This specification covers the requirements for wood used in permanent and temporary structures and posts for signs, highway fence, and guide rail.

1601.01 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.
1601.01.02 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.

1601.02 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:

CSA Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O56-M79 (R2006)</td>
<td>Round Wood Piles (Metric Version)</td>
</tr>
<tr>
<td>O80 Series-97 (R2002)</td>
<td>Wood Preservation</td>
</tr>
<tr>
<td>O122-06</td>
<td>Structural Glued-Laminated Timber</td>
</tr>
<tr>
<td>O141-05</td>
<td>Softwood Lumber</td>
</tr>
<tr>
<td>O177-06</td>
<td>Qualification Code for Manufacturers of Structural Glued-Laminated Timber</td>
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American Wood-Preservers Association (AWPA)

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1/P13-06</td>
<td>Creosote Preservative</td>
</tr>
<tr>
<td>P5-06</td>
<td>Waterborne Preservatives</td>
</tr>
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</table>

Others

National Lumber Grades Authority (NLGA):
Standard Grading Rules for Canadian Lumber, 2005
1601.03  DEFINITIONS

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

**Check** means separation of the wood along the grain, the greater part of which occurs across the rings of annual growth. When the depth of a check exceeds half the thickness of the member, it shall be deemed a split.

**Decay** means a disintegration of the wood substance due to the action of wood-destroying fungi that causes the wood to become unsound. Also known as dote or rot.

**Dressed Wood** means wood that is surfaced by a planing machine to attain a standard of smoothness and uniformity of size.

**Glued-Laminated Wood** means a structural wood member produced by gluing together a number of wood pieces according to CSA O122.

**Grade** means the designation of the size or quality of a piece of wood according to the NLGA Standard Grading Rules for Canadian Lumber.

**New Wood** means wood that is free from deterioration such as that caused by decay, chemical or insect attack, or physical damage and has not been remanufactured since the time of its original grading.

**Preservative Treatment** means a pressure process that impregnates wood with toxic agents to prevent decay and insect attack.

**Shake** means a lengthwise separation of the wood that occurs between or through the rings of annual growth.

**Short Crook** means a localized deviation from straightness that is more than half the mean diameter of the crooked section within any section five feet or less in length.

**Species** means the tree source from which the wood was taken.

**Split** means a lengthwise separation of the wood due to the tearing apart of the wood cells that usually extends from surface to surface of a wooden pile.

**Sweep** means the deviation of a post from straightness.

**Used Wood** means wood other than that defined as new wood.

**Wane** means bark or lack of wood from any cause on the edge or corner of a piece of lumber.

**Wood** means that generic term covering all wood including glued-laminated members.

1601.05  MATERIALS

1601.05.01  General

All wood in permanent structures shall be new and shall be according to the grade, species, size, and surface finish as specified in the Contract Documents. All sizes of sawn wood shall be dressed sizes.
1601.05.02 Wood for Highway Fence, Cable Guide Rail, and Delineator Posts

Round wooden posts for highway fence, cable guide rail, and delineators shall be Eastern White Cedar, Jack Pine, Red Pine, or Southern Yellow Pine. Allowable defects shall be according to CAN3/CSA O56M, except that the posts shall be free from loose or unsound knots, short crooks, reverse sweep, shakes, decay, and checks that exceed 6 mm in width. Posts having a sweep exceeding 2% of the length of the post shall be rejected.

1601.05.03 Wood for Steel Beam Guide Rail and Sign Posts

Wooden posts and wooden offset blocks for steel beam guide rail shall be Jack Pine, Red Pine, or Southern Yellow Pine.

Wooden posts for signs shall be Jack Pine, Red Pine, Western Red Cedar, Lodgepole, or Ponderosa Pine.

Except for maximum allowable wane, posts and blocks for steel beam guide rail and posts for signs shall be No. 1 Grade - Structural Posts and Timbers graded according to the NLGA Standard Grading Rules for Canadian Lumber.

Wane on blocks and on the portion of posts to be set above ground shall not exceed a total width of 25 mm on any one face. Wane on the lower 1.2 m or on the portion of posts to be set below ground shall not exceed a total width of 60 mm on any one face. The total width of wane on any face shall be determined by deducting the portion of the face that is entirely free from wane from the minimum permissible dimension as specified in the Contract Documents.

1601.05.04 Round Wooden Piles

Wooden piles shall be cleaned and peeled and according to CAN3/CSA O56M.

1601.05.05 Structural Glued-Laminated Wood

Structural glued-laminated wood shall be according to CSA O122 and shall be produced by a manufacturer certified according to CSA O177.

1601.05.06 Preservatives

Preservatives shall be according to CSA O80 Series and shall be selected from the following:

a) Creosote shall be according to AWPA P1.

b) Pentachlorophenol in Type A hydrocarbon solvent. The mixture shall be not less than 5% pentachlorophenol and petroleum solvent.

c) Chromated Copper Arsenate (CCA) shall be according to AWPA P5, Type A, B, or C.

d) Ammoniacal Copper Arsenate (ACA) shall be according to AWPA P5.

e) Alkaline Copper Quaternary (ACQ) shall be according to AWPA P5.

1601.05.07 Painting of Preservative Treated Wood

Only waterborne preservatives CCA or ACA shall be permitted for use on wood that is to be painted.
1601.05.08  Marking of Wood for Identification

All wood shall be marked using a grade stamp of an association or independent grading agency according to CAN/CSA O141.

1601.05.09  Marking of Wood for Identification of Preservative Treatment

All wood with preservative treatment shall be marked using a certification mark authorized by the Canadian Wood Preservers Bureau (CWPB).

1601.05.10  Certificates of Compliance

1601.05.10.01  Identification of Wood

When the grade stamp is obscured or is nonexistent, the following certificates shall be provided by the fabricator:

a) Verification of compliance with grade and species by an agency approved by the Canadian Lumber Standards Accreditation Board (CLSAB).

b) Verification that all structural glued-laminated wood has been produced by a certified manufacturer.

1601.05.10.02  Preservative Treatment

When the certification mark is obscured or is nonexistent, a certificate shall be provided by the fabricator verifying that the material was treated at a plant authorized by the CWPB.

1601.05.11  Used Wood

Used wood shall not be used as posts for delineator, steel beam guide rail, or cable guide rail installations.

Used wood shall be permitted for use in temporary structures, provided that the wood is of known history and the grade and species are identifiable. The wood shall be the stress level for new wood of the same grade and species, provided that the previous use has not damaged the wood in such a way that the grade requirements are no longer met. Where wood has been damaged, has deteriorated due to decay or to chemical or insect attack, or its planned use is in a structure to which the public has access, the wood shall not be used, unless it is regraded by a grading agency approved by CLSAB.

1601.07  PRODUCTION

1601.07.01  Preservative Treatment

Preservative treatment shall be according to CSA O80 Series.

All wood for permanent applications shall be pressure preservative treated except Eastern White Cedar for cable guide rail posts, guide posts, delineator posts, and highway fence posts and Western Red Cedar for sign posts.

All wood, except cedar posts, in temporary structures with an intended service life exceeding one year shall be pressure preservative treated.
Wood treated using oil borne preservatives shall be subjected to a vacuum expansion bath at a treatment plant according to CSA O80 Series to produce a material that is free of excessive surface oil. Wood treated using water borne preservatives shall have an average moisture content not exceeding 25% at 25 mm depth below the surface prior to preservative treatment.

1601.07.02 Shop Fabrication
Cutting, framing, drilling, and grooving of wood shall be performed prior to preservative treatment.

1601.07.03 Handling, Storage and Care of Wood
Handling and storage of wood shall be according to CSA O80 Series.

Wood shall be kept free of dirt and stored in a location that will not create an excessive increase in temperature through the green house effect resulting in rapid drying of the material. Wood shall be stored in a manner that will prevent ponding or trapping of excess moisture between surfaces where it cannot dry readily.

When oil treatment is used, the wood shall be given three coats of creosote oil to repair all cuts, abrasions, and holes made after the initial pressure preservative treatment. Each coat shall be dry before the next coat is applied.

Repair of cuts, abrasions, and holes in material treated with water-borne preservatives shall be according to CSA O80 Series.

1601.07.04 Quality Control - Wood Preservation
The wood preserving plant shall use quality control procedures according to CSA O80 Series.

1601.07.05 Tolerances
1601.07.05.01 Dimensions
The following tolerances shall apply:

Diameter of round wooden posts for highway fence, cable guide rail, and delineator posts ± 10 mm
Diameter of other round wooden posts ± 6 mm
Dressed cross-sectional dimensions ± 2 mm
Length ± 10 mm

1601.07.05.02 Splits and Checks
Splits and checks in all treated wood shall not exceed the following limits:

Cedar and Treated Posts
a) The width of splits and checks at the surface shall not exceed 10 mm, regardless of their length or depth.

b) The depth of splits or checks shall not exceed the depth of 40% of the post diameter or thickness, regardless of their length or width.
Other Treated Wood

a) The width of splits and checks at the surface shall not exceed 6 mm.

b) Splits shall not exceed in length any of the following:
   i. Twice the member thickness.
   ii. One and one half times the member width.
   iii. One quarter of the member length.

1601.08 QUALITY ASSURANCE

1601.08.01 Inspection

The quality of all materials and finished products shall be subject to inspection and approval by the Owner. The manufacturer shall afford the Owner all reasonable facilities and access to ensure that the wood products furnished are according to this specification.
Appendix 1601-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.