement	PVMT	WET, GROOVED	ENDS
Pedestrian	PED	---	---
Place	PL**	---	---
Pounds	LBS	---	---
Prepare	PREP	---	TO STOP
Right	RT, R	KEEP, NEXT	---
Road	RD**	---	---
Roadwork	RDWK	---	AHEAD (DISTANCE)
Route	RT, RTE	BEST, ALTERNATE	---
Saint	ST	---	---
Saturday	SAT	---	---
Service	SERV	---	---
Shoulder	SHLDR	---	---
Signal	SIGNL	---	OUT
Slippery	SLIP	---	---
South	S	---	---
Southbound	S, S-BND, SB	---	---
Speed	SPD	---	---
Stadium	STDM	NAME OF STADIUM	PARKING, NEXT EXIT

Table 6K-3: Abbreviations Allowable on PCMS(s), cont.

Emergency Word Message	Standard Abbreviation	Typical Prompt Word that Precedes the Abbreviation	Typical Prompt Word that Follows the Abbreviation
Street	ST**	---	---
Sunday	SUN	---	---
Sweeper	SWEEP	---	AHEAD
Temporary	TEMP	---	---
Terrace	TER**	---	---
Thursday	THUR	---	---
Tons of Weight	T	---	---
Traffic	TRAF	---	---
Trail	TR**	---	---
Tuesday	TUE	---	---
Two-Way Intersection	2-WAY	---	---
Two-Wheeled Vehicles	CYCLES	---	---
Upper	UPR	---	LEVEL
US Numbered Route	US	---	ROUTE DESIGNATION*
Vehicle(s)	VEH, VEHS	---	---
Warning	WARN	---	---
Wednesday	WED	---	---
West	W	---	---
Westbound	W, W-BND, WB	---	---
Will Not	WONT	---	---

NOTES:

* A space and no dash shall be placed between the abbreviation and the number of the route.

** This abbreviation shall not be used for any application other than the name of a roadway.

Table 6K-4: Unacceptable PCMS Abbreviations

Abbreviation	Intended Word	Common Misinterpretation
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
TH	Trunk Highway	Misunderstood

Operating Mode

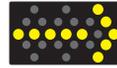
Panel Display

(Element layout for Type C panel shown.)

1. At least one of the following three modes shall be provided:

(Right arrow is shown, left arrow is similar)

Flashing Arrow



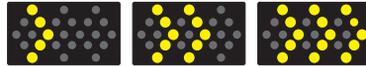
Move/Merge Right

Sequential Arrow



Move/Merge Right

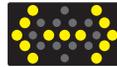
Sequential Chevron



Move/Merge Right

2. The following mode shall be provided:

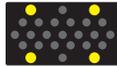
Flashing Double Arrow



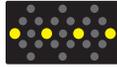
Move/Merge Right or Left

3. At least one of the following three modes shall be provided:

Flashing Four Corners



Flashing Bar



Alternating Flashing Diamonds



Caution

Panel Type	Minimum Size (Inches)	Minimum Legibility Distance (miles)	Minimum Number of Elements	Recommended Usage
A	48 x 24	0.50	12	Low Speed Streets
B	60 x 30	0.75	13	Anything not covered in A or C
C	96 x 48	1.00	15	Freeways and Expressways

Arrow Stick



Arrow Sticks may supplement other TTC devices, but shall not be used in place of arrow boards.

Advance Warning Arrow Board Specification
Figure 6K-6