



**CONSTRUCTION SPECIFICATION FOR
PORTABLE TEMPORARY TRAFFIC SIGNALS**

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708.01	SCOPE
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This specification covers the requirements for the installation, operation and maintenance of portable temporary traffic signals.

708.01.01 Specification Significance and Use

This specification is written as a provincial-oriented specification. Provincial-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

708.01.02 Appendices Significance and Use

Appendices are not for use in provincial Contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner.

Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their Contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

708.02 REFERENCES

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Ministry of Transportation Publications

Designated Sources for Materials (DSM)

Ontario Traffic Manual (OTM):
Book 7, Temporary Conditions
Book 12, Traffic Signals

708.03 DEFINITIONS

For the purpose of this specification, the following definitions apply:

Portable Temporary Traffic Signals (PTTS) means two traffic control signal heads mounted onto a movable trailer.

708.05 MATERIALS

708.05.01 Portable Temporary Traffic Signals

Portable temporary traffic signals shall be supplied from a source named on the ministry's DSM.

The traffic control signal heads shall have a minimum vertical mounting height of 5 metres for both the primary and secondary signal heads.

The primary and secondary signal heads shall be separated by a minimum of 3.0 metres measured laterally.

The signal heads shall be reversible on the trailer's boom.

Highway yellow backboards shall be used on each signal head.

All signal lenses shall comply with the Institute of Transportation Engineers interim/final specifications for incandescent or light emitting diode lamps for chromaticity and luminous intensity.

708.05.02 Temporary Illumination

Temporary illumination shall be provided for all PTTS installations being used at night. Temporary illumination shall meet the following requirements:

- a) A minimum of one luminaire shall be mounted over each PTTS trailer.
- b) Each luminaire shall have a minimum light output of 22,000 lumens.
- c) Each luminaire shall be mounted a minimum of 9 metres vertically above the roadway surface.
- d) The temporary illumination shall be powered by generator or line power.
- e) Temporary illumination shall be on from dusk until dawn. If the temporary illumination has a photo controller, then the temporary illumination shall be switched on when ambient light levels are at 16 Lux and lower and switched off when ambient light levels are at 50 Lux and higher.

708.07 CONSTRUCTION

708.07.01 General

PTTS and its temporary illumination shall be installed and relocated at the locations specified in the Contract Documents, or on the signed legal drawing (PHM-125). PTTS shall be installed on a level and stable surface that allows for on-site maintenance and service of the units.

The PTTS shall be positioned to prevent displacement or damage by weather, maintenance activities, vehicle impact or vandalism.

The Contract Administrator shall be given a minimum of 24-hour notice prior to the activation of the PTTS. The PTTS shall be activated in the presence of the Contract Administrator.

708.07.02 Operational Constraints

Operation of PTTS shall be permitted between April 1st and November 30th of each calendar year. The operation of PTTS outside of this period shall not be permitted unless otherwise specified in the Contract Documents. If PTTS are permitted outside of this period, the PTTS shall be configured with environmental controls to permit operation at any temperature.

When not in use, the PTTS shall be removed or the traffic control signal heads covered or turned up and/or away from the roadway.

708.07.03 Operational Capabilities

708.07.03.01 Portable Traffic Control Signals

The installation and operation of portable temporary traffic signals shall be according to the OTM Book 7 and the traffic control signal head display criteria specified in OTM Book 12.

PTTS shall have the following operational capabilities:

- a) Pre-timed signal operations where the green time, the amber clearance, and the all red times can be manually input to the controller.
- b) Fully actuated operation using a variety of detection devices including loops, microwave, video or non-loop in-pavement detection equipment that will:
 - i) Place a call for a green indication when red or amber is being displayed.
 - ii) Extend the green indication from a minimum to a maximum green time by a user selectable amount each time a vehicle is detected during the green display (extension time).
- c) Rest in red or the last phase served. The user must be able to select this mode through software input on a construction site.
- d) The user must be able to manually enter a minimum green time, a maximum green time, and an extension time for actuated operations.
- e) All timing intervals are capable of being set in increments of one second.
- f) Default mode – flashing red shall display in both directions (at both master and local trailers) at the same time.
- g) Manual mode – shall allow an operator to interrupt the other modes and return to the previous mode when finished.
- h) Default mode warning system – the PTTS shall have the email, text messaging or cell/satellite paging warning system activated and monitored, to advise the Owner/operator and/or Contractor when the signals have gone into the “default mode”.
- i) Be able to communicate between the master and local units through either radio or hardwire with conflict monitoring enabled to ensure malfunctions are identified. The units shall be set up so that if communications are lost, both units will revert to “default mode” operation.
- j) All conflicts must be recorded in an error log with the exact date and time of the occurrence. The error log must be retrievable by the Owner.

708.07.03.02 Trailer Unit

Each PTTS trailer unit shall have the following operational capabilities:

- a) Be able to operate as either a master or local.
- b) Be interconnected by either hardwire or radio.

708.07.03.03 Controller

Each controller shall have the following operational capabilities:

- a) Be capable of providing variable all red clearance intervals between 0 – 600 seconds.
- b) Have circuitry that detects low voltage and prevents the occurrence of an unsafe (conflicting) signal indication. In the event of low voltage the signal must default to a flashing all red.
- c) Must be password protected or have other security devices in place to prevent program tampering.
- d) Provide a red flash cycle that is flashed continuously at a rate of 50 – 60 times per minute with a 50% duty cycle.
- e) If a radio interconnection is used then the system must have a mobile license from Industry Canada.

708.07.03.04 Power Supply

The PTTS shall be powered by one or more of the following methods:

- a) Generator
- b) Solar power
- c) Electrical line power

If a generator is being used to power the PTTS and temporary illumination, suitable housing and sound reduction measures shall be installed to enclose the generator and reduce external noise levels to less than 45 dBA measured at a distance of 7 metres from the generator. The housing shall provide sufficient ventilation to prevent overheating and permit exhausting of any hazardous fumes.

The PTTS shall have a battery backup with a battery capacity sufficient to operate the system for a minimum of 14 days without recharging.

The power supply and other electronic controls shall be completely inaccessible to unauthorized personnel and protected by a sturdy, lockable metal enclosure.

708.07.04 Traffic Signal Control Programming and Timing

A technical expert knowledgeable in the operation of the PTTS shall be at the site to provide assistance during the initial set-up of the unit and shall remain on site until the unit is operating to the satisfaction of the Contract Administrator.

The traffic signal timing as specified in the Contract Documents shall be programmed into the traffic signal controller.

The controller shall be set up by performing all programming, setting all timing controls, switch settings and conflict monitoring.

708.07.05 Temporary Traffic Signals Supplied by Owner

Where the Owner supplies the PTTS, the PTTS shall be picked up and transported from the Owner's premises as specified in the Contract Documents. Once the PTTS is placed into operation, the operation, and maintenance of the PTTS shall be completed at no additional cost to the Owner.

PTTS shall be returned to the Owner's premises or to an alternate site specified by the Contract Administrator within 7 Days of being taken out of operation.

708.07.06 Maintenance of Portable Temporary Traffic Signals

Routine, non-routine and emergency maintenance work required for continuous and proper operation of the PTTS shall be performed as specified in the Contract Documents.

A technical expert shall be available on-call 24 hours a day, 7 days a week, to troubleshoot any PTTS problems on site and perform all work required to restore the PTTS to full operation.

When directed by the Contract Administrator, the traffic signal operation shall be manually overridden to reduce or eliminate queuing traffic.

A logbook shall be maintained and kept with the PTTS or at a location agreed upon with the Owner. The logbook shall record any fieldwork performed on the PTTS system, including the replacement of any hardware, changes to the software, or changes to the configuration, phasing, or timing parameters. The time and date of each entry in the logbook shall be signed by the individual making the entry.

708.09 MEASUREMENT FOR PAYMENT

708.09.01 Portable Temporary Traffic Signals

For measurement purposes, a count shall be made of the number of PTTS installed. Each PTTS shall be counted only once, regardless of the number of times it is relocated.

708.09.02 Plan Quantity Measurement

When measurement is by Plan Quantity, such measurement shall be based on the units shown in the clause under Actual Measurement.

708.10 BASIS OF PAYMENT

708.10.01 Portable Temporary Traffic Signals - Item

Payment at the Contract price for the above tender item shall be full compensation for all labour, Equipment, and Material to do the work, including all relocations of the PTTS.

Site visits by the technical expert required to restore the PTTS to full operation shall be at no additional cost to the Owner.

**Appendix 708-A, November 2016
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

No information provided here.

Related Ontario Provincial Standard Drawings

No information provided here.

