

4 Things to Know About North American Mass Timber Standards

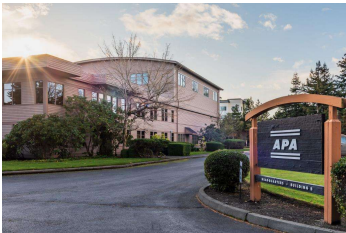
Patrick Schleisman – Engineered Wood Specialist (SE)
Lindsey Kuster, P.E. – Engineered Wood Specialist (SW)



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4 Things to Know About North American Mass Timber Standards

What is APA – The Engineered Wood Association?



1933: Douglas Fir Plywood Association
1994: APA–The Engineered Wood Association



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Webinar Attendee Survey





Patrick Schleisman
Engineered Wood Specialist
Southeast Region

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Engineered Wood Specialist
Southwest Region

<https://www.apawood.org/presentation-survey>

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APA Member Products

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"The Voice of an Industry"

AcuTruss Industries 1996 (LTD) Alamco Wood Products LLC Anthony Forest Products Company, LLC DBA Canfor Arbec Amos OSB Arizona Structural Laminators Art Massif Structure De Bois Inc. Aspen Planers Ltd. DBA Savana Specialty Plywood Boise Cascade Company Bozzer Laminated Beam Co., Inc. Brisco Manufacturing Ltd. Canoe Forest Products Limited D.R. Johnson Wood Innovations Eagle Plywood Specialties EACOM Timber Corporation dba INTERFOR Element5 Limited Partnership FraserWood Industries Ltd.	Freres Lumber Co., Inc. dba Freres Engineered Wood Georgia-Pacific Wood Products LLC Global LVL, Inc. Goodlam - Division of Goodfellow, Inc. Gruen-Wald Engineered Laminates, Inc. Hardel Mutual Plywood Corporation Hood Industries Inc. Hunt Forest Products, Inc. INTERFOR IB ENP Inc. Kalesnikoff Mass Timber Inc. Kandiska Forest Products LP Mercer Mass Timber Mississippi Laminators, Inc. Murphy Company Nation Wood Products, LLC Nordic Structures	Pacific Wood Laminates, Inc. PWIT Pivot Furniture Technologies Inc. Podatch/Dellic Land & Lumber, LLC QB Corporation ReNuTaq, LLC Resolute Engineered Wood Richmond Plywood Corporation Ltd. Rosboro Roseburg Forest Products Company RoyO'Martin Scotch Plywood Company of Alabama Shelton Structures Inc. dba Shelton Lam and Deck Sound Wood Products, Inc. Southern Veneer Specialty Products, LLC Stark Truss Company, Inc. Smartlam, LLC	SmartLam NA Enterprises Swanson Group Mfg. LLC Thompson River Veneer Products Ltd. Timber Products Company Tolko Industries Ltd. Timberlab Laminators, LLC Vaagen Timbers, LLC Veneer Products Acquisitions, LLC dba Southern Veneer Products Warmboard, Inc. WA Enterprises LTD. West Fraser West Fraser LVL Westlam Industries LTD. Weyerhaeuser WFP Engineered Products, LLC Winston Plywood & Veneer, LLC Zip-O-Laminators, LLC
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APA Glulam Manufacturers

- Mercer Mass Timber
- Alamco Wood Products, LLC
- Stark Truss Company, Inc.
- Goodlam, Division of Goodfellow Inc.
- Mississippi Laminators, Inc.
- Timberlab Laminators, LLC
- D.R. Johnson Wood Innovations
- Rosboro
- Shelton Lam and Deck
- WFP Engineered Products, LLC
- Arizona Structural Laminators, LLC
- Boise Cascade Company
- Element5 Limited Partnership
- WA Enterprises LTD.
- Vaagen Timbers, LLC
- Anthony Forest Products Company, LLC DBA Canfor
- QB Corporation
- Zip-O-Laminators, LLC
- SmartLam, LLC
- Bozzer Laminated Beam Co., Inc.
- FraserWood Industries Ltd.
- Art Massif Structure De Bois Inc.
- Nordic Structures
- SmartLam NA Dothan, LLC.
- Kalesnikoff Mass Timber Inc.
- Gruen-Wald Engineered Laminates, Inc.

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APA CLT Manufacturers

See "Manufacturer Directory" page on APA website for more information.

- Vaagen Timbers, LLC
- Nordic Structures
- SmartLam LLC
- SmartLam NA Enterprises
- Mercer Mass Timber
- Boise Cascade Company
- Mercer Mass Timber
- Element5 Limited Partnership
- Kalesnikoff Mass Timber, Inc.
- Freres Lumber Co., Inc. dba Freres Engineered Wood



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4 Things to Know About North American Mass Timber Standards

Course Description

- Learn about engineered wood products, especially mass timber, and how (and why) mass timber has been incorporated into projects across North America.
- Explore glue-laminated (glulam) timber and cross-laminated timber (CLT), covering manufacturing processes, design specifications, performance and environmental benefits through real-world case studies.
- Cover the North American CLT standard (ANSI/APA PRG 320) and its implications for design professionals. CLT that meets PRG 320 standards is code-recognized, assuring its quality and mitigating risk for owners, designers and builders.

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Learning Objectives

1. Define the scope and purpose of the North American Cross-Laminated Timber (CLT) standard (ANSI/APA PRG 320) and its role in ensuring product performance and code compliance. Identify requirements of PRG 320 including material components, performance, panel specification, qualification, and testing.
2. Define the scope and purpose of the North American Glue-Laminated Timber standard (ANSI/APA A190.1) and its role in ensuring product performance and code compliance.



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Learning Objectives

3. Explain how mass timber construction contributes to occupant safety, indoor environmental quality, and sustainability, supporting health, safety, and welfare (HSW) objectives.
4. Identify the structural and performance characteristics of engineered wood products commonly used in mass timber construction, including CLT and glulam.

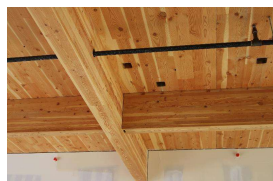


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Agenda

- What is Mass Timber
- Overview of Glulam & CLT
- CLT Codes and Standard
- Mass Timber Case Studies



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4 Things to Know About North American Mass Timber Standards

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- What is Mass Timber
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What are Engineered Wood Products?

Engineered Wood:

A range of derivative wood products which are manufactured by binding or fixing the strands, particles, fibers, veneers, or boards of wood, together with adhesives.



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What Are Engineered Wood Products?

Panel Products

- **WSP – Wood Structural Panels**
 - Plywood
 - Oriented Strand Board (OSB)
- **Specialty Panels**
 - Radiant Barrier
 - Formwork
 - Industrial Panels
 - Overlaid Panels
 - APA FRT OSB sheathing
 - Siding





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What Are Engineered Wood Products?

Framing Products

- **I-Joists**
- **Glulam – Glued Laminated Timber**
- **SCL – Structural Composite Lumber**
 - PSL – Parallel Strand Lumber
 - LVL – Laminated Veneer Lumber
 - LSL – Laminated Strand Lumber
 - OSL – Oriented Strand Lumber



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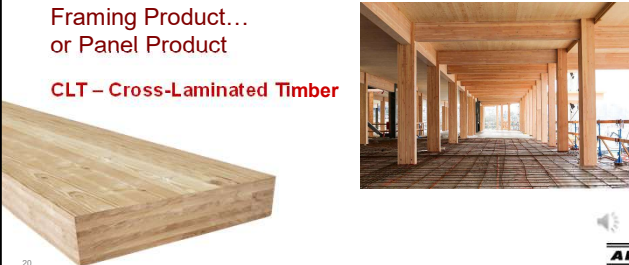
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What Are Engineered Wood Products?

**Framing Product...
or Panel Product**

CLT – Cross-Laminated Timber



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Code Recognized

Proprietary	vs.	Non-Proprietary
▪ Lab Tested		▪ Lab Tested
▪ ES Reports		▪ Code Design Values
▪ APA Product Reports		
▪ I-Joists		▪ Plywood
▪ SCL		▪ I-Joists
▪ Glulam		▪ Oriented Strand Board
▪ CLT		▪ Glulam*
		▪ Cross-Laminated Timber*

*Can be proprietary



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APA Specification Resources

ANSI/APA PRG 320
Standard for Performance-Rated
Cross-Laminated Timber

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Mass Timber Today

Over 2,598 Mass Timber projects in the US*

Major Benefits:

- Environmentally responsible
 - Embodied carbon & Sequestered carbon
- Faster installation than steel or concrete
- Aesthetics of exposed wood
- Biophilia effects
- Code acceptance

Building Types:

- Multi-family and hospitality (hotels, motels)
- Multi-story
- Single-family
- Commercial

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Mass Timber Engineered Wood Products

Cross Laminated Timber (CLT)

Glue Laminated Timber (Glulam)

Dowel Laminated Timber (DLT)*

Images courtesy of StructureCraft

Nail Laminated Timber (NLT)*

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APA Members Produce Mass Timber

Cross Laminated Timber (CLT)

- "Traditional" Cross Laminated Timber (CLT) – Panels
- Mass Plywood Panels or Mass Ply Lam (MPP-MPL) – Panels, columns, and beams
- Veneer Laminated Timber (VLT) – Panels

Glue Laminated Timber (Glulam)

- Glue laminated decking – Panels
- Glue laminated beams – Beams, columns, rim and stair stringers



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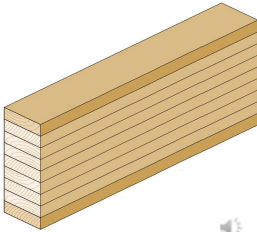
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Glued Laminated Timber (Glulam)

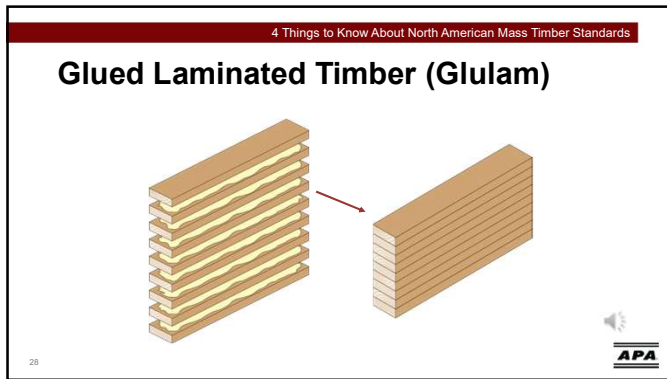
Dimension lumber laminations

- Wood laminations bonded together
- Wood grain runs parallel to the length
- Common uses: beams, headers and columns
- Balanced vs. unbalanced
- Shape versatility
 - May be cambered
 - Custom shapes, arches
- Visual grades:
 - Premium, Architectural, Industrial and Framing

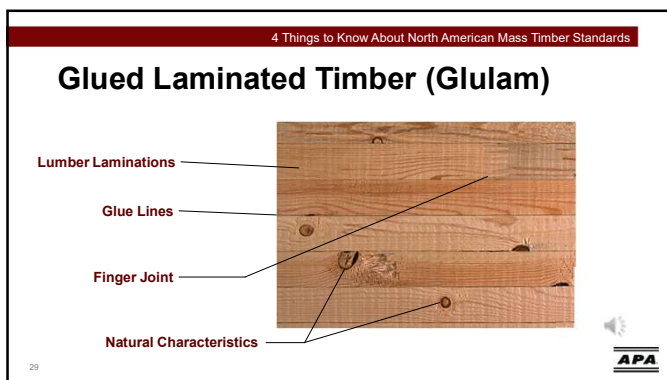


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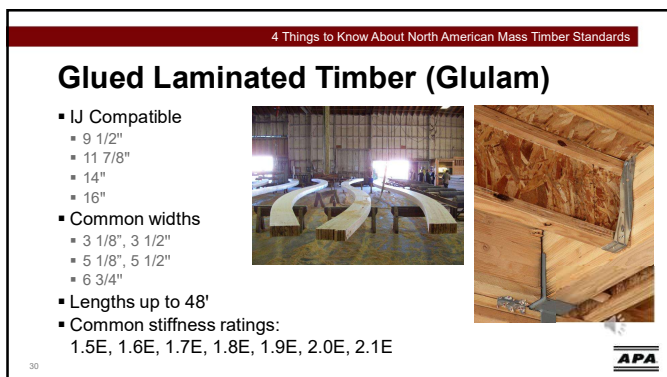
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Product Basics: Glulam Beam Layups

Balanced Layup

Unbalanced Layup

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High-Strength Glulam Beams

LVL Hybrid Glulam with LVL Outer Laminations

- Full length with no finger joints required
- LVL has greater tensile strength compared with lumber
- 30F-2.1E stress level achieved
- Direct substitute for many SCL products



LVL Laminations

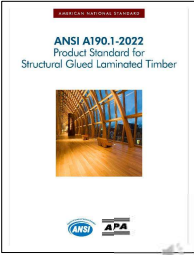


List of Manufacturers: High Strength Composite Beams (HSC)
<https://www.apawood.org/manufacture-directory?c=25>

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ANSI A190.1 (U.S.)

- Qualification and quality assurance requirements are specified.
- Third-party inspection is required on an ongoing basis.
- All glulam must bear marking in accordance with ANSI A190.1
 - or CSA 0122/0177 or CCMC.



ANSI A190.1-2022
Product Standard for
Structural Glued Laminated Timber



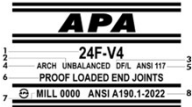
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Glulam Specifications

Refer to:

- APA Engineered Wood Construction Guide, Form E30
- ANSI A190.1-2022: Product Standard for Structural Glued Laminated Timber



1. Combination symbol.
2. Unbalanced layout.
3. The species or species group of lumber used.
4. Designation of appearance classification.
5. Applicable design and manufacturing specification.
6. Indicates the member has the required laminations proof loaded.
7. APA mill number.
8. Identification of ANSI A190.1, the Standard for Wood Products - Structural Glued Laminated Timber.

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North American vs Imported Glulam

- Application of foreign building code in North America is the responsibility of the design engineer.
- The use of adhesives that have not been evaluated for heat durability could impose a serious life safety concern during a fire.



Form W500

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Glulam Product Basics

Appearance Classifications

- Framing** – Intended for concealed applications and is typically available in 3 1/2", 5 1/2", and 7 1/4" widths to match dimensions of 2x4, 2x6, and 2x8 framing lumber
- Industrial** – Intended for concealed applications or where appearance is not of primary importance
- Architectural** – Used where members are exposed to view and an attractive finish is desired
- Premium** – Available only as a custom order where appearance is of primary importance



Form Y110

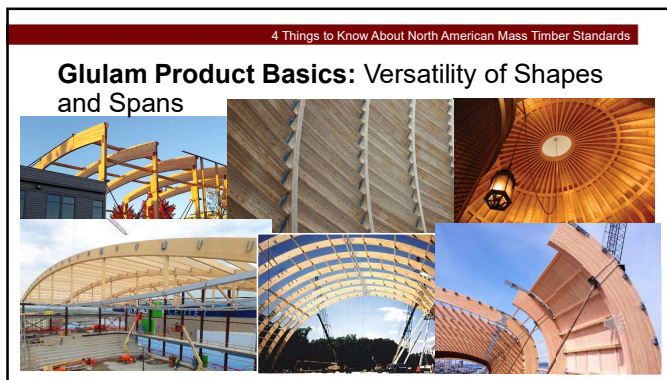
Strength is not impacted by appearance classifications

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Glulam Product Basics:

Large Cross Sections Are Possible

Note multiple pieces positioned side by side



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Cross Laminated Timber (CLT)

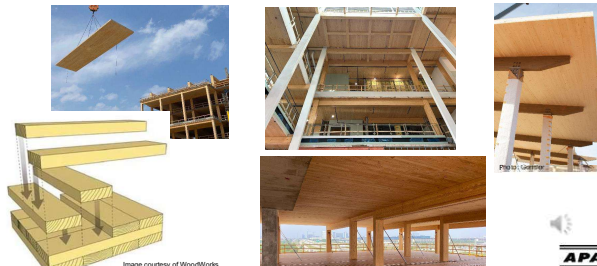


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Cross Laminated Timber (CLT)



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4 Things to Know About North American Mass Timber Standards

Cross Laminated Timber (CLT)

- Typically, board layers stacked in alternating directions
- Bonded with structural adhesives
- Pressed to form a solid, straight, rectangular panel
- May be sanded or prefinished
- Precut window and door openings



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Cross Laminated Timber (CLT)

- Application: long spans, shear walls, floors, roof panels
- Typical Sizing: 2-10' wide, ≤ 60' lengths, ≤ 20" thicknesses
- Publications: IBC, NDS, ANSI/APA PRG 320-2025






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4 Things to Know About North American Mass Timber Standards

CLT Panels



Source: D.R. Johnson



1. Grade qualified in accordance with ANSI/APA PRG 320.

2. APA mill number.

3. Product thickness.

4. Referenced product standard.

1 V2 6 7/8" 3

2 MILL 0000 ANSI/APA PRG 320-2025 4

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Agenda

- What is Mass Timber
- Overview of Glulam & CLT
- CLT Codes and Standard**
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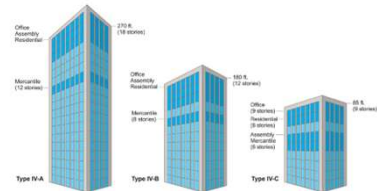
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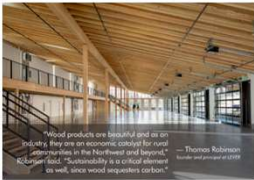
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Mass Timber

Mass timber is strong, fast-to-erect and low-carbon



Graphic courtesy of WoodWorks



APA Case Study – Beauty and the Budget
Engineered Wood's Appeal is More than Skin Deep

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Code Updates

Under IBC 2021

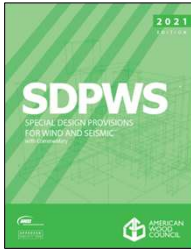
SDPWS 2021

- CLT Diaphragm (section 4.5)
- CLT Shear Walls (section 4.6)

Under IBC 2024

ASCE 7-22

- First ASCE CLT shear wall systems will be recognized



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ANSI/APA PRG 320

North American Product Standard for CLT provides:

- Reference documents
- Product terminology and symbols
- Panel dimensions and tolerances
- Panel component requirements
- Performance criteria
- Qualification and product marking
- Quality assurance processes
- Design criteria (Annex A)

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4 Things to Know About North American Mass Timber Standards

PRG-320: Terminology

- Lamination
- Layer
 - Longitudinal vs Transverse Layers
- Layup
 - Balanced vs Unbalanced Layups
- CLT Grade
 - Basic CLT layups in Annex A

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PRG-320: Terminology

- Major Strength Direction: direction with the greater bending strength. Parallel to CLT length

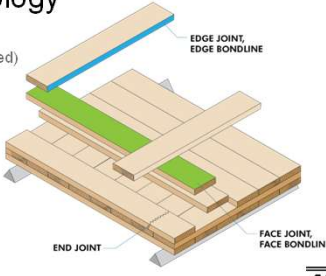
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4 Things to Know About North American Mass Timber Standards

PRG 320: Terminology

- Joints
 - Edge (can be bonded or unbonded)
 - End
 - Face
- Bondline
 - Edge
 - Face



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PRG 320: Laminations Requirements

Laminations within the same layer shall be of the same thickness, type, grade, and species or species combination.

Grade and Species Requirements



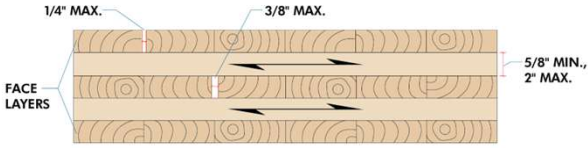
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PRG 320: Laminations Requirements



Not to Scale!

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PRG 320: Adhesives

Elevated temperature performance requirements in the US and Canada

- See Annex B

APA Form S500: North American CLT vs. Imported Product



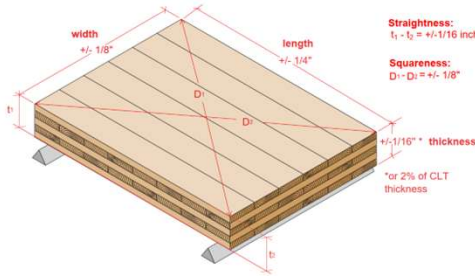
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PRG 320: Dimensional Tolerances



Width: $\pm 1/8"$

Length: $\pm 1/4"$

Thickness: $\pm 1/16"$ or 2% of CLT thickness

Straightness: $t_1 - t_2 \leq \pm 1/16$ inch

Squareness: $D_1 - D_2 \leq \pm 1/8"$

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PRG 320: CLT Performance Criteria

Basic CLT Layups:



- Provided in Annex A
- Balanced
- Alternating layers
- Same lamination thickness

Custom CLT Layups:



- Not listed in Annex A
- Not required to be symmetric, have alternating layers or for lamination thickness to be equal
- In APA Product Reports

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APA Product Reports

Design Values + Code Compliance Pathway



APA Product Report - Canada



APA Product Report - USA



ICC-APA Joint Report

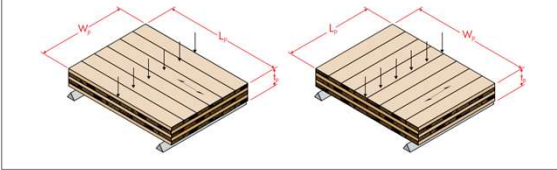
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4 Things to Know About North American Mass Timber Standards

Flatwise Bending of CLT

FIGURE 2
FLATWISE BENDING IN THE MAJOR (LEFT) AND MINOR (RIGHT) CLT STRENGTH DIRECTIONS



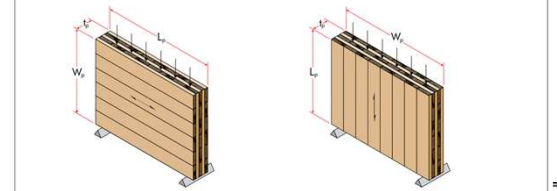
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Edgewise Bending of CLT

FIGURE 1
EDGEWISE BENDING IN THE MAJOR (LEFT) AND MINOR (RIGHT) CLT STRENGTH DIRECTIONS



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PRG 320: Quality Assurance

Process Control:

- CLT qualified under PRG 320 requires ongoing observation and testing



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PRG-320: Annex A

Design properties based on CLT grade:

“E” = Machine Stress Rated (MSR) lumber

- Low variability in strength and stiffness

“V” = Visual grading

- A trained lumber grader assesses grade based on appearance and characteristics

“S” = Structural Composite Lumber (SCL)

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TABLE A1
ASD REFERENCE DESIGN VALUES^a FOR LAMINATIONS USED IN BASIC CLT GRADES (FOR USE IN THE U.S.)

CLT Grade	Laminations Used in Major Strength Direction						Laminations Used in Minor Strength Direction					
	E_x (psi)	E_y (10 ³ psi)	E_x (psi)	E_y (psi)	F_x (psi)	F_y (psi)	E_x (10 ³ psi)	E_y (psi)	F_x (psi)	F_y (psi)	F_x (psi)	F_y (psi)
E1	1,950	1.7	1,375	1,800	135	45	540	1.2	750	650	135	45
E2	1,650	1.5	1,020	1,700	180	60	525	1.4	725	775	180	60
E3	1,200	1.2	600	1,400	110	35	350	0.9	150	475	110	35
E4	1,950	1.7	1,375	1,800	175	55	450	1.3	750	725	175	55
E5	1,650	1.5	1,020	1,700	150	50	500	1.2	300	725	150	50
V1	900	1.6	575	1,350	180	60	575	1.4	225	775	180	60
V19a	850	1.6	500	1,400	180	60	475	1.4	300	825	180	60
V2	875	1.4	450	1,150	135	45	500	1.2	250	650	135	45
V3	750	1.4	450	1,250	175	55	450	1.3	250	725	175	55
V4	775	1.1	350	1,000	135	45	450	1.0	200	575	135	45
V5	850	1.3	525	1,300	150	50	500	1.2	300	725	150	50
S1	2,250	1.5	1,500	1,950	120	40	2,250	1.5	1,500	1,950	130	40
S2	1,900	1.3	1,300	1,650	150	50	1,900	1.3	1,300	1,650	150	50
S3	1,750	1.3	1,200	1,500	115	35	1,750	1.3	1,200	1,500	115	35

For SI: 1 psi = 0.006895 MPa

a. The ASD reference design values for laminations in the basic CLT grades made of visually graded lumber are based on 2x12 lumber. Because the basic CLT grades do not limit the lamination sizes used, the ASD reference design values for laminations in basic CLT grades are not increased for the lamination size, repetition number, and flat size adjustment factors when calculating the ASD reference design properties for basic CLT grades provided in Table A2.

b. The indicated E values are published E for lumber and E_{min} (plank) apparent E for SCL.

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TABLE A2
ASD REFERENCE DESIGN VALUES FOR BASIC CLT GRADES AND LAYOUTS (FOR USE IN THE U.S.)

Lamination Thickness (in.) in CLT Layout

CLT Grade	t (in.)	Lamination Thickness (in.) in CLT Layout				Major Strength Direction				Minor Strength Direction			
		1	2	3	4	(F _b) _{CLT} (ksi)	(E _x) _{CLT} (10 ³ ksi)	(G _x) _{CLT} (ksi)	(F _v) _{CLT} (ksi)	(F _b) _{CLT} (ksi)	(E _y) _{CLT} (10 ³ ksi)	(G _y) _{CLT} (ksi)	(F _v) _{CLT} (ksi)
E1	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,925	115	0.46	1,490	160	2.1	0.41	495
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	440	0.92	2,480	1,370	81	1.2	1,450
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	1,080	1.4	3,475	2,100	212	1.8	2,480
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	1,080	1.4	3,475	2,100	212	1.8	2,480
E2	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,925	102	0.53	1,980	165	2.6	0.56	600
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	289	1.1	3,200	1,450	95	1.1	1,980
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	663	1.6	4,425	3,300	264	1.7	3,300
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	663	1.6	4,425	3,300	264	1.7	3,300
E3	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,925	81	0.35	1,360	100	2.3	0.44	385
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,400	311	0.69	1,930	955	41	0.87	1,160
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	11,225	769	1.0	2,700	2,210	234	1.3	1,930
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,925	115	0.46	1,490	160	2.1	0.41	495
E4	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	440	1.0	3,025	1,320	88	1.2	1,820
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	18,400	1,080	1.5	4,225	2,850	338	1.9	3,025
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	18,400	1,080	1.5	4,225	2,850	338	1.9	3,025
E5	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,925	101	0.48	1,650	160	3.1	0.58	560
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	10,400	289	0.92	2,700	1,750	81	1.1	1,650
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	15,375	962	1.4	3,850	2,150	312	1.7	2,700
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	2,090	108	0.53	1,980	165	2.6	0.56	600
V1	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,900	415	1.1	2,200	1,440	95	1.2	1,980
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	8,500	1,027	1.6	4,025	3,300	264	1.8	3,300
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	1,990	108	0.53	1,980	165	2.6	0.56	600
V1(N)	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,500	415	1.1	2,200	1,440	95	1.2	1,980
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	8,025	1,027	1.6	4,025	3,000	264	1.8	3,300
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	2,030	95	0.46	1,490	160	2.1	0.41	495
V2	4.5/8	1.3/8	1.3/8	1.3/8	1.3/8	6,475	363	0.91	2,480	1,370	81	1.0	1,490
	5/8	1.3/8	1.3/8	1.3/8	1.3/8	8,375	898	1.4	3,475	3,150	312	1.6	2,480

Table continued on next page.

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Demand
Major =
7,500lb-ft/ft
Minor =
1,200lb-ft/ft

Don't Forget
The Adjustment
Factors!

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4 Things to Know About North American Mass Timber Standards

PRG 320: Additional Information

- Annex B: Practice for Evaluating Elevated Temperature Performance of Adhesives Used in Cross-laminated Timber Using the Compartment Fire Test (CFT) Method
- Appendix X1: Examples of CLT Appearance Classifications
- Appendix X3: An Engineering Model Used in the Development of CLT Design Values in Annex A
- Appendix X4: History of The Standard

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4 Things to Know About North American Mass Timber Standards

Agenda

- What is Mass Timber
- Overview of Glulam & CLT
- CLT Codes and Standard
- Mass Timber Case Studies



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4 Things to Know About North American Mass Timber Standards

Mass Timber Projects



School Library Vancouver, WA



Portland International Airport

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Schools



Photo courtesy of Tacoma Public Schools



Photo courtesy of Western Wood Products



Form W170

- CLT
- Glulam
- LSL
- LVL
- Plywood

- Environmental benefits
- Improved safety
- Natural beauty – biophilia
- Acoustics

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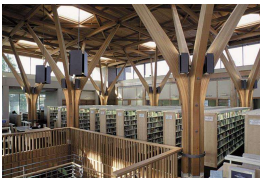
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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Library







Form A115

- Architectural Glulam

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Credit Union





Photos Courtesy of Mike Browning for Swanton Builders

- CLT
- Glulam
- CNC Fabrication
- Small crew for erection
- 5-story
- Lower cost alternative
- Speed of erection

Form U115

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Office Building





- CLT – floor & roof
- Glulam – post & beam
- Balcony
- 3-week erection
- Concealed connectors

Form Q210

APA

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Mixed Use





- Glulam beams & columns
- Sustainability
- Aesthetics
- Type VB
- Five-story timber-framed

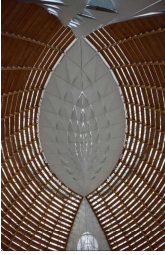
Form S120

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Worship


- 99' long Glulam columns (ribs)
- Glulam louvers
- 103' long Glulam mullions

Form J140

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Architecture




- Glulam beams & columns
- CLT
- Plywood shear walls
- Locally sourced
- Lower costs
- Increased speed
- Carbon sequestration

Form V130

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4 Things to Know About North American Mass Timber Standards

APA Case Studies – Exposed Glulam and CLT





- Glulam beams & columns
- 8' x 40' CLT Roof Panels
- Pine Beetle Infestation
- Wood's beauty
- Quick installation
- Lighter than concrete
- Less labor

Form R130

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Questions?

Please complete the survey.





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4 Things to Know About North American Mass Timber Standards

Referenced APA Publications















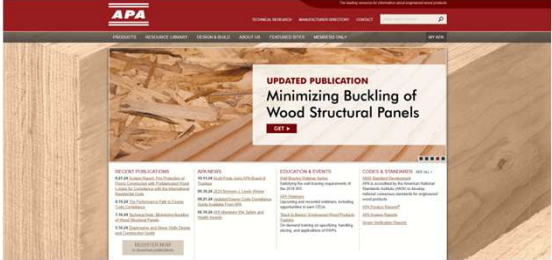

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Designing Engineered Wood Diaphragm Systems

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Diaphragms play a vital role in a building's lateral load path. Whether that lateral load is from seismic activity or wind forces, the diaphragm is responsible for distributing that lateral load to the shear walls. This session provides guidance on the proper design of engineered wood diaphragms.

WEBINAR
Designing Engineered Wood Diaphragm Systems

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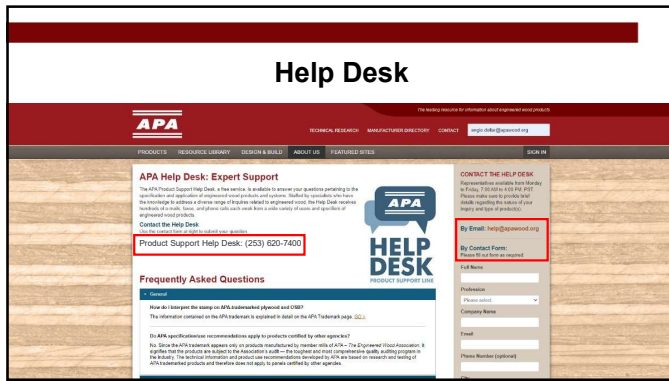
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