

COOLING TECHNOLOGY INSTITUTE

CTI CODE TOWER Standard Specifications

For the Design of Cooling Towers With Douglas Fir Lumber



August 2022

STD-114 (22)

This document was developed using the consensus procedure outlined in the CTI Operating Procedure 304
and has been approved for publication by the CTI Board of Directors
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This guideline document summarizes the best current state of knowledge regarding the specific subject. This document represents a consensus of those individual members who have reviewed this document, its scope and provisions. It is intended to aid all users or potential users of cooling towers.

Approved by the CTI Executive Board.



This document has been reviewed and approved as part of CTI's Five Year Review Cycle. This document is again subject to review in 2027.

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CTI - Bulletin
STD-114

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For the Design of Cooling Towers with Douglas Fir Lumber

Part I

Scope, Abbreviations, Other Standards and Definitions

1.0 Scope

- 1.1 This standard sets forth recommended timber design parameters; the recommended grades; and the specifications and grading rules for Douglas Fir lumber to be used in construction of water cooling towers.

2.0 Abbreviations

ICC	International Code Council (www.iccsafe.org)
NDS	National Design Specification for Wood Construction, (www.awc.org)
AWC	American Wood Council, (www.awc.org)
WCLIB	West Coast Lumber Inspection Bureau, (www.wclib.org)
WWPA	Western Wood Products Association, (www.wwpa.org)
IBC	International Building Code, latest edition, by ICC, (www.iccsafe.org)
ASLC	American Softwood Lumber Standard, latest edition, (www.alsc.org). Standard is published by NIST
NIST	National Institute of Standards and Technology, (www.nist.gov/)

3.0 Other Standards and Specifications

3.1 Other standards or specifications as listed below are referenced in the body of this standard:

- ASCE 7 (latest edition) American Society of Civil Engineers Standard Minimum Design Loads in Buildings and other Structures.
- National Design Specification for Wood Construction, latest edition, by AWC with accompanying supplement, Design Values for Wood Construction.
- Standard Grading Rules for Western Lumber, latest edition by Western Wood Products Association, hereafter referenced as WWPA Grading Rules.
- Standard Grading and Dressing Rules for West Coast Lumber, Number 17, published by the West Coast Lumber Inspection Bureau, latest edition, hereafter referenced as WCLIB Grading Rules.

4.0 Definitions of Members

Framework Members:

4.1 Water cooling tower framework members are those members capable of supporting applicable loads, have published design values (or sufficient testing verifying structural integrity) and include the following:

Columns: Vertical or inclined supporting members in the tower framework, used to resist axial compression or tension stresses in combination with flexural or shear stresses that may exist.

Horizontal Ties and Struts: The main horizontal members interconnecting columns or bracing elements.

Braces: Members in the framework whose primary function is to provide lateral stability to the structure or individual members. These usually consist of diagonal members between columns or beams.

Joists and Beams: Horizontal members used to support gravity loads such as supports for fan deck flooring, fill, drift eliminators, cold and hot water collection and distribution basins, flumes, piping and mechanical equipment. Also included are beam-type members that resist wind or seismic forces.

Decking

4.2 Horizontal planking, typically 50.8mm x152.4mm (2 inches x 6 inches (50.8mm x152.4mm tongue and groove material or plywood per CTI-STD-134 (Plywood For Use In Cooling Towers) used for fandek or hot water basin flooring must be capable of sustaining, as appropriate, water loads, live loads, construction and maintenance loads, environmental loads, concentrated loads and any applicable dynamic loads due to operating equipment.

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