



CONSTRUCTION SPECIFICATION FOR TEMPORARY TRANSITION BARRIERS

TABLE OF CONTENTS

742.01	SCOPE
742.02	REFERENCES
742.03	DEFINITIONS
742.04	DESIGN AND SUBMISSION REQUIREMENTS - Not Used
742.05	MATERIALS
742.06	EQUIPMENT - Not Used
742.07	CONSTRUCTION
742.08	QUALITY ASSURANCE - Not Used
742.09	MEASUREMENT FOR PAYMENT
742.10	BASIS OF PAYMENT

APPENDICES

742-A	Commentary
--------------	-------------------

742.01 SCOPE

This specification covers the requirements for the installation of temporary transition barrier from existing concrete roadside barrier or concrete median barrier to temporary concrete barrier.

742.01.01 Specification Significance and Use

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

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

742.01.02 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.

742.02 REFERENCES

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

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

Ontario Provincial Standard Specifications, Construction

OPSS 906 Structural Steel for Bridges

CSA Standards

G40.20-13/G40.21-13 (R2018)	General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels
G189-66 (R2003)	Sprayed Metal Coatings for Atmospheric Corrosion Protection
W47.1-09 (R2014)	Certification of Companies for Fusion Welding of Steel
W59-18	Welded Steel Construction

ASTM International

A36/A36M-14	Carbon Structural Steel
A123/A123M-17	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
A143/A143M-07(2014)	Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
A194/A194M-18	Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
A500/A500M-18	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
A563-15	Carbon and Alloy Steel Nuts
A780/A780M-09(2015)	Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

D4541-17 Test Methods for Pull-Off Strength of Coatings Using Portable Adhesion Testers
F3125/F3125M-18 High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat
Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and
Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

The Society for Protective Coatings (SSPC)

SP 8-2004 Pickling

SSPC, American Welding Society (AWS) and NACE Joint Publications

SSPC-CS 23.00/AWS C2.23M/NACE No.12-2003 Application of Thermal Spray Coatings (Metalizing) of
Aluminum, Zinc, and Their Alloys and Composites for
Corrosion Protection of Steel

742.03 DEFINITIONS

For the purpose of this specification, the following definition applies:

Temporary Transition Barrier means a system that connects temporary concrete barrier to permanent concrete barrier.

742.05 MATERIALS

742.05.01 Steel Components

Steel plates shall be according to CSA G40.21, Grade 300W.

Hollow structural steel sections shall be according to ASTM A500, Grade C.

Bolts shall be according to ASTM F3125. Nuts shall be according to ASTM A563, Grade DH.

Threaded rods and nuts shall be according to ASTM A194, Grade B7 and 2H respectively.

Other steel components not identified above shall be according to ASTM A36.

742.05.02 Hot Dip Galvanizing

Purity of the zinc and the galvanizing bath composition for hot dip galvanizing of railing and metal traffic barrier components shall be according to ASTM A123.

742.07 CONSTRUCTION

742.07.01 Fabrication

742.07.01.01 General

Temporary transition barrier components shall be protected from damage and distortion during hot dip galvanizing, handling, transportation, storage, and installation.

Temporary transition barrier components shall be fabricated according to the Contract Documents.

When welding is required, the fabricator shall be certified according to CSA W47.1, Division 2.1 or better. Welds shall be according to CSA W59.

742.07.01.02 Steel Components

742.07.01.02.01 General

Fabrication and welding shall be according to OPSS 906.

All flame cut edges shall be as smooth and regular as those produced by edge planing and shall be free of slag.

742.07.01.02.02 Surface Preparation for Hot Dip Galvanizing

Prior to galvanizing, temporary transition barrier components shall be cleaned according to SSPC SP 8. The length of time that the components are immersed in the pickling solution shall be kept to an absolute minimum to achieve the specified surface preparation condition prior to hot dip galvanizing. The galvanizer shall employ proper pickling and galvanizing procedures as precautionary measures to safeguard against embrittlement as specified in ASTM A143.

742.07.01.02.03 Hot Dip Galvanizing

Metal components shall be hot dip galvanized according to ASTM A123.

742.07.01.02.04 Repair of Damage to Galvanized Coating

When the galvanized surface of a temporary transition barrier component is damaged or uncoated, the exposed steel shall be repaired if the cumulative total of the damaged and uncoated area does not exceed 2% of the total area of each component or 0.02 m², whichever is less. Where the cumulative area exceeds these amounts, the damaged coating shall be stripped and the component re-galvanized according to ASTM A123.

Damaged and uncoated areas shall be cleaned of all rust and other contaminants and repaired using one of the following methods:

a) Soldering Method Using Zinc-Tin-Copper Solder

The surface preparation and application of thermal spray metal coating or metallizing shall be performed according to SSPC-CS 23.00/AWS C2.23M/NACE No.12 to provide a minimum thickness of 200 µm, applied in two separate coats.

The finished thickness of the metal coating in the repaired area shall be a minimum of 90 µm. The repaired surface shall be ground flush with the surrounding galvanized coating.

b) Metallizing

The surface preparation and application of thermal spray metal coating or metallizing shall be performed according to CSA G189 to provide a minimum thickness of 100 µm, applied in two separate coats.

The metal coating on the repaired areas shall have a minimum adhesion of 2.8 MPa, when tested according to ASTM D4541.

c) Zinc-Rich Touch-Up Paint

This method of repair of galvanized coating is permitted when the individual damaged and uncoated area is less than 625 mm².

Two coats of zinc-rich touch-up paint shall be brush applied after the surface preparation according to ASTM A 780.

742.07.02 Installation

Installation of temporary transition barriers shall be according to and at locations specified in the Contract Documents.

742.07.03 Relocation

Temporary transition barriers installed on the left side of the roadway may only be relocated to another left side location. Temporary transition barriers installed on the right side of the roadway may only be relocated to another right side location.

742.09 MEASUREMENT FOR PAYMENT

742.09.01 Actual Measurement

742.09.01.01 Temporary Transition Barrier

For measurement purposes, a count shall be made of the number of temporary transition barrier installations.

742.09.01.02 Temporary Transition Barrier Relocation

For measurement purposes, a count shall be made of the number of temporary transition barrier installations relocated.

Barriers that are temporarily surplus and are required for future stages shall be paid for as one relocation for the combined moves into and out of storage, including any off-site storage required due to on-site restrictions.

742.09.02 Plan Quantity Measurement

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

742.10 BASIS OF PAYMENT

**742.10.01 Temporary Transition Barrier – Item
Temporary Transition Barrier Relocation - Item**

Payment at the Contract price for the above tender items shall be full compensation for all labour, Equipment, and Material to do the work.

Appendix 742-A, November 2020 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

The designer should specify the following in the Contract Documents:

- Locations of temporary transition barriers to be installed. (742.07.03)

The temporary transition barrier is a system that provides a crashworthy transition between permanent concrete median barrier or concrete roadside barrier and temporary concrete barrier (TCB). The system meets the crash test acceptance requirements of the AASHTO Manual for Assessing Safety Hardware (MASH) Test Level 3.

The system should be used for transitions where TCB will be in place for a long duration, typically three months or greater, and for transitions where TCB will be in place over a winter season.

When TCB will be in place for short duration, or when relocations are required to accommodate multiple construction stages, temporary energy attenuators should be used.

The first three TCB segments downstream of the temporary steel transition plate shall be Type X and shall be restrained by pinning or bolting as applicable.

When a transition from Type X barrier to a different type of TCB is required, at least one length of unpinned Type X TCB downstream of the pinned Type X TCB shall be provided in advance of the transition.

Where transitions are required for multiple stages, they may be relocated using the relocation item. However, left-side installations may only be relocated to left side locations and right-side installations may only be relocated to right side locations. Quantities of transitions and relocations shall reflect this.

The quantity is based on each completed installation. The first three TCB segments installed as part of the system shall be part of the transition barrier item.

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

OPSD 911.331	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Installation
OPSD 911.335	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Ribs and Stiffener Posts - Components
OPSD 911.336	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Stiffener Post Details - Components
OPSD 911.337	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Tail Piece - Components
OPSD 911.338	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, End Cap - Components
OPSD 911.339	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Cup Washer 1 – Component

Appendix 742-A

OPSD 911.340	Guide Rail System, Concrete Barrier, Temporary Concrete Barrier Transition, Installation - Temporary
OPSD 911.341	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Connection to Permanent Barrier - Component
OPSD 911.342	Guide Rail System, Concrete Barrier, Temporary Transition Barrier, Cup Washer 2 - Component