



**CONSTRUCTION SPECIFICATION FOR
MODULAR BRIDGE STRUCTURES FOR TEMPORARY INSTALLATIONS**

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918.01 SCOPE

This specification covers the requirements for the design, supply, construction, maintenance, and removal of modular bridge structures used for temporary installations, including ramps, bank seats, decking, sidewalks, and railings.

918.01.01 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.

918.01.02 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.

918.02 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 Provincial Standard Specifications, Construction

OPSS 501	Compacting
OPSS 906	Structural Steel for Bridges
OPSS 907	Structural Wood Systems
OPSS 908	Metal Traffic Barriers and Metal Railings for Structures

Ontario Provincial Standard Specifications, Material

OPSS 1601	Wood, Preservative Treatment, and Shop Fabrication
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Ontario Ministry of Transportation Publications

Structural Manual

CSA Standards

CSA S6-14	Canadian Highway Bridge Design Code
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918.03 DEFINITIONS

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

Bank Seats means mud sills, timber matting and other components to support the base plates and ramps.

Modular Bridge means a superstructure comprised of commercially available standard proprietary prefabricated components that can be assembled and disassembled on site.

Temporary Installation means an installation that maintains traffic at a construction site for a length of time not exceeding three years.

918.04 DESIGN AND SUBMISSION REQUIREMENTS

918.04.01 Design Requirements

The modular bridge structure shall be designed according to the Contract Documents, CAN/CSA S6 and the Structural Manual except that:

- a) The following requirements of the CAN/CSA S6 are not mandatory:
 - i. Traffic lane widths, side clearance, and sidewalks.
 - ii. Deck crossfall and drain outlets.
 - iii. Limitation of maximum deflection.
 - iv. Designing floor beam and diaphragms for jacking.
 - v. Provision of a protective coating.
 - vi. Fatigue.
 - vii. Accessibility for inspection and coating, the avoidance of pockets, and the provision of drain holes in pockets and their filling with waterproofing.
 - viii. Camber.
 - ix. Provision of two bolts at the end of bracing members.
 - x. Nuts with safety pins or snap rings may be used instead of hexagonal recessed nuts or hexagonal solid nuts with washers.

- b) In addition to the requirements of CAN/CSA S6, a minimum of three girders or two pairs of trusses shall be used to form the main load carrying system of the bridge.

918.04.02 Submission Requirements

918.04.02.01 Working Drawings, Procedures & Certifications

The following documents, bearing the seal and signature of a design Engineer and a design-checking Engineer, shall be submitted to the Contract Administrator at least 7 Days prior to commencement of the installation of the modular bridge, for information purposes only:

- a) Working Drawings of the modular bridge.
- b) Launching, installation and removal procedures.
- c) A letter and design calculations certifying that the modular bridge has been designed according to the Contract Documents.

- d) Where modular bridge components are fabricated outside of Canada, a letter shall be submitted certifying that the materials used, and the fabrication of the modular bridge components are according to the Contract Documents.
- e) Where the load carrying capacity of the modular bridge or any of its components has been established by testing, the load test reports provided by the manufacturer of the modular bridge shall be submitted confirming the bridge satisfies the requirements of the Evaluation Section of CAN/CSA S6, using a Reliability Index (β) not less than 3.75.

Where previously used components are utilized in the modular bridge, a letter signed and sealed by an Engineer shall be submitted certifying that all used components are in good structural condition and free from any damage or defects that could adversely affect their load carrying capacity and performance.

When other authorities are involved in the approval of the design or construction of the modular bridge, submissions shall be made at least 5 weeks prior to commencement of work and one additional copy of the submission shall be provided for each authority.

The requirements of each authority shall be satisfied prior to commencement of the work.

918.04.02.02 Notice of Installation

A written notice shall be submitted to the Contract Administrator at least 7 Days prior to the installation of the modular bridge superstructure.

918.05 MATERIALS

918.05.01 General

All materials and components shall be according to the Working Drawings.

918.05.02 Modular Bridge Components

All modular bridge steel components shall be fabricated according to the requirements of OPSS 906.

The use of modular bridge components that have been used previously is permitted provided they are free from damages or defects that could adversely affect their load carrying capacity and performance.

918.05.03 Hardware

The hardware used in the assembly and installation of the modular bridge shall be according to the modular bridge manufacturer's requirements.

918.05.04 Structural Steel

Any structural steel components that are not part of the modular bridge shall be designed and constructed according to OPSS 906.

918.05.05 Wood

Wood shall be according to OPSS 1601. Preservative treatment of wood is not required. Fasteners and hardware for wood construction shall be according to OPSS 907.

918.05.06 Railings

Railings shall be according to OPSS 908 or an equivalent modular bridge manufacturer railing system.

918.07 CONSTRUCTION

918.07.01 General

Documentation indicating that the modular bridge Superintendent who shall be in charge of the installation of the modular bridge has had experience and has successfully performed these duties on at least 3 similar bridges shall be submitted to the Contract Administrator at least 7 Days prior to installation of the modular bridge.

918.07.02 Construction of Bank Seats

Fill under bank seats shall be compacted according to OPSS 501 to a minimum of 95% of the maximum dry density.

918.07.03 Installation and Removal of Modular Bridge

The modular bridge, including bank seats, shall be assembled, installed, and removed according to the Working Drawings, procedures and Contract Documents.

918.07.04 Certificate of Conformance

Upon the completion of construction of the modular bridge, a Certificate of Conformance bearing the seal and signature of a Quality Verification Engineer shall be submitted to the Contract Administrator. The certificate shall state that the modular bridge has been constructed in general conformance with the Working Drawings, procedures and Contract Documents.

918.07.05 Management of Excess Material

Management of excess material shall be according to the Contract Documents.

918.07.06 Modular Bridge Maintenance

For the duration of the Contract, excluding seasonal shutdown, the modular bridge, including bearings, bank seats, ramps, decking, sidewalks, railing, approaches, and substructure elements shall be inspected, and have any deficiencies corrected, to ensure its structural integrity, safety and performance are not compromised.

918.10 BASIS OF PAYMENT

918.10.01 Temporary Modular Bridge - Item

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

For payment purposes, the construction of the modular bridge shall constitute 50% of the work of the tender item.

