



**CONSTRUCTION SPECIFICATION FOR  
INSTALLATION OF GABIONS**

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**512.01 SCOPE**

This specification covers the requirements for the installation of gabions and gabion structures not exceeding 2 metres in height.

**512.01.01 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.

## 512.01.02 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.

## 512.02 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 206	Grading
OPSS 490	Site Preparation for Pipelines, Utilities, and Associated Structures
OPSS 501	Compacting
OPSS 517	Dewatering of Pipeline, Utility, and Associated Structure Excavation
OPSS 539	Temporary Protection Systems
OPSS 805	Temporary Erosion and Sediment Control Measures
OPSS 902	Excavating and Backfilling - Structures

### Ontario Provincial Standard Specifications, Material

OPSS 1004	Aggregates - Miscellaneous
OPSS 1430	Gabion Baskets and Mats
OPSS 1860	Geotextiles

## 512.03 DEFINITIONS

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

**Gabion** means a gabion basket or a gabion mat filled with gabion stones.

**Gabion Structure** means a vertical or near vertical stacked installation of gabions.

**512.05 MATERIALS**

**512.05.01 Gabion Baskets and Gabion Mats**

Gabion baskets and gabion mats shall be according to OPSS 1430.

Gabion baskets shall be manufactured from galvanized steel wire mesh or PVC coated galvanized steel wire mesh as specified in the Contract Documents. When the type of mesh is not specified in the Contract Documents, the gabion baskets shall be manufactured from PVC coated galvanized steel wire mesh.

Gabion mats shall be manufactured from PVC coated galvanized steel wire mesh.

**512.05.02 Gabion Stones**

Gabion stones shall be according to OPSS 1004 and as specified in the Contract Documents.

**512.05.03 Geotextile**

Geotextile shall be non-woven, Class II according to OPSS 1860, with an FOS of 75-150 µm, unless otherwise specified in the Contract Documents.

**512.07 CONSTRUCTION**

**512.07.01 Site Preparation**

Site preparation shall be according to OPSS 490.

**512.07.02 Dewatering**

Dewatering shall be according to OPSS 517.

**512.07.03 Temporary Erosion and Sediment Control Measures**

Temporary erosion and sediment control measures according to OPSS 805 shall be implemented when gabions are placed in or along a watercourse.

**512.07.04 Excavation, Bedding, and Backfill**

Excavation for gabions shall be according to OPSS 206.

Corrective measures ordered by the Contract Administrator to rectify deficiencies caused by over-excavation shall be performed. Material placed in the over-excavated area shall be compacted to the density requirements of OPSS 501.

Bedding and backfill shall be as specified in the Contract Documents.

**512.07.04.01                    Excavation, Bedding and Backfill for Gabion Structure Not Exceeding 2.0 m Height**

For gabion structures, excavation and the placing of bedding and backfill shall be according to OPSS 902.

**512.07.05                    Assembly of Gabions**

Gabions shall be installed at the locations and to the line, grade, and dimensions specified in the Contract Documents.

Gabions shall be assembled according to the manufacturer's instructions and as specified in the Contract Documents.

Gabions shall be assembled so that wire ends do not project outside the units on any exposed surface.

Gabion stones shall be placed in a manner as not to damage the wire mesh or the PVC coating on the wire or cause deformation of the gabion. Gabion stones shall be placed to minimize the voids between the stones. When specified in the Contract Documents, the front face of exposed wall surfaces shall be hand placed gabion stone to ensure a uniform appearance.

Prior to securing the lids on the gabion basket, the gabion basket shall be slightly overfilled by 25 to 50 mm of gabion stone in order to allow for settlement of the stone within the units.

**512.07.06                    Placing of Internal Connecting Wires**

Internal connecting wires shall be installed according to the manufacturer's recommendations. When gabions are used as a channelling revetment, internal connecting wires are not necessary.

**512.07.07                    Securing Lids**

When the gabion has been filled, the gabion lid shall be bent over until all lid edges coincide with the front and side edges of the gabion and shall be secured to the front and sides by wire according to manufacturer's instructions and as specified in the Contract Documents.

**512.07.08                    Geotextile**

Geotextile shall be placed uniformly, free of folds, tears or punctures and as specified in the Contract Documents. The geotextile shall be joined so that the material overlaps a minimum of 500 mm and shall be pinned together. Alternatively, the geotextile shall be joined to conform to the seam requirements of OPSS 1860. Geotextile shall be fixed to prevent movement during installation.

**512.07.09                    Protection Systems**

The construction of all protection systems shall be according to OPSS 539. Where the stability, safety, or function of an existing roadway, railway, other works, or proposed works may be impaired due to the method of operation, such protection as may be required shall be provided. Protection may include sheathing, shoring, and the driving of piles where necessary to prevent damage to such works or proposed works.

**512.07.10                    Management of Excess Material**

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

**512.09 MEASUREMENT FOR PAYMENT**

**512.09.01 Actual Measurement**

**512.09.01.01 Gabions**

Measurement of gabions shall be by volume in cubic metres based on the nominal dimensions of the gabions used. When the gabion excavation overlaps excavation required for other work, the measurement shall be made as specified with no deduction for overlaps.

Geotextile used with gabions shall not be measured for payment.

**512.09.01.02 Gabion Structures Not Exceeding 2.0 m Height**

Measurement of gabion structures not exceeding 2.0 m height shall be by volume in cubic metres based on the nominal dimensions of the gabions used. Height is measured from the base of the gabion structure and includes embedment depth, when applicable.

Geotextile used with gabion structures not exceeding 2.0 m height shall not be measured for payment.

**512.09.02 Plan Quantity Measurement**

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

**512.10 BASIS OF PAYMENT**

**512.10.01 Gabions - 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.

Any costs associated with an unauthorized over-excavation shall be the Contractor's responsibility and at no extra cost to the Owner.

**512.10.02 Gabion Structures Not Exceeding 2.0 m Height - 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.

Granular bedding and backfill for gabion structures shall be paid under the granular item for the material specified according to OPSS 902.

For gabion structures, excavation, bedding and backfilling shall be paid under the item Earth Excavation for Structure and Rock Excavation for Structure according to OPSS 902.

Where excavation required for gabion structure overlaps excavation required for other work, payment for excavation shall be made in accordance with the specification for the other work as though no excavation were required for the gabions and the gabion structures.

**Appendix 512-A, November 2014  
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.