

SECTION 061003

CERTIFIED ROUGH CARPENTRY

CSI 3-PART **LONG-FORM** GUIDE SPECIFICATION
EDIT TO SUIT PROJECT

PART 1 - GENERAL

1.1 SUMMARY

- A. Work of this Section includes but is not limited to the following:
1. Wood Boards
 - a. Select
 - b. Common
 2. Dimension Lumber
 - a. Structural light framing
 - b. Light framing
 - c. Studs
 - d. Decking
 - e. Structural joists and planks
 3. Timbers
 - a. Beams and Stringers
 - b. Posts and Timbers
 4. Wood treatments
 5. Accessories including, but not limited to, metal connector plates, structural connectors, fasteners
- B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to the following:
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 General Requirements, Specification Sections, apply to this Section.
 2. SECTION 060530, CERTIFIED WOOD TYPES: Forest, tree and timber management and sourcing.
 3. SECTION 061603, CERTIFIED WOOD SHEATHING
 4. SECTION 061703, CERTIFIED SHOP FABRICATED STRUCTURAL WOOD
 5. SECTION 064003, CERTIFIED ARCHITECTURAL WOODWORK: Blocking for wood casework.

1.2 REFERENCES

- A. Abbreviations and Acronyms per SECTION 011000, SECTION 014000, and as follows:
1. AHJ. Authority Having Jurisdiction from local, state and federal regulatory agencies.
 2. NAF. No Added Formaldehyde.
 3. CoC. Chain-of-Custody.
 4. Per. In accordance with.
 5. RH. Relative Humidity.

NOTE: Edit Definitions and References below to suit project.

NOTE: Items may also be moved to Section 014000 and deleted here.

B. Definitions per SECTION 011000, SECTION 014000, and as follows:

1. Certified Wood: Independent third party certified forests; trees and lumber meeting FSC or PEFC member principles and criteria from forests complying with responsibly managed forest standards that meet broad social, economic and environmental goals.
2. Dimension Lumber: A product of the saw mill and planing mill of nominal 2 in. through 4 in. thick and 2 or more inches wide usually not further manufactured other than by sawing, re-sawing, passing lengthwise through a standard planing machine, crosscutting to length, and matching.
3. Engineered Wood Products: Wood fibers and/or particles that have been bonded with synthetic resins under heat and pressure that are formed into panels or boards. Refer to SECTION 061603 for information regarding Hardboard, HDO, MDF, MDO, Plywood, OSB and Particleboard.
4. **HAP**. Hazardous Air Pollutant
5. Heavy Timber: Large dimension wood member construction in which fire resistance is attained by placing limitations of minimum sizes on wood structural members.
6. HMA Hardwood Moldings [Glossary](#)
7. Mechanically Graded Lumber: Machine stress-rated lumber (MSR) or machine evaluated lumber (MEL) and grade stamped as conforming to the American Lumber Standard or Southern Pine Inspection Bureau and ASTM D6570.
8. **MIC**. Methyl diisocyanate, an extremely toxic isocyanate chemical compound and HAP, used in making industrial adhesives and polyurethane.

RED NOTE: Extremely toxic MIC has a NIOSH IDLH (immediately dangerous to life or health) exposure of 3 ppm. Higher levels of exposure, over 21 ppm, can result in pulmonary or lung edema, emphysema and hemorrhages, bronchial pneumonia and death.

There is no known antidote.

9. Northern Forest: Timber stands that range from the NY Adirondacks through Vermont and New Hampshire up into Maine. <http://www.northernforestalliance.org/explore.htm>
10. S4S. Lumber that is dressed/surfaced on all four (4) sides.
11. S2S. Lumber that is dressed/surfaced on two (2) sides.
12. Sustainably Harvested Wood: Wood harvested from forests managed in accordance with stated environmental, social, economic, legal, forest management, and systematic validation principles such as those proffered by the Northern Forest Alliance <http://www.northernforestalliance.org/about/sustainforest.htm>, FSC www.fsc.org/pc.html, ATFM http://65.109.144.60/cms/test/26_34.html and SFI <http://www.sfi-program.org/files/pdf/sfi-standard-2005-2009-sept%2008%20update.pdf>.
13. Sustainable Forest Management: The practice of meeting the forest resource needs and values of the present without compromising the similar capability of future generations (1993 Montreal Process.) The UN-FF (United Nations Forum on Forests) in 2004 adopted the following seven themes of sustainable forest management: Extent of forest resources; Biological diversity; Forest health and vitality; Productive functions of forest resources; Protective functions of forest resources; Socio-economic functions; and Legal, policy and institutional framework.
14. Sustainably Recycled Wood: Wood products certified by a third party to be made from reused, reclaimed or salvaged wood timbers or post-consumer wood products.
15. Visually Graded Lumber: Lumber visually graded by trained graders for appearance and strength factors according to [PS20](#) rules as enforced by regional organization like [NeLMA](#) and others. Lumber is marked for: Number, size, and position of knots and holes; Bark on edges; Decay; Checks and splits; Machining defects; Twisting, bowing, and warp; Species.
16. **VOC**. Volatile Organic Compounds are compounds that have a high vapor pressure and low water solubility.

C. Referenced Standards per SECTION 014000 and as follows:

1. [ALSC](#). American Lumber Standard Committee; www.alsc.org
 - a. [Lumber Grading Rules](#)
2. ANSI. American National Standards Institute; www.ansi.org
3. ASTM. ASTM International; www.astm.org
 - a. ASTM D245, Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber
 - b. ASTM D1990, Establishing Allowable Properties for Visually Graded Dimension Lumber from In-Grade Tests of Full-Sized Specimens
 - c. ASTM D6570, Standard Practice for Assigning Allowable Properties for Mechanically Graded Lumber
4. [AWI](#). Architectural Woodwork Institute
 - a. AWI - Quality Standards, 8th Edition, Version 1.0, 2003
 - b. AWI / AWMAC / WI – Architectural Woodwork Standards – 2009, 1st Edition

NOTE: The AWS will be printed and available for distribution before August 1. The Woodwork Institute will adopt it as their official standard for work bidding after Oct 31, 2009.

5. AWWA. American Wood Preservers Association; www.awpa.com
6. BAAQMD. Bay Area Air Quality Management District; www.baaqmd.gov
7. CARB. California Air Resources Board, a department of the California Environmental Protection Agency; www.arb.ca.gov
8. EPA. U.S. Environmental Protection Agency; www.epa.gov
9. FSC. Forest Stewardship Council; Certified Sustainably Managed Lumber; www.fsc.org/pc.html; <http://www.fscus.org/>
 - a. Certifier: Rainforest Alliance 'SmartWood' Program. <http://www.smartwood.org>
 - b. Certifier: Scientific Certification Systems 'Forest Conservation Program' (FCP); <http://www.scscertified.com>
 - c. Certifier: Bureau Veritas Certification (BVC); <http://certification.us.bureauveritas.com/>
 - d. Certifier: Price Waterhouse Cooper LLC (PwC); <http://www.pwc.com/extweb/pwcpublications.nsf/docid/0cca106f2a7b9d5585256fc50051263a>
 - e. Withdrawn Certifier: SGS Systems & Services Certification USA; http://www.us.sgs.com/forestry_us
10. GS. Green Seal; www.greenseal.org
11. [HMA](#). Hardwood Manufacturers Association; www.hardwoodinfo.com
12. ICC. International Code Council; www.iccsafe.org
13. ICC/ES. International Code Council / Evaluation Service; www.icc-es.org
14. ISO/IEC. International Organization for Standardization, International Electrotechnical Commission; www.iec.ch/
15. [NeLMA](#). Northeastern Lumber Manufacturers Association. www.nelma.org
 - a. Standard Grading Rules for Northeastern Lumber 2006
16. NFPA. National Fire Protection Association; www.nfpa.org
17. NLGA. (Canadian) National Lumber Grades Authority; www.nlga.org
18. NHLA. National Hardwood Lumber Association; www.natlhardwood.org
19. [PEFC](#). Programme for the Endorsement of Forest Certification schemes, Geneva-based; [PEFC Annex 4](#) Chain of Custody; (SFI, CSA, and ATFS are endorsed by PEFC.)
 - a. Member: [SFI](#). Sustainable Forestry Initiative, Washington DC; www.sfiprogram.org
 - b. Member: [ATFS](#). American Tree Farm System Certified; www.treefarmssystem.org
 - c. Member: [CSA](#). Canadian Standards Association; <http://certifiedwood.csa.ca>
 - d. Certifier: Bureau Veritas Certification (BVC); <http://certification.us.bureauveritas.com/>
 - e. Certifier: Price Waterhouse Coopers LLC (PwC); <http://www.pwc.com/extweb/pwcpublications.nsf/docid/0cca106f2a7b9d5585256fc50051263a>
20. SCAQMD. South Coast Air Quality Management District; www.aqmd.gov
21. SPIB. Southern Pine Inspection Bureau; www.spib.org
22. UL. Underwriters Laboratories Inc.; www.ul.org

23. United States Department of Commerce Standard [PS20-99](#)
 - a. Procedures for the Development of Voluntary Product Standards
24. USGBC. United States Green Building Council; www.usgbc.org
25. [WI](#). Woodworking Institute; <http://www.wicnet.org/publications/2003manual.asp>

1.3 ADMINISTRATIVE REQUIREMENTS

NOTE: Coordinate and edit to the correct Section number below.

- A. Coordination per SECTION 013000 or 013100, SECTION 060530, and as follows:
1. Verify each certified material chain-of-custody from original material resource to project site.

NOTE: Coordinate and edit to the correct Section number below.

- B. Preinstallation Meetings per SECTION 013000 or 013100 and as follows:
1. Meeting purpose is to review site conditions, installation procedures, schedules, coordination with other work, blocking requirements, and warranty requirements.

NOTE: Coordinate and edit to the correct Section number below.

- C. Sequencing: Per SECTION 010000 or 011100, and SECTION 060530.

NOTE: Coordinate and edit to the correct Section number below.

- D. Scheduling: Per SECTION 010000 or 011100, and SECTION 013000 or 013200.

1.4 SUBMITTALS

NOTE: Coordinate and edit to the correct Section number below.

- A. Product Data per SECTION 013000 or 013300 and as follows: Submit manufacturer's printed descriptions of materials, components, treatment systems, performance criteria, fasteners, brackets, hangers, gusset plates, adhesives, finishes, use limitations, recommendations and installation information.

NOTE: Coordinate and edit to the correct Section number below.

- B. Shop Drawings per SECTION 013000 or 013300 and as follows: Submit AHJ required drawings for installed products indicated to comply with design loads including structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Shop Drawings shall not be copies or modified copies of the Contract Drawings.

NOTE: Current cutting edge Shop Drawings are based on Architect's 3-D BIM Drawing files.
Delete if not using.

2. Use 3-D BIM (Building Information Modeling) Drawings as base for final Shop Fabrication Drawings.

NOTE: Coordinate and edit to the correct Section number below.

- C. Samples per SECTION 013000 or 013300 and as follows:
1. Initial for Selection: Submit printed material for each type of proposed fastener, hanger or other accessory.
 2. Final Selection: Submit three (3) of each fastener, bracket, or other accessory selected for use.

- D. Quality Assurance Submittals per SECTION 014000 and as follows:
1. Certificates: Submit printed certificates or manufacturer's letterhead with manufacturer's signature certifying that each product and/or system meets each regulatory requirement, sustainability characteristic, performance requirement, design criteria, and applicable standard specified.
 - a. Certificates of Grade: Certificate of Inspection for grade marked material by (ALSC) recognized inspection agency
 - b. KD Certificates: Kiln-dried moisture content by (ALSC) recognized inspection agency.
 2. Test and Evaluation Reports: Submit certified test results by a recognized testing laboratory in accordance with specified test methods for each product and/or system indicating physical, chemical and performance characteristics.
 - a. Indicate fire-retardant-treated wood and wood composites that comply with building code in effect for Project.
 - b. Rot-resistant preservative-treated wood and wood composites that comply with standards and other requirements.
 3. Qualification Statements: Submit a letter, on printed letterhead and signed by an officer of the firm, for each listed quality assurance qualification listed, attesting to meeting each requirement called out.

NOTE: Edit LEED Requirements below to suit project.

- E. Sustainable Design (LEED) Submittals: Submit the following in accordance with the requirements of SECTION 018113, LEED REQUIREMENTS:
1. LEED Credit MR, Materials & Resources. Submit completed LEED-NC 2.2 Submittal Templates in accordance with SECTION 017419, CONSTRUCTION WASTE MANAGEMENT, and other required paperwork as follows:
 - a. MR 5.1: Regional Materials, Regionally Extracted, Processed & Manufactured Products, 10 Percent
 - b. MR 5.2: Regional Materials, Regionally Extracted, Processed & Manufactured Products, 20 Percent
 - 1). Submit product data indicating name of the manufacturer, product cost, distance between the project site and the manufacturer, and the distance between the project site and the extraction site for each raw material
 - c. MR 7: FSC Certified Wood
 - 1). Submit certificates of chain-of-custody signed by manufacturers certifying materials and products specified are made from certified wood obtained from forests certified by a Forest Stewardship Council accredited certification body.
 - 2). Submit evidence sawmill is certified for chain-of-custody by an FSC-accredited certification body.
 2. LEED Credit EQ, Indoor Environmental Quality. Submit completed LEED-NC 2.2 Submittal Templates and required paperwork as follows:
 - a. EQ 4.1: Low Emitting Materials, Adhesives & Sealants, VOC Data
 - 1). Submit manufacturers' product data for construction adhesives and sealants, including printed statement of VOC content and MSDS Sheets.
 - 2). Submit manufacturer's certification that products meet the requirements of SCAQMD Rule 1168 in areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur.
 - 3). Submit manufacturer's certification that products meet the requirements of BAAQMD Regulation 8, Rule 51 for containers larger than 16 oz and with CARB for containers 16 oz or less, for areas where freeze/thaw conditions do exist or direct exposure to moisture can occur.

NOTE: Coordinate and edit to the correct Section number below.

- F. Closeout Submittals per SECTION 017000 or 017800, unless noted otherwise.

1. Operation and Maintenance Data: Including, but not limited to, methods for maintaining installed products.
2. Record Documents: Drawings, Specifications, and Product Data.

[NOTE: Edit LEED Requirements below to suit project.](#)

3. Sustainable Design Closeout Documentation: Submit completed USGBC LEED® worksheet templates for the following credits:
 - a. MR 5.1: Regional Materials, Regionally Extracted, Processed & Manufactured Products, 10 Percent
 - b. MR 5.2: Regional Materials, Regionally Extracted, Processed & Manufactured Products, 20 Percent
 - c. MR 7: FSC Certified Wood
 - d. EQ 4.1: Low Emitting Materials, Adhesives & Sealants, VOC Data

1.5 QUALITY ASSURANCE

A. Regulatory Requirements

1. Provide fire retardant treatment which complies with the following regulatory requirements:
 - a. FHA Minimum Property Standard #2600.
 - b. HUD Materials Release 1261.

B. Qualifications:

1. Supplier: A firm capable of providing Third Party Certification that wood materials were sourced from sustainably managed forests.
2. Testing Agency: An independent testing agency with the experience and capability to conduct the testing indicated, meeting requirements of ISO/IEC Standard 17025 or ASTM E699 and ASTM E329.

C. Certifications: Wood timber and manufactured wood products shall be sourced from sustainably managed forests as certified by SmartWood, SCS, BVC, PwC, and displaying the FSC or PEFC or PEFC Member label.

D. Sustainability Standards and Certifications:

1. Adhesive and Sealant VOC Limits: According to South Coast Air Quality Management District [Rule 1168](#) and [GS-36](#) for aerosols.
2. VOC Limits: As tested using U.S. EPA Reference Test Method 24 and as defined by
 - a. South Coast Air Quality Management District Rules: In areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur.
 - 1). SCAQMD [Rule 1113](#), Architectural Coatings
 - 2). SCAQMD [Rule 1168](#), Adhesive and Sealant Applications
 - b. Bay Area Air Quality Management District Regulation: For containers larger than 16 oz., for areas where freeze/thaw conditions do exist or direct exposure to moisture can occur.
 - 1). BAAQMD [Regulation 8, Rule 51](#)
 - c. California Air Resources Board: For areas where freeze/thaw conditions do exist or direct exposure to moisture can occur.
 - 1). CARB for containers 16 oz. or less.
 - d. Green Seal Standards:
 - 1). [GS-11](#), Low Odor or Low VOC Paint
 - 2). [GC-03](#), Anti-Corrosive Paints, Second Edition, January 7, 1997
3. Certified Wood Materials: According to FSC-STD-40-004 chain-of-custody requirements.

[NOTE: Coordinate and edit to the correct Section number below.](#)

- E. Prototypes per SECTION 014000 or 014300: Provide materials or assemblies of each unit type for review and approval prior to benchmarking, manufacturing or fabrication production indicating
 - 1. Each different joint connection detail
 - 2. Each different support, and exposed fastener
 - 3. Bends, angles and corners
 - 4. Finishes
 - 5. Special grain patterns and acceptable wood defects.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery, Storage and Handling per industry and fabricator guidelines, SECTION 016000, and as follows:
 - 1. Delivery and Acceptance Requirements
 - a. Deliver materials to Project site in an undamaged condition, in original bundles and bearing intact labels.
 - b. Inspect shipped materials on delivery to ensure compliance with requirements of Contract Documents and to ensure that products are undamaged and properly protected.
 - 1). Reject damaged goods, and accept properly ordered, protected and undamaged goods.
 - 2. Storage and Handling Requirements
 - a. Protect wood materials and accessories from soiling, damage, and deterioration, handling with proper care in proportion to the fragility and hazard of each product and its finished surfaces.
 - b. Protect materials during shipping, handling, storage and installation from exposure to harmful conditions including, but not limited to, weather, vandalism, extreme changes in temperature, dryness or humidity, denting, chipping, gouging, warping, peeling, moisture, construction operations, and other damage.
 - c. Store product materials from exposure to harmful conditions including, but not limited to, weather, vandalism, extreme changes in temperature, direct sunlight, dryness or humidity, water, construction operations, and other damage.
 - 1). Store certified materials separately for auditing.
 - 3. Packaging Waste Management
 - a. Request that manufacturers, fabricators, suppliers and shippers provide least amount of packaging that adequately and properly protects, supports and contains the items shipped, and is reusable, returnable or recyclable.

1.7 WARRANTY

- A. Manufacturer Warranty: Contractor shall provide Wood Treatment manufacturer's twenty (20) year limited warranty against structural damage due to termites, carpenter ants and fungal decay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS / FABRICATORS

GREEN NOTE: For most current list of Vermont FSC Certified Products go to http://www.vtwoodnet.org/certified_wood_sources.html .

- A. FSC / [SmartWood Certified Resource Managers](#) of Vermont Timber
 - 1. Essex Timber Company, LLC, Ipswich, MA; 978.356.5995; [SmartWood Forest Management Public Summary](#) (*manages old Champion International lands*)
 - 2. Fountain Forestry Incorporated, Montpelier, VT; 802.223.8644; [SmartWood Forest](#)

[Management Public Summary](#)

3. Marsh-Billings-Rockefeller National Historical Park, Woodstock, VT; 802.457.3368; [SmartWood Forest Management Public Summary](#)
4. Redstart Forestry, Corinth, VT; 802.434.5491; [SmartWood Forest Management Certification Assessment](#)

B. FSC Certified Lumber Wholesalers in VT:

1. Currier Farms Forest Products, Danville, VT; 802.684.8128; SW-COC-1120 C and SCS-COC-001477 E
2. Lumberjack Lumber, Inc., White River Junction, VT; www.lumberjackwood.com; SCS-COC-001477 C
3. Vermont Family Forests, Bristol, VT; 802-453-7728; www.familyforests.org; SCS-COC-001477 D

C. Lumber Wholesalers in VT:

1. Richard S. Ward Lumber Co., Shelburne, VT; 802.985.5201
2. Champlain Hardwoods, Essex Junction, VT; 802.878.5000
3. Jack Tarmy Lumber Co., Brattleboro, VT; 802.257.0427
4. Mansfield Forest Products, Shelburne, VT; 802.425.7500

D. FSC Certified Sawmills in VT:

1. Allard Lumber Company, Brattleboro, VT; www.allardlumber.com
2. Gagnon Lumber, Inc., Pittsford, VT; 802.483.6550
3. S.A.W. Mill, Morrisville, VT; 802. 888.2700

E. Sawmills in VT List: (200+/- sawmills. [Search link](#)) The following list is representative: (http://www.vtfor.org/util/for_utilize_sawmill_search.cfm)

1. A Johnson Co. Bristol
2. Allen Lumber, Barre
3. Brandon Lumber
4. Britton Lumber
5. Cliffords
6. Fogg's
7. Heath Lumber, Hardwick
8. Lathrop's Mill, Bristol
9. LaValley's Lumber
10. Mill River Lumber
11. Morse Lumber
12. Oak Bros., Bradford
13. P&L Lumber, Wolcott
14. RK Miles, Manchester 362.1932
15. Rice Lumber, Shelburne
16. Sticks & Stuff, St. Albans
17. Swanton Lumber 868-3355

F. Kiln-Dried Processors in VT List:

1. AJ Wesolow Sawmill, Morrisville, VT; 802.888.2700
2. Brattleboro Kiln Drying (a Cersosimo Company), Brattleboro, VT; 802.254.4528
3. Caledonia Kiln Corp., Saint Johnsbury, VT; 802.748.3528
4. Morse Hardwoods, Essex Junction, VT; www.morsehardwoods.com
5. Stevens Kiln Drying, Wolcott, VT; 802.472.5013

G. Conventional Kiln-Dried Lumber Yard Processors in VT List:

1. Ames True Temper, Inc., Wallingford, VT; 802.446.2601
2. Britton Lumber Company, Inc., Fairlee, VT; 802.333.4388
3. Cersosimo Lumber, Co., Brattleboro, VT; www.cersosimolumber.com
4. Clifford Lumber, LLP, Hinesburg, VT; 802.482.2325
5. Cyr Lumber, Inc., Milton, VT; 802.893.4448
6. Granville Manufacturing Company, Granville, VT; www.woodsiding.com
7. Lathrop's Maple Supply, Bristol, VT; 802.453.2897
8. Stanley Tools, Pittsfield, VT; 802.746.8311

H. Dehumidification Kiln-Dried Lumber Yard Processors in VT List:

1. Carl Gerbeth Construction, St. Johnsbury, VT; 802.748.8412
2. Clarendon Hardwood Bowls, West Rutland, VT; 802.438.2345
3. Granville Manufacturing Company, Granville, VT; www.woodsiding.com
4. Kerber Farms & Mill, Guilford, VT; 802.257.0614
5. Mill River Lumber, Ltd, North Clarendon, VT; www.millriverlumber.com
6. P & R Lumber, Wolcott, VT; 802.472.6636
7. S.A.W. Mill, Morrisville, VT; 802.888.2700
8. Woodspirit, Pownal, VT; 802.823.5510

I. Trucking Contractors in VT List

1. Paul Fournier, Hinesburg, VT; 802.482.2617
2. HRS Transportation, Bristol, VT; 802.453.2147
3. Weston Pulpwood Sales, Inc., Essex Junction, VT; 802.864.4365

NOTE: Coordinate and edit to the correct Section numbers below.

J. Substitution Limitations: Manufacturers of equivalent products shall be considered when submitted in accordance with SECTION 013000 or SECTION 013300, and SECTION 016000 or 016200.

K. Product Options - Lumber Categories:

1. BOARDS. Size classifications:
 - a. Select grade
 - 1). B & Better
 - 2). C Select
 - 3). D Select
 - b. Common grade
 - 1). No. 1
 - 2). No. 2
 - 3). No. 3 (sheathing or sub-flooring)
 - 4). No. 4 (sheathing or sub-flooring)
 - 5). No. 5
2. DIMENSION LUMBER. Size classifications:
 - a. Structural light framing
 - 1). Grade: Select structural
 - 2). Grade: No. 1
 - 3). Grade: No. 2
 - 4). Grade: No. 3
 - b. Light framing
 - 1). Grade: Construction
 - 2). Grade: Standard
 - 3). Grade: Utility

- c. Studs
- d. Decking
 - 1). Select
 - 2). Commercial
- e. Structural joists and planks
 - 1). Grade: Select structural
 - 2). Grade: No. 1
 - 3). Grade: No. 2
 - 4). Grade: No. 3
- 3. TIMBERS. Size classifications:
 - a. Beams and Stringers
 - 1). Grade: Dense Select structural
 - 2). Grade: Dense No. 1
 - 3). Grade: No. 1
 - 4). Grade: No. 2
 - b. Posts and Timbers
 - 1). Grade: Dense Select structural
 - 2). Grade: Dense No. 1
 - 3). Grade: No. 1
 - 4). Grade: No. 2

2.2 DESCRIPTION

A. Regulatory Requirements

- 1. Mechanically Graded Lumber: Machine stress-rated lumber (MSR) or machine evaluated lumber (MEL) and grade stamped as conforming to the American Lumber Standard or SPIB and ASTM D6570.
- 2. Visually Graded Lumber: Lumber visually graded by trained graders for appearance and strength factors according to [PS20](#) rules as enforced by regional organization like [NeLMA](#) and others.
 - a. WWPAA G5: Western Wood Products Association.
 - b. WCLIB 17: West Coast Lumber Inspection Bureau.
 - c. SPIB 1003: Southern Pine Inspection Bureau.
 - d. SCMA Spec.: Southern Cypress Manufacturers Association.
 - e. NELMA Grading Rules: Northeastern Lumber Manufacturers Association.
 - f. RIS Grade Use: Redwood Inspection Service (RIS) Of The California Redwood Association (CRA).
 - g. NHLA Rules: National Hardwood Lumber Association.
- 3. Flame Spread Index per ASTM E84:
 - a. Class I or A; flame spread 0 – 25
 - b. Class II or B; flame spread 26 – 75
 - c. Class III or C; flame spread 76 – 200
 - d. Class IV; flame spread over 200

B. Sustainability Characteristics

NOTE. Finger-jointed lumber provides an efficient use of the timber resource allowing mills to combine shorter pieces of wood into dimensional, structural lumber.

- 1. [USGBC](#) LEED Rating: Comply with project requirements intended to achieve the following Rating, as measured and documented according to the USGBC LEED® Green Building [Rating System](#) and Version indicated:

NOTE: Each LEED Version requires a different credit total to achieve the desired LEED Rating.

NOTE. Select one of the following Ratings:

- a. Rating: Certified
- b. Rating: Silver
- c. Rating: Gold
- d. Rating: Platinum

NOTE. Select one of the following Versions:

- e. Version: [LEED-NC](#) v. 2.2 (New Construction)
 - f. Version: [LEED-EB](#) v. 2.0 (Existing Building)
 - g. Version: [LEED-CI](#) v. 2.0 (Commercial Interiors)
 - h. Version: [LEED for Schools](#), Version 2007
 - i. Version: [LEED for Retail](#), v. 2 (July 2008) Draft (Commercial Interiors)
 - j. Version: [LEED for Health Care](#)
2. Applicable LEED Credits: Performance requirements of the following LEED Categories and Credits apply to this Section and shall be met:
- a. Materials & Resources (MR):
 - 1). MR Credit 5.1, Regional Materials, 10% Extracted, Processed & Manufactured Regionally
 - 2). MR Credit 5.2, Regional Materials, 20% Extracted, Processed & Manufactured Regionally
 - 3). MR Credit 7, Certified Wood
 - b. Indoor Environmental Quality (EQ):
 - 1). EQ Credit 4.1, Low-Emitting Materials: Adhesives and Sealants

2.3 PERFORMANCE / DESIGN CRITERIA

A. Performance Capacities

- 1. NeLMA (WWPA) [Grade](#)
- 2. Moisture Content
 - a. 6 to 9 percent for hardwoods per NHLA
 - b. Maximum 19 percent by weight for framing lumber
 - c. National Grading Rule
 - 1). S-GRN, S-DRY, and MC 15. S-GRN (surfaced green)
- 3. Hardness per Janka Test, pounds per square inch (psi)
- 4. Movement in service requirement

B. Design Criteria

- 1. Solid wood grain pattern cut
 - a. Plain sawn (flat-sawn or flat-grained)
 - b. Quarter sawn (straight-grained, edge grained or straight-grained)
 - c. Rift sawn

2.4 MATERIALS

A. General:

- 1. Hardwood: Provide solid wood lumber and veneers per performance requirements. Do not provide finger-jointed wood unless clearly indicated in the Contract Documents.
- 2. Softwood: Provide solid wood lumber and veneers per performance requirements. Do not provide finger-jointed wood unless clearly indicated in the Contract Documents.

B. Structural and Framing Lumber:

- 1. Per [US DoC PS20](#) or Canadian [NLGA](#), and applicable [grading rules](#) of the inspection agency, as certified by ALSC's Board of Review for wood species as included in the Work:
 - a. NeLMA Grading Rules: Northeastern Lumber Manufacturers Association.

2. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
3. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.

2.5 WOOD TREATMENTS

RED NOTE: The USA phased out the use of CCA (chromated-copper-arsenate) treated wood on December 31, 2003. Hexavalent chromium and arsenic pentoxide heavy-metal compounds are known toxins, carcinogens and teratogens that does harm to people, pets and the environment.

- A. Decay and Insect-Resistant Wood: American Wood-Preservers Association [AWPA Standards](#); use only hexavalent chromium-free and arsenic-free materials.
1. Insect and decay protection treatment for wood products specified in this and other Division 06 sections, including:
 - a. Framing lumber
 - 1). Stud-framed walls and partitions
 - 2). Sill plates
 - 3). Roof rafters
 - 4). Wood blocking and furring
 - b. Floor joists, subflooring and other interior sheathing including plywood and OSB
 - c. Beams and purlins
 - d. Roof and floor trusses

GREEN NOTE: Naturally rot-resistant, untreated wood species have an average service life roughly equivalent to and sometimes better than treated lumber (9-50 yrs) depending on the species, treatment, and application.

2. Naturally Rot Resistant or Very Resistant (Untreated) Wood Species in accordance with Forest Products Laboratory 1999 Wood Handbook, Table 3-10: Heartwood (average untreated lifespan)
 - a. Vermont Sourced: Black Locust (30+), White Oak (18), Black Cherry, Chestnut, Black Walnut
 - b. Other North America Sourced: Osage-orange (60+), Western juniper (30+), Pacific yew (25), Red Cedar (23), Yellow Cedar, Redwood (21), Baldcypress (15-25), Arizona Cypress
 - c. Internationally Sourced: American Mahogany (Swietenia spp.) (60), Ipé (60), Goncalo Alves, Jarah, Lignumvitae, Honduras Mahogany, Purpleheart, Spanish Cedar, Teak.
3. Waterborne Preservative Material: AWP P5 using one or more of the following materials.

NOTE: Borate is considered safe for humans and other mammals, but is not for use in high-moisture areas.

Use boron-based preservatives for above-ground applications only.

- a. SBX. Inorganic Boron: AWP P25
 - 1). DOT. Disodium octoborate tetrahydrate
 - 2). BA. Boric Acid.
 - b. ACQ. Alkaline Copper Quat or Micronized Copper: AWP P26 (Type A), P27 (Type B), P28 (Type C) and P29 (Type D)
 - c. CA-B. Copper Boron Azole, Type B: AWP P32
 - d. CX-A. Copper HDO: AWP P33
 - e. CuN-W. Copper Naphthenate: AWP P34
 - f. PTI. Propiconazole Tebuconazole Imidacloprid: AWP P45
 - g. Sodium-silicate amorphous glass matrix (MBDC "Cradle to Cradle" Silver Certification for [TimberSIL](#))
4. Preservative Treatment by Pressure Process

- a. Lumber: AWWA C1, C31
5. Fire-Retardant Treatment by Pressure Processes
 - a. Wood preservative fire-retardant treatments used shall be free of halogens, sulfates and ammonium phosphate.
 - b. Fire-Retardant Formulations: AWWA P17 Lumber; ASTM D1435
 - c. UL listed eligible species of LUMBER and plywood for treatment:
 - 1). Lumber species include: Douglas fir, redwood, hem/fir, spruce/pine/fir, southern pine, white pine, ponderosa pine, western red cedar, red oak, yellow poplar.
 - 2). Plywood species include: Douglas fir, redwood, southern pine, lauan.
 - d. Flame spread of less than 25: ASTM E84, NFPA 255 or UL 723.
 - e. Fungicidal Efficacy: ASTM D1413
 - f. Corrosion Properties: Treated wood in contact with carbon steel, galvanized steel, aluminum, copper and red brass shall exhibit corrosion rates less than 1 mil (0.025mm) per year as per Federal Military Specification MIL-L-19140, Para. 4.6.5.2.
 - g. Treatment and Performance: Verified by qualified independent testing agency that establishes performance ratings.
 - h. Identify each piece or bundle of treated material shall bear identification of the testing agency to indicate performance with such rating.
6. Kiln-Dried After Treatment (KDAT) Moisture Content: 19 percent maximum for lumber and 18 percent for plywood.
7. Hygroscopic Requirements: Per ASTM D3201 at relative humidity up to 95 percent.

2.6 ASSEMBLY / FABRICATION

A. Drying Lumber

1. Lumber shall be carefully stacked and stickered (placing narrow spacers made from dry lumber between the layers of boards to allow airflow through the pile) as soon after sawing as possible.
 - a. Air-dry to 15 percent moisture content over several months to a year or more, depending on conditions and species.
 - b. Kiln-dry in a climate controlled enclosure to 8 percent moisture content over less than one month.
2. Construction grade requires from 12 to 14 percent moisture content.
3. Furniture grade requires from 6 to 8 percent moisture content.

B. Ease edges of lumber less than 1 inch (25mm) in nominal thickness to 1/16 inch (1.5mm) radius and edges of lumber 1 inch (25mm) or more in nominal thickness to 1/8 inch (3mm) radius.

C. Expansion / Contraction Movement: Assemble wood products using details that allow for expansion and contraction due to changes in environmental conditions.

2.7 ACCESSORIES

RED NOTE: Avoid specifying chromium plated metal finishes, the process which uses carcinogenic hexavalent chromium in a non-recyclable arsenic heavy metal salt bath.

- A. Fasteners: Of appropriate type, length and durability for wood product used to securely fasten to the substrate or other wood product for the intended life, exposure, and use of the unit.
- B. Multipurpose Construction Adhesive: Formulation complying with ASTM D3498 that is recommended for indicated use by adhesive manufacturer.

NOTE: Select one of the following deleting the other.

1. Use adhesives that comply with LEED Credit EQ 4.1 requirements.

2. Use adhesives that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
 1. Use NAF glues that comply with LEED Credit EQ 4.1 requirements.

PART 3 - EXECUTION

3.1 FIELD CONDITIONS

- A. Do not install rough carpentry materials that are wet, moisture damaged, or mold damaged.
 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, warping, or irregular shape.
 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.
 3. Remove damaged materials and replace with Architect acceptable materials.
- B. Existing Conditions
 1. Locate concealed framing, blocking and reinforcements that support woodwork and document on shop drawings before work is enclosed. All preparatory support work shall be subject to inspection and approval of Architectural Woodworker and other trades.

3.2 EXAMINATION

NOTE: Coordinate and edit to the correct Section number below.

- A. Examination per SECTION 017000 or 017100 or 017116, and as follows:
 1. Acceptance of Conditions: Carefully examine installation areas with Installer/Applicator present, for compliance with requirements affecting Work performance.
 - a. Verify that field measurements, surfaces, substrates, structural support, utility connections, tolerances, levelness, plumbness, humidity, moisture content level, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
 - 1). Test substrates as required by manufacturer to verify proper conditions.
 - b. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

NOTE: Coordinate and edit to the correct Section numbers below.

- A. Preparation per SECTION 017000 or 017100 or 017123, and as follows:
 1. Layout installation by marking extents of each item, and anchoring / fastening locations coordinated with blocking or other structural support.
 - a. Marks shall be covered up and hidden by installation.
 - b. Locate areas out-of-level and correct.
 2. Protect adjacent conditions per SECTION 017000 or 017100, and as follows:
 - a. Protect adjacent substrates, installed work and existing items from damage by construction operations with temporary but effective means.
 3. Product Preparation: Handle products in accordance with manufacturer's instructions and warranty requirement including, but not limited to:
 - a. Remove shipping / storage protection
 - b. Acclimatize product to installation location.

- c. Strictly adhering to manufacturer's handling and installation safety requirements.

3.4 ERECTION / INSTALLATION

NOTE: Coordinate and edit to the correct Section number below.

- A. Installation per Drawings, reviewed Shop Drawings, manufacturer's written instructions, SECTION 017000 or 017300 or 017316, and the following:
 - 1. General:
 - a. Place rough carpentry to indicated levels and lines, with members plumb, aligned, cut, and fitted.
 - b. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit.
 - c. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - d. Install wood framing per ANSI / AF&PA [NDS-2005](#), unless otherwise noted.
 - e. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated, and as required by AHJ.
 - f. For perimeter blocking anchorage spacing requirements refer to FM Data Sheet 1-49.
 - g. Fasten or anchor materials and units in a concealed manner with fasteners appropriate to use and anticipated durability. Attach rough carpentry work to substrate securely by anchoring and fastening as indicated, complying with ICC Table 2304.9.1, Fastening Schedule, and ICC-ES / [ESR-1539](#), which may supercede the ICC National Evaluation Report [NER-272](#).
 - 1). Do NOT use chromium-plated metal fasteners and anchors.
 - 2). Use only stainless steel or ASTM G185 galvanized fasteners with treated lumber.
 - 3). Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials.
 - 4). Make tight connections between members.
 - 5). Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.
 - 6). Place fasteners, when exposed, aligned in straight rows parallel with edges of members for exposed work, with fasteners evenly spaced, and with adjacent rows staggered.
 - 2. Special Techniques
 - a. Select preservative treated wood members in accordance with appropriate untreated lumber span tables.
 - 1). Provide ventilation of building cavities as required by code.
 - b. Install preservative treated wood in accordance with requirements of applicable codes and related Division 06 Sections.
 - 1). Avoid milling operations that could adversely affect preservative characteristics of borate preservative treated wood.
 - c. End Cut Treatment: Treat end cuts of borate preservative treated wood members over 2 inches (51mm) in thickness with field-applied end-coat prior to installation for Spruce-Pine-Fir (SPF) and Douglas Fir (DF) only.
 - d. Sill Plate: Where applicable, provide sill plate of preservative treated wood.
 - e. Fasten wood and wood products though sound wood, sorting and selecting to avoid characteristic imperfections like knots and checks.

NOTE: For installation of specific rough carpentry types refer to manufacturer written instructions and ANSI / AF&PA NDS-2005.

3.5 FIELD QUALITY CONTROL

NOTE: Coordinate and edit to the correct Section number below.

- A. Site Tests and Inspections: Per SECTION 014000 or 014500 or 014523, and as follows:

1. Allow and facilitate unscheduled inspections of timber stands and complete forestry operations to meet FSC or other sustainability standards.
2. Inspect framing installation for plumbness of walls and floor flatness.
 - a. Maximum 1/4 inch in 10 feet of height, and 1/2 inch out of level over 30 feet.

B. Non-Conforming Work per General Conditions and as follows:

1. Remove, Repair and Reinstall or Restore in Place damaged items.
 - a. Finish touch-up damaged surface finishes.
 - b. Apply EPA registered treatment to water-damaged treated lumber.
2. Replace damaged materials or items with New if repair not acceptable to Architect.

3.6 CLEANING

NOTE: Coordinate and edit to the correct Section number below.

A. Waste Management per SECTION 017000 or 017400 or 017419, and as follows:

1. Disposal Requirements:
 - a. Handle hazardous waste in strict accordance with manufacturers' recommendations and AHJ rules and regulations for materials regulated under RCRA (Resource Conservation and Recovery Act).
 - 1). Collect and store treated wood scrap and cut pieces for proper disposal.
 - b. On-site incineration not allowed.
2. Coordinate take-back program with manufacturer, if applicable.
 - a. Store and return pallets, containers and packaging to manufacturer or recycler for reuse or recycling.
 - b. Store scrap materials to be returned to manufacturer for recycling into new product.

NOTE: Coordinate and edit to the correct Section number below.

B. Provide Progress Cleaning per SECTION 017000 or 017400 or 017413, and as follows:

1. Work Areas: Continuously clean areas where work is in progress to the level of cleanliness necessary for safe and proper execution of the Work.
 - a. Clean and maintain completed construction until Substantial Completion.
2. Site: Continuously maintain Project site free of waste materials and debris.

NOTE: Coordinate and edit to the correct Section number below.

C. Provide Final Cleaning immediately prior to Substantial Completion inspection per SECTION 017000 or 017400 or 017423.

3.7 CLOSEOUT ACTIVITIES

NOTE: Coordinate and edit to the correct Section number below.

A. Substantial Completion Requirements per SECTION 017000 or 017700.

3.8 PROTECTION

- A. Protect installed work from weather, vandalism and construction operations damage until Final Completion or Owner occupancy, whichever comes first.

END OF SECTION

NOTE: Please **contact us** with comments, additions and deletions about this GuideSpec so we can make it better.

VERMONT SUSTAINABLE JOBS FUND

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