

**Construction Specification for
Steel Plates Used in Connection with Roadway Utility Excavations**

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TS 1.30.01 SCOPE

This specification covers the requirements for the placement and removal of steel plates over open excavations within the public right-of-way.

TS 1.30.02 REFERENCES

City of Toronto Standard Drawings

T-216.02-18 Steel Plate Ahead

Ontario Ministry of Transportation

Ontario Traffic Manual Book 7 Temporary Conditions

Canadian Standards Association

G40.21

38W/260W Standard Specification for Carbon Structural Steel

Canadian Highway Bridge Design Code (CHBDC)

CL-625 ONT Loading Conditions (17,845 kg for one axle or 28,552 kg for tandem axle at 1.2 m axle spacing)

TS 1.30.03 DEFINITIONS – Not Used

TS 1.30.04 DESIGN AND SUBMISSION REQUIREMENTS

For trenches and installations with spans greater than 1.20 m, a structural design shall be prepared by a professional engineer licensed in the province of Ontario. Design of plate thickness shall be according to the maximum allowable span of the steel plate over the trench in the roadway, and the maximum dead and live loads that steel plate can undertake from the roadway. Indicate the required minimum plate overlap in the design report.

TS 1.30.05 MATERIALS

Where road plates are used to facilitate vehicle crossings, the Contractor must have a satisfactory supply of road plates at the job site before commencing work.

TS 1.30.05.01 Steel Plate Requirements

Steel plates shall be able to withstand CL-625-ONT traffic loading without any lateral movement.

Steel plates shall be fabricated to meet G40.21 38W/260W steel requirements.

When two or more of plates are in place more than three consecutive days without the need to accomplish work or inspections, the plates shall be tack welded together at each corner to reduce or eliminate vertical movement. Alternative methods to accomplish this, such as metal connectors, will be considered for approval on case by case basis.

Steel plates shall be installed to resist bending, vibrations and loud rattling under traffic loads and shall be anchored securely to prevent movement. If these conditions are not met, the Contractor shall be required to backfill and pave the excavation daily, or use alternative methods such as “Plate Locks” which are designed to secure the plates with minimum noise and vibration.

All steel plates within the right-of-way, whether used in or out of the traveled way, shall be without deformation. The plate surface must not deviate more than 6.35 mm when measured with a 3.0 m straight edge along the length of the plate.

In the event of improper installation of the steel plates that presents a nuisance or a public safety problem, the Contractor shall respond to all excavation restoration requests by the City immediately upon notification. Non-responses will result in the required restoration work being done by the City, with all expenses to be paid by the Contractor.

Steel plates must extend a minimum of 300 mm beyond the edges of the excavation and be countersunk so that the surface of the plates is flush with the adjacent pavement.

Before steel plates are installed, the excavation shall be adequately shored to support the bridging and traffic loads.

Where deformations in the existing pavement do not allow the plate surface to match the adjacent pavement, temporary paving with a cold asphalt mix should be used to feather the edges of the plate to form a wedged taper to cover the edges of the steel plate.

Wedges or other non-asphaltic devices shall be used for leveling as required to eliminate rocking of the plates. Compacted temporary asphalt shall be used to fill all gaps between the plates and existing pavement surfaces.

Steel road plates shall have a welded-open diamond mesh for traction and painted traffic yellow for high visibility. Steel road plates shall have a minimum thickness of 13 mm when used on sidewalks and a minimum thickness of 25 mm when used on roadways.

Other equivalent road plates with a skid resistant surface in a highly visible colour may be used with the approval of the Contract Administrator.

TS 1.30.06 EQUIPMENT – Not Used

TS 1.30.07 CONSTRUCTION

TS 1.30.07.01 Installation

The steel plate installation shall be recessed by milling into the existing asphalt to set flush with the surface of the existing asphalt. The pavement shall be cut and cold planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate. Full depth cutting of the asphalt section of excavation is not permitted. Wedges or other non-asphaltic devices shall be used for leveling as required to eliminate rocking of the plates. Compacted temporary asphalt (cold mix) shall be used to fill the gap between the edge of the plate and the adjacent existing asphalt pavement.

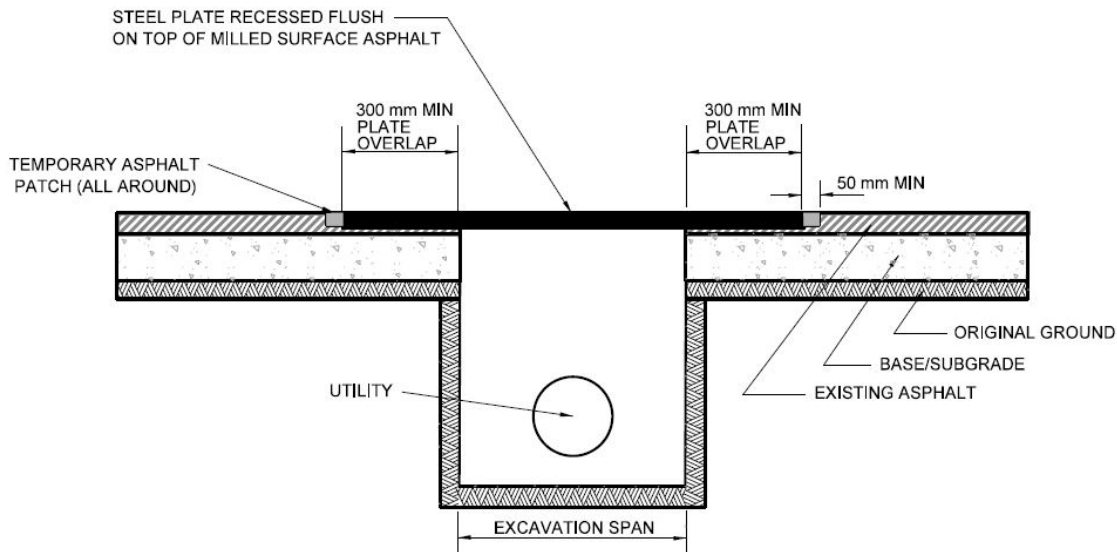


Figure 1 – Installation Detail

TS 1.30.07.02 Safety

Provisions should be made for the safety and protection of vehicular and pedestrian traffic during the construction period as follows:

- The Contractor shall be responsible for the furnishing, erection and maintenance of all required traffic control devices. All signs and devices shall be according to the requirements of the current edition of the Ontario Traffic Manual Book 7 Temporary Conditions
- When in the opinion of the Contract Administrator, City inspector or Work Zone Traffic Coordinator, the work constitutes a hazard to traffic in any area of the work, the Contractor may be required to suspend operations during certain hours and to remove any equipment from the area of work
- The roadway surface shall be kept clean of debris at all times and should be thoroughly cleaned at the completion of the work.
- The Contractor shall be responsible to replace all pavement markings in kind which have been disturbed as a result of the excavation.
- Routine inspection and maintenance depending on the duration of the installed steel plate be performed every Day during when in use.

TS 1.30.07.03 Signage

In addition to any traffic control devices required by the Work Zone Traffic Coordinator, warning signs advising motorists that they should expect to encounter steel plates, shall be placed at approximately 30 m in advance of the steel plate location. Steel plate ahead sign shall be according to T-216.02-18.

Plates left overnight may require, at the discretion of the Work Zone Traffic Coordinator, that the sign be supplemented with a Type "A" Low-Intensity-flashing warning light mounted on the sign support.

TS 1.30.07.04 Seasonal Requirements

Where possible, limit the use of plates during winter, given the possibility of ploughing operations.

TS 1.30.08 QUALITY ASSURANCE – Not Used

TS 1.30.09 MEASUREMENT FOR PAYMENT – Not Used

TS 1.30.10 BASIS OF PAYMENT

All costs associated with this Work shall be considered incidental to all related items of Work. No separate payment shall be made.