

SECTION 061603

CERTIFIED WOOD SHEATHING

CSI 3-PART **LONG-FORM** GUIDE SPECIFICATION
USE FOR CONTRACT DOCUMENT (CD) SPECIFICATION ISSUES
EDIT TO SUIT PROJECT

PART 1 - GENERAL

1.1 SUMMARY

- A. Work of this Section consists of composite wood panel sheathing and includes, but is not limited to, the following:
1. Exterior wood panel sheathing
 2. Engineered wood panel products
 3. Structural panels
 4. 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 061003, CERTIFIED ROUGH CARPENTRY
 4. SECTION 061703, CERTIFIED SHOP FABRICATED STRUCTURAL WOOD
 5. SECTION 062003, CERTIFIED FINISH CARPENTRY: Millwork, molding and trim.
 6. SECTION 064003, CERTIFIED ARCHITECTURAL WOODWORK: Wood casework.
 7. SECTION 096403, CERTIFIED WOOD FLOORING
 8. SECTION 125083, CERTIFIED WOOD FURNITURE

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. CoC. Chain-of-Custody.
 3. NAF. No Added Formaldehyde.
 4. NAUF. No Added Urea Formaldehyde
 5. Per. In accordance with.

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 verified wood from forests complying with responsibly managed forest standards that meet broad social, economic and environmental goals.

2. Engineered Composite 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.
 - a. Hardboard. A panel manufactured primarily from inter-felted lignocellulosic fibers that are consolidated under heat and pressure in a hot-press to a 500 kg/m^3 (31 pcf) density or greater.
 - b. HDO. High Density Overlay plywood is made with a thermosetting resin-impregnated fiber surface bonded to both sides under heat and pressure with a final factory finish.
 - c. MDF. Medium Density Fiber Core Hardwood Plywood is a composite panel product composed primarily of cellulosic fibers and a bonding system cured under heat and pressure. MDF is typically between 500 kg/m^3 (30 pcf) and 1000 kg/m^3 (60 pcf) density. MDF with density below 50 pcf is also known as LDF or Low Density Fiberboard. MDF with density >60 pcf is known as HDF or High Density Fiberboard.
 - d. MDO. Medium Density Overlay plywood is made with a thermosetting resin-impregnated fiber surface bonded to both sides under heat and pressure but manufactured with a surface tooth ready for paint or other coating types.
 - e. Plywood. A panel built up of sheets of veneer called plies, united under pressure by a bonding agent to create a panel with an adhesive bond between plies as strong as or stronger than, the wood. Plywood is constructed of an odd number of layers with the wood grain of adjacent layers laid perpendicular to each other. Layers consist of a single-ply or two or more plies laminated with parallel grain direction. Outer layers and all odd-numbered layers generally have the grain direction oriented parallel to the long dimension of the panel. The layers with alternating grain direction equalize strains, reduce splitting, and minimize dimensional change and warping of the panel.
 - f. OSB / Waferboard. Oriented Strand Board are panel products primarily made of aspen or poplar (as well as southern yellow pine in the US) strands or wafer chips bonded together under heat and pressure using a waterproof phenol-formaldehyde resin adhesive or waterproof polyurethane binder. With OSB the strands are oriented parallel to the long axis of the board. With waferboard the strands are oriented randomly.
 - g. Particleboard. A generic term for a composite panel primarily composed of cellulosic materials (usually wood), generally in a form of discrete wood pieces or particles, as distinguished from fibers, bonded together with a bonding system, and which may contain additives.
3. FSC: Forest Stewardship Council; www.fsc.org
 - a. [FSC Forest Management Certification](#)
 - b. [FSC CoC](#)
 - c. [FSC Controlled Wood](#)
 - 1). FSC Pure
 - 2). FSC Mixed
 - 3). FSC Recycled
4. [HAP](#). Hazardous Air Pollutant
5. HDF. High Density Fiberboard (>60 pcf / 1000 kg/m^3)
6. LDF. Low Density Fiberboard (between 30 pcf and 50 pcf / 500 kg/m^3 and 800 kg/m^3)
7. [LEED®](#). Leadership in Energy and Environmental Design, a set of USGBC rating programs that are applied to building projects.
8. MDF. Medium Density Fiberboard (between 60pcf and 30pcf / 1000 kg/m^3 and 500 kg/m^3)
9. [MIC](#). Methyl diisocyanate ($\text{C}_2\text{H}_3\text{NO}$) is an extremely toxic isocyanate chemical compound and HAP, used in making industrial adhesives and rubber products.

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, hemorrhages, bronchial pneumonia and death.

There is no known antidote.

10. Northern Forest: Timber stands that range from the NY Adirondacks through Vermont and New Hampshire up into Maine. <http://www.northernforestalliance.org/explore.htm>

11. Sheathing: Structural plywood, OSB, wafer-board panels, and non-structural cellulose-fiber panels.
12. Structural Panels: A panel manufactured from veneers, wood strands or wafers, or a combination of veneer and wood strands or wafers, bonded together with waterproof synthetic resins or other suitable bonding systems and intended for use in structural applications.
13. 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/index.php?id=pc, 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>.
14. Sustainable Forest Management: The UN-FF (United Nations Forum on Forests) in 2004 adopted these 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.
15. 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.
16. VOG. Volatile Organic Compounds are chemical compounds that have a high vapor pressure and low water solubility. They include a variety of chemicals, some of which may have short- and long-term adverse health effects when concentrated indoors.

C. Referenced Standards per SECTION 014000 and as follows:

NOTE: Add the following language into Division 01 (modify to suit project):

“Each Reference Standard listed throughout this Specification shall be the latest issue accepted by the AHJ, and as of the document bid issue date.”

1. AFPA / AF&PA. American Forest & Paper Association; www.afandpa.org
 - a. ASD (Allowable Stress Design) / LRFD (Load and Resistance Factor Design), Manual for Engineered Wood Construction
2. ANSI. American National Standards Institute; www.ansi.org
 - a. ANSI A208.1-1998, Particleboard
 - b. ANSI A208.2-1994, Medium Density Fiberboard
 - c. ANSI / AHA A135.4-1995, Basic Hardboard
 - d. ANSI / AFPA (NDS®) National Design Specification for Wood Construction
 - e. HPVA / ANSI HP-1-1994, Hardwood and Decorative Plywood
3. APA. APA – The Engineered Wood Association; www.apawood.org
 - a. APA Engineered Wood Construction Guide, Form E30
4. ASME. American Society of Mechanical Engineers; www.asme.org
 - a. ASME [B18.6.1](#), Wood Screws (Inch Series)
 - b. ASME [B18.6.4](#), Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws, Inch Series
5. ASTM. ASTM International; www.astm.org
 - a. ASTM D1038, Standard Terminology Relating to Veneer and Plywood
 - b. ASTM D1554, Standard Terminology Relating to Wood-Base Fiber and Particle Panel Materials
 - c. ASTM D1761, Test Methods for Mechanical Fasteners in Wood
 - d. ASTM D5582, Standard Test Method for Determining Formaldehyde Levels from Wood Products Using a Desiccator
 - e. ASTM D7033, Standard Practice for Establishing Design Capacities for Oriented Strand Board (OSB) Wood-Based Structural-Use Panels
 - f. ASTM D2719, Standard Test Methods for Structural Panels in Shear Through-the-Thickness

- g. ASTM E72, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- h. ASTM E455, Standard Method for Static Load Testing of Framed Floor or Roof Diaphragm Constructions for Buildings
- i. ASTM E661, Standard Test Method for Performance of Wood and Wood-Based Floor and Roof Sheathing Under Concentrated Static and Impact Loads
- j. ASTM E1333, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber
- k. ASTM E2129, Standard Practice for Data Collection for Sustainability Assessment of Building Products
- l. ASTM E2322, Standard Test Method for Conducting Traverse and Concentrated Load Tests on Panels used in Floor and Roof Construction
- m. ASTM F1482, Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
- 6. [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.

- 7. AWWA. American Wood Preservers Association; www.awpa.com
- 8. BAAQMD. Bay Area Air Quality Management District; www.baaqmd.gov
- 9. CARB. California Air Resources Board, a department of the California Environmental Protection Agency; www.arb.ca.gov

NOTE: CARB regulations (required by LEED™) govern formaldehyde emissions in both raw composite wood panels and finished products sold or used in California.

Both imported and domestic products are regulated and must be third-party certified and clearly labeled to indicate they meet California's requirements.

CARB regulations apply to hardwood plywood, particleboard, and medium density fiberboard (MDF) and all products (such as furniture, cabinets, flooring, store fixtures, moldings and millwork, countertops, decorative household items, doors, etc.) made with those products.

Phase I emission requirements were effective beginning January 1, 2009.

- 10. [CPA](#). Composite Panel Association; <http://www.pbmdf.com/>
 - a. CARB Certification Program; <http://www.carbrule.org/>
 - b. EPP. Environmentally Preferable Product Grademark Program
- 11. EPA. U.S. Environmental Protection Agency; www.epa.gov
- 12. FSC. Forest Stewardship Council; Certified Sustainably Managed Lumber; www.fsc.org; <http://www.fscus.org/>
 - a. Certifier: Rainforest Alliance 'SmartWood' Program; <http://www.smartwood.org>
 - b. Certifier: Scientific Certification Systems (SCS) 'Forest Conservation Program' (FCP); <http://www.scs-certified.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

NOTE: Key strengths of the FSC network and organization is its transparency and ability to pioneer approaches and adaptations to certification. FSC as a standard is more demanding especially in participatory approaches in forest management planning and in the identification and protection of threatened species. FSC also sets detailed requirements for the timber production methods. FSC is 6 to 12 times more prescriptive than PEFC and has more NGO influence

credibility.

The VFF Certified Ecoforestry is equivalent to FSC for Vermont.

PEFC is more rigid towards contractors who are assessed during a group certification when working in certified forests. PEFC group certification is based on a management system that requires internal revisions at the group and local levels. PEFC allows more forest producer influence and is less stringent.

13. [HMA](#). Hardwood Manufacturers Association; www.hardwoodinfo.com
14. [HPVA](#). Hardwood Plywood Veneer Association; www.hpva.org
 - a. HVPA HP-1, Voluntary Standard for Hardwood and Decorative Plywood
15. ICC. International Code Council; www.iccsafe.org
 - a. ICC Evaluation Service Acceptance Criteria AC-182 Acceptance Criteria for Wood-Based Structural-Use Panels
16. ICC/ES. International Code Council / Evaluation Service; www.icc-es.org
17. ISO/IEC. International Organization for Standardization, International Electrotechnical Commission; www.iec.ch/
18. [NeLMA](#). Northeastern Lumber Manufacturers Association; www.nelma.org
 - a. Standard Grading Rules for Northeastern Lumber 2006
19. NFPA. National Fire Protection Association; www.nfpa.org
20. NHLA. National Hardwood Lumber Association; www.natllhardwood.org
21. NIST. U.S. National Institute of Standards and Technology; www.nist.gov
 - a. United States Department of Commerce, Procedures for the Development of Voluntary Product Standards
 - 1). Voluntary Standard [PS 1](#), Construction and Industrial Plywood
 - 2). Voluntary Standard [PS 2](#), Wood-Based Structural-Use Panels
 - 3). Voluntary Standard [PS 20](#), National Grading Rules, Framing & Decking
22. [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>
23. SBA. Structural Board Association; www.osbguide.com
24. SCAQMD. South Coast Air Quality Management District; www.aqmd.gov
25. UL. Underwriters Laboratories Inc.; www.ul.org
26. USGBC. United States Green Building Council; www.usgbc.org
27. VFF. Vermont Family Forests; www.familyforests.org
 - a. VFF Certified Ecoforestry; <http://www.familyforests.org/ecoforestry/>

1.3 ADMINISTRATIVE REQUIREMENTS

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

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

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, manufacturing standards followed, prefinishes, treatment

systems, adhesives, glues, resins, mechanical fastening, performance criteria, usage limitations, and installation recommendations.

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

Delete Shop Drawing requirement if not applicable.

- B. Shop Drawings per SECTION 013000 or 013300 and as follows: Submit fabrication and assembly Shop Drawings indicating structural shear walls indicating materials, piece quantities and dimensions, each exposed piece surface finish and jointing, assembly configuration, specific attachments and attachment requirements.
1. Drawings for installed products indicated to comply with design loads shall include structural analysis data, signed and sealed by the qualified professional engineer responsible for their preparation.

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 color charts or sample chains indicating manufacturer's complete range for each type of panel material finish exposed to view not yet selected by Architect or specified.
 2. Final Selection: Submit a minimum 6 inch (150mm) square sample of each different profile (grain and species for clear finishes) with proposed finishes, and fasteners.
- 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. APA trademarks shall include, but not be limited to, structural panel grade(s), span rating(s), edge type(s), bond classification(s), Product Standard, veneer grade(s), and species group number(s).
 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 specified requirements.

NOTE: Edit LEED Requirements below to suit project.

- E. Sustainable Design (USGBC [LEED®](#)) Submittals: Submit the following in accordance with the requirements of SECTION 018113, LEED REQUIREMENTS:
1. LEED Credit MR, Materials & Resources. Submit completed LEED 2009-NC v.3 Submittal Templates in accordance with SECTION 017419, CONSTRUCTION WASTE MANAGEMENT, and other required paperwork as follows:
 - a. MR 4.1: Recycled Content: Minimum 10 Percent (post-consumer + 1/2 pre-consumer)
 - b. MR 4.2: Recycled Content: Minimum 20 Percent (post-consumer + 1/2 pre-consumer)
 - 1). Submit product data indicating percentage by weight of recycled content with a statement indicating costs for each.
 - c. MR 5.1: Regional Materials, Regionally Extracted, Processed & Manufactured Products, 10 Percent

- d. 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
 - e. MR 6: Rapidly Renewable Materials
 - 1). Submit the product name, material manufacturer, total product cost for each tracked material, total product cost for each tracked material, percentage of product by weight, for each material that meets the rapidly renewable criteria.
 - f. 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 IEQ, Indoor Environmental Quality. Submit completed LEED 2009-NC v.3 Submittal Templates and required paperwork as follows:
- a. IEQ 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.
 - b. IEQ 4.2: Low Emitting Materials, Paints & Coatings, VOC Data
 - 1). Submit manufacturers' product data for interior paints and coatings, including printed statement of VOC content and MSDS Sheets.
 - 2). Clear wood finishes, floor coatings, stains, sealers, and shellacs applied to interior elements meet the VOC content limit requirements established by SCAQMD Rule 1113, Architectural Coatings, effective January 1, 2004.
 - c. IEQ 4.4: Low Emitting Materials, Indoor Composite Wood & Agrifiber, No Added Urea-Formaldehyde Content
 - 1). Submit manufacturers' product data for composite wood products used in the building showing they contain no added urea-formaldehyde.

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. Executed Warranty Documentation: Manufacturers' material warranties.
 3. Record Documents: Drawings, Specifications, and Product Data.

NOTE: Edit LEED Requirements below to suit project.

4. Sustainable Design Closeout Documentation: Submit completed USGBC LEED® [Worksheet Templates](#) for the following credits:
 - a. MR 4.1, MR 4.2, MR 5.1, MR 5.2, MR 6, MR 7
 - b. IEQ 4.1, IEQ 4.2, IEQ 4.4

1.5 QUALITY ASSURANCE

A. Regulatory Requirements

1. Engineered wood shall display the APA trademark assuring the product is manufactured in conformance with APA performance standards shown in the mark.
2. Provide fire retardant treatment which complies with the following regulatory requirements:
 - a. FHA Minimum Property Standard #2600.
 - b. HUD Materials Release 1261.
3. International Organization for Standards (ISO) 14001, 9001, and 9002 compliant.

B. Qualifications:

1. Manufacturer: A firm capable of providing Third Party Certification that composite 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.
3. Engineer: Licensed by the AHJ where Project site resides.

C. Certifications: Manufactured composite wood products shall be sourced from sustainably managed forests as certified by SmartWood, SCS, SGS, BVC, SFI, ATFS, CSA, or VFF, and displaying the FSC, PEFC, PEFC member, or VFF label.

NOTE: Edit sustainability standards and certifications below to suit project.

D. Sustainability Standards and Certifications:

1. Engineered wood products shall be made using non-toxic glues, no added urea-formaldehyde resins, and 100 percent recycled wood fibers and/or certified sustainably harvested wood.
2. Adhesive and Sealant VOC Limits: According to South Coast Air Quality Management District [Rule 1168](#) and [GS-36](#) for aerosols.
3. VOC Limits: As tested using U.S. EPA Reference Test Method 24 and as defined by
 - a. South Coast Air Quality Management District (SCAQMD) 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 (BAAQMD) 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 (CARB): 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 (GS) Standards:
 - 1). [GS-11](#), Low Odor or Low VOC Paint
 - 2). [GC-03](#), Anti-Corrosive Paints, Second Edition, January 7, 1997
4. Composite wood and agrifiber products shall contain no added urea-formaldehyde resins.
5. Certified Wood Materials: According to [FSC-STD-40-004](#) chain-of-custody requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery, Storage and Handling per industry and manufacturer 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. Reject damaged goods, and accept properly ordered, protected and undamaged goods.
2. Storage and Handling Requirements
 - a. Protect 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. Store product materials from exposure to harmful conditions including, but not limited to, weather, extreme changes in temperature, direct sunlight, extreme dryness or humidity, water, construction operations, and other damage.
 - 1). Store certified materials separately for auditing.
3. Packaging Waste Management
 - a. Require manufacturers, fabricators, suppliers and shippers to provide least amount of packaging that adequately and properly protects, supports and contains the items shipped, and is reusable, returnable or recyclable.

PART 2 - PRODUCTS

2.1 MANUFACTURERS / FABRICATORS

GREEN NOTE: For the most current list of FSC Certified Products go to http://www.vtwoodnet.org/certified_wood_sources/certified_wood_sources_5.html
There are currently no Vermont manufacturers of composite wood panel products.

- A. **FSC Sourced** Particleboard, MDF, Plywood Manufacturer/Distributor List:
1. FSC Fire-Rated Panels
 - a. Panel Source International, St. Albert, AB, Canada; 780.458.1007; www.panelsource.net
 2. FSC Hardboard
 - a. Eucatex of North America, Inc., Alpharetta, GA; 678.624.0160; pfurlanetto@eucatex.net
 3. FSC Hardwood Plywood:
 - a. Mt. Baker Products, Inc, aka Mt. Baker, Bellingham, WA; 360.733.3960; www.mtbakerplywood.com
 4. FSC MDF
 - a. Chesapeake Plywood, LLC, Baltimore, MD; 410.244.0055; www.chesapeakeplywood.com
 - b. Duratex of North America, High Point, NC; 336.885.1500; phil.kusiak@duratex-northamerica.com
 - c. Eucatex of North America, Inc., Alpharetta, GA; 678.624.0160; pfurlanetto@eucatex.net
 - d. Panel Source International, St. Albert, AB, Canada; 780.458.1007; www.panelsource.net
 5. FSC OSB
 - a. Grant Forest Products, Mississauga, Ontario, Canada; 905.858.3200; www.gfp-inc.com
 6. FSC Particleboard
 - a. Atlantic Plywood Corporation, Woburn, MA; 585.768.7440 ext. 201; www.atlanticplywood.com
 - b. Chesapeake Plywood, LLC, Baltimore, MD; 410.244.0055; www.chesapeakeplywood.com
 - c. Collins Products, Klamath Falls, OR; 541.885.3289; 800.547.1793; www.collinsco.com
 - d. Columbia Forest Products, Portland, OR; 800.547.4261; www.columbiaforestproducts.com
 - e. Fiberresin Industries, Inc. and Rodman Industries, Oconomowoc, WI; 262.567.4427; www.fiberresin.com

- f. Panel Source International, St. Albert, AB, Canada; 780.458.1007; www.panelsource.net
- 7. FSC Plywood
 - a. Atlantic Plywood Corporation, Woburn, MA; 585.768.7440 ext. 201; www.atlanticplywood.com
 - b. Chesapeake Hardwood Products, Inc., West Chesapeake, VA; 757.543.1601; www.chpi.com
 - c. Chesapeake Plywood, LLC, Baltimore, MD; 410.244.0055; www.chesapeakeplywood.com
 - d. Columbia Forest Products, Portland, OR; 800.547.4261; www.columbiaforestproducts.com
 - e. Panel Source International, St. Albert, AB, Canada; 780.458.1007; www.panelsource.net
 - f. S.J. Morse Company, Capon Bridge, WV; 304.856.3423; www.sjmorse.com
 - g. States Industries, Eugene, OR; 800.626.1981; www.statesind.com
- 8. FSC Veneer Panels
 - a. Architectural Forest Products, Inc., Two Rivers, WI; 920.793.4404; www.savetheforest.com
 - b. Midwest Veneer & Pressing, Inc., Wyoming, MN; 651.462.4389; www.midwestveneer.com
 - c. S.J. Morse Company, Capon Bridge, WV; 304.856.3423; www.sjmorse.com

GREEN NOTE: The following CPA (Composite Panel Association) EPP and CARB (California Air Resources Board) compliant manufacturers meet stringent formaldehyde and other environmental standards.

At present no Vermont manufacturer of wood products have been accepted to the list.

- B. CPA [CARB compliant composite wood panel producers](#); Phase I (2009) formaldehyde emissions of < 0.18; Phase II (effective 2011) < 0.09 ("California 93120 Compliant for Formaldehyde" or "CARB ATCM 93120 Phase 2 / Phase 1 Certified")

NOTE: This regulation is applicable to hardwood plywood with a veneer core (HWPW-VC), hardwood plywood with a composite core (HWPW-CC), particleboard (PB), medium density fiberboard (MDF), thin tMDF (<8 mm thick), low density fiberboard (LDF), and high density fiberboard (HDF) bonded with urea formaldehyde (UF) resins.

Independent third party testing is required to prove that composite wood products are made with no-added formaldehyde (NAF), or ultra-low emitting formaldehyde (ULEF) resins.

NOT applicable to hardboard, structural (softwood) plywood and OSB bonded with phenol formaldehyde (PF) or melamine urea formaldehyde (MUF) resins.

No-added urea formaldehyde

Highest physical properties

100% recycled wood fiber or 100% post consumer recycled wood waste

FSC mixed credit certified

LEED® credit support: MR 4.1, 4.2, 5.1, 5.2, 7 & IEQ 4.4

CARB ATCM 93120 Phase 2 Certified

Third party certification - SCS, EPP

CHPS compliant - California section 01350 approved

- 1. Hardwood plywood
 - a. [PureBond®](#) by Columbia Forest Products
 - b. [Classic Core®](#) by Columbia Forest Products

- c. [GreenT™](#) by Timber Products Co.
 - d. [SkyPly FSC](#) by Roseburg
 - e. [SkyPly FSC CFC Veneer Core](#) by Roseburg
 - 2. Particleboard
 - a. [EVR™ Panels](#) by ATC Panels
 - b. [Boise Evergreen™](#) by Boise Cascade
 - c. [Collins Pine FreeForm™](#) by Collins Products
 - d. [VESTA](#) by Flakeboard
 - e. [SkyBlend FSC](#) by Roseburg
 - f. [Encore™](#) by Sierra Pine
 - g. [TemStock - FREE](#) by Temple-Inland / Del
 - h. [GreenT™](#) by Timber Products Co.
 - 3. MDF
 - a. [MDF & HDF](#) by Clarion Boards
 - b. [Extira®](#) by CMI International
 - c. [VESTA MDF](#) by Flakeboard
 - d. [Arreis®](#) by Sierra Pine
 - e. [Meditate® II](#) by Sierra Pine
 - f. [Medex®](#) by Sierra Pine
 - g. [Meditate® 3D](#) by Sierra Pine
 - h. [Meditate® FR](#) by Sierra Pine
 - i. [Meditate®](#) by Sierra Pine
 - j. [Thin MDF](#) by Sierra Pine
 - k. [MDF](#) by Sierra Pine
 - l. [UltraStock™ – FREE MDF](#) by Temple-Inland / Del-Tin Fiber
- C. CPA [Environmentally Preferable Products](#) (EPP); Use of recycled and/or recovered wood fiber and adherence to voluntarily lower formaldehyde emission standards than government regulations as defined by Federal Executive Order 13101.
- 1. EPP Particleboard
 - a. ATC Panels, Inc., Franklin, VA; [www.atcpanels.com](#)
 - b. Boise Cascade Corporation, Boise, ID; [www.bc.com/particleboard](#)
 - c. Collins Products, LLC, Klamath Falls, OR; [www.collinswood.com](#)
 - d. Flakeboard, OR, SC, LA, New Brunswick; [www.flakeboard.com](#)
 - e. MASCO Builder Cabinet Group Rapid City, SD; [www.merillat.com](#)
 - f. Northern Engineered Wood Products, Inc., Smithers, British Columbia; [www.newpro.ca](#)
 - g. Panolam Industries International, Huntsville, Ontario; [www.panolam.com](#)
 - h. Potlatch Forest Products, Post Falls, ID; [www.potlatchcorp.com](#)
 - i. Roseburg, OR, MI, MT, (Russellville) SC, MS, GA; [www.rfpco.com](#)
 - j. SierraPine, GA, CA, (Springfield) OR; [www.sierrapine.com](#)
 - k. Tafisa Canada and Company Ltd., Lac-Megantic, Quebec; [www.tafisa.ca](#)
 - l. Temple-Inland, TX, AR, AL, GA; [www.temple.com](#)
 - m. Timber Products Company, Medford, OR; [www.timberproducts.com](#)
 - n. Uniboard, Moncure, NC, Sayabec and Val-d'Or, Quebec; [www.uniboard.com](#)
 - o. Waverly Particleboard Company, LLC, Waverly, VA; 840.834.3555
 - p. Webb Furniture Enterprises, Inc., Galax, VA; [www.webbfurn.com](#)
 - 2. EPP MDF
 - a. ATC Panels, Inc., Franklin, VA; [www.atcpanels.com](#)
 - b. Del-Tin Fiber, LLC, El Dorado, AR; [www.temple.com](#)
 - c. Flakeboard, OR, SC, AR, New Brunswick, Ontario; [www.flakeboard.com](#)
 - d. Georgia-Pacific Corporation, Monticello, GA; [www.gp.com](#)
 - e. Plum Creek MDF, Inc., Columbia Falls, MT; [www.plumcreek.com](#)
 - f. Roseburg, Holly Hill, SC; [www.rfpco.com](#)
 - g. SierraPine, Medford, OR; [www.sierrapine.com](#)

- h. Temple-Inland, Mt. Jewett, PA; www.temple.com
 - i. Uniboard, Mont-Laurier, Quebec; www.uniboard.com
 - j. Unilin US MDF, Mt. Gilead, NC; www.unilin.com
 - k. West Fraser Mills Ltd., British Columbia, Alberta; www.westfraser.com
 - l. (Pending) Langboard Inc., Willacoochee, GA; www.langboard.com
3. EPP Hardboard
- a. Stimson Lumber Company, Forest Grove, OR; www.stimsonlumber.com
- D. Substitution Limitations: Manufacturers of equivalent products beyond those listed above shall be considered when submitted per DIVISION 01, using CSI Substitution Request Form 1.5C (During the Bidding Phase) or Form 13.1 (After the Bidding Phase.) [link](#)
- E. Product Options
- 1. Subflooring
 - 2. Underlayment
 - 3. Wall Sheathing
 - a. Diaphragms
 - b. Shear Walls
 - 4. Roof Sheathing
 - 5. Plywood, face-veneers bonded to core of:
 - a. Plywood, 3, 5, 7 or more plies
 - b. Particleboard
 - c. MDF
 - d. HDF
 - e. Composite cross-bands with plywood inner core
- F. APA Rated Products: [APA Panel Handbook & Grade Glossary](#); [APA Technical Papers](#)
- 1. APA Rated Sheathing
 - a. Grade (Face-Back)
 - 1). A-A
 - 2). A-A Exterior
 - 3). A-B
 - 4). A-B Exterior
 - 5). A-C Exterior
 - 6). A-D
 - 7). AFG-01
 - 8). B-B Utility panel
 - 9). B-B Exterior
 - 10). B-B Plyform®
 - 11). B-C Exterior B-D
 - 13). C-C Plugged Exterior
 - 14). C-D Plugged
 - 15). Decorative
 - 16). Underlayment C-C Plugged Exterior
 - 17). Underlayment
 - 18). Veneer
 - a). N
 - b). A
 - c). B
 - d). C Plugged
 - e). C
 - f). D
 - b. Exposure Durability [Bond Classification \(Form TT-009\)](#) Rating:
 - 1). Exterior

- 2). Exposure 1 rating
 - 3). Exposure 2 rating
 - 4). Interior
 - 5). Marine
 - 6). Plyron®
 - 7). Structural I
 - 8). COM-PLY®
 - 9). PRP®
 - c. Span rating:
 - 1). 12/0
 - 2). 16/0
 - 3). 20/0
 - 4). 24/16
 - 5). 32/16
 - 6). 40/20
 - 7). 48/24
 - d. Thickness:
 - 1). 5/16 inch
 - 2). 1/2 inch
 - 3). 5/8 inch
 - 4). 3/4 inch
 - 5). 1 inch
 - 6). 1-1/4 inch
 - e. Edge Joint / Treatment:
 - 1). Banding
 - 2). Bevel
 - 3). Butt or Square
 - 4). Chamfer
 - 5). Rabbet
 - 6). Scarf
 - 7). Shiplap
 - 8). T&G
 - f. Glue Resin:
 - 1). Resorcinol (C₆H₆O₂)
 - 2). Liquid Polyvinyl (White Glue)
 - 3). Phenolic (Formaldehyde)
 - 4). ~~Urea (Formaldehyde)~~
- RED NOTE: Urea formaldehyde is a known carcinogen and a VOC whose emissions are carefully tested for. Do not specify. Chose one of the other glue resins.
- g. Plies:
 - 1). 3
 - 2). 4
 - 3). 5
 2. APA Rated Siding:
 - a. Surface Treatment:
 - 1). V-Groove
 - 2). Channel Groove
 - a). Kerfed
 - b). 303® or Reverse Board & Batten
 - 3). Deep Groove (APA Texture One-Eleven® or 1-11®)
 - 4). Brushed
 - 5). Rough Sawn
 - 6). Texture Embossed (MDO)
 3. APA Rated Sturd-I-Floor
 - a. 2-4-1®

4. APA Rated Sturd-I-Wall
5. Screws: Flat head wood
 - a. #8
 - b. #6
 - c. #4
6. Nails:
 - a. Common and Box: 16d, 8d, 10d
 - b. Scaffold: 8d, 10d
 - c. Siding
 - d. Casing and Finish: 4d, 6d, 8d
 - e. Roofing
 - f. Drywall: 4d, 6d
 - g. Underlayment and Finish Floor:
 - 1). 8d, 2-1/2 inch screw-shank for hardwood strip flooring
 - 2). 3d ring-shank for 1/2 or less panels
 - 3). 4d deformed-shank for 19/32 through 3/4 inch
 - 4). 3/4 inch brad, 1 inch brad, 3d finish, or 1 inch blue-lath for 1/4 inch panels
 - 5). Galvanized or coated non-staining for exterior installations
 - h. Accessories
 - 1). Metal panel clip
 - 2). Z Flashing

2.2 DESCRIPTION

A. Regulatory Requirements

1. CPA [EPP Certified](#) MDF, Particleboard and Hardboard; ≤ 0.20 ppm formaldehyde emissions per ASTM E1333.
2. No Added Urea-Formaldehyde (NAF) MDF, Particleboard and Hardboard.
3. Ultra-Low Emitting (ULEF) MDF, Particleboard and Hardboard.

B. Sustainability Characteristics

1. Finger-jointed lumber provides an efficient use of the timber resource allowing mills to combine shorter pieces of wood into dimensional, structural lumber.
2. I-joists have a very high strength-to-weight ratio and provide structural support for floors and roofs using one half the amount of wood that is required for traditional solid sawn joists.

RED NOTE: MDI (polymeric diphenyl methane di-isocyanate), an EPA toxic material, and the less toxic but more commonly used Phenol-Formaldehyde liquid and powdered resins are used to manufacture OSB, Plywood and other Engineered Wood Products.

3. OSB consists of small wood chips that can be harvested from fast growing trees, as opposed to the larger dimensional timber required for the manufacture of plywood.

GREEN NOTE: Although EPS foam is derived from a limited petroleum resource, it takes only one quart of oil to create forty quarts of expanded foam, which is in effect, mostly air. EPS foam core contains no CFC's, HCFC's, or formaldehyde.

4. Structural panel systems have a core of expanded polystyrene (EPS) and OSB sheathing, these panels are structural, energy efficient and simple to erect.
5. [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 2009-NC](#) v. 3 (New Construction)
 - f. Version: [LEED 2009-EB](#) v. 3 (Existing Building)
 - g. Version: [LEED 2009-CI](#) v. 3 (Commercial Interiors)
 - h. Version: [LEED 2009 for Schools](#)
 - i. Version: [LEED for Retail](#), v. 2 (July 2008) Draft (Commercial Interiors)
 - j. Version: [LEED for Health Care](#)
6. Applicable LEED Credits: Performance requirements of the following LEED Categories and Credits apply to this Section and shall be met:
- a. Materials & Resources (MR) Credits: 4.1, 4.2, 5.1, 5.2, 6, 7
 - b. Indoor Environmental Quality (IEQ) Credits: 4.1, 4.2, 4.4

2.3 PERFORMANCE / DESIGN CRITERIA

A. Performance Capacities

- 1. NHLA [Grade](#)
 - a. Select
 - b. No. 1 common
 - c. No. 2 Common
- 2. NeLMA (WWPA) [Grade](#)
 - a. C Select
 - b. D Select
 - c. 2 & Better Commons
 - d. 3 Common
 - e. 4 Common
 - f. 5 Common
 - g. 1A Furniture
 - h. 2A Furniture
 - i. Merchantable

B. Design Criteria

- 1. Exterior sheathing
- 2. Structural panels: Walls, flooring, roof
 - a. Shear walls
 - b. Diaphragm

2.4 MANUFACTURED UNITS

- A. Engineered Wood Products: Provide products acceptable to AHJ, with allowable design stresses as published by manufacturer that meet or exceed those indicated.

NOTE: Engineered Lumber efficiently utilizes forest resources, however binders and glues containing Formaldehyde can prohibit recycling and contribute to poor indoor air quality.

Both ASTM D6007 or ASTM E1333 are methods to determine a glue-laden product's affect on indoor air quality (Formaldehyde specific).

[ASTM D6330](#) is a test to determine non-formaldehyde VOC inputs.

- B. Structural Plywood: Per NIST – [US DoC PS 1](#)

1. Plywood represented as being in conformance with PS 1 shall bear the stamp of a qualified inspection and testing agency.
 2. All panels represented as conforming to PS 1 shall be identified with grademarks indicating species group number, span rating, class number, bond classification, grade name, the symbol "PS 1-07", panel thickness, and other designations as warranted.
 3. Bond Classification:
 - a. Exposure 1 (interior with exterior glue)
 - b. Exterior
 4. Panel Grades:
 - a. Grade N veneer (intended for a natural finish)
 - b. Grade A veneer (suitable for painting)
 - c. Grade B veneer
 - d. Grade C veneer
 - e. Grade C plugged veneer
 - f. Grade D veneer (used in Exposure 1 only)
 5. Wood Species Group Numbers:
 - a. Group 1 (American Beech, Sweet Birch, Yellow Birch, Sugar Maple, Loblolly Pine)
 - b. Group 2 (Balsam Fir, White Fir, Black Spruce, Red Spruce, Tamarack (Larch), Yellow Poplar)
 - c. Group 3 (Red Alder, Paper Birch, Eastern Hemlock, Jack Pine, White Spruce)
 - d. Group 4 (Bigtooth Aspen, Quaking Aspen, Eastern White Pine)
 - e. Group 5 (Basswood (Linden), Poplar)
 6. Sheet Edge:
 - a. Tongue and Groove interlock.
 - b. Square Edge: Supported by blocking or framing.
- C. OSB or Waferboard: Per NIST – [US DoC PS 2](#); (Used for subfloors, single floors, roof or wall sheathing including siding, rim boards, stair treads, concrete formwork, treated sheathing, foil-faced sheathing, I-joist webs and outer skins of (SIP) structural insulated panels.)
1. OSB represented as being in conformance with PS 2 shall bear the stamp of a qualified inspection and testing agency.
 2. All panels represented as conforming to PS 2 shall be identified with grademarks indicating manufactured nominal thickness, span rating, bond classification, the symbol "PS 2-04", and other supplemental application specifications as warranted.
 3. Bond Classification: Exposure 1 OSB
 4. Grade:
 - a. Sheathing
 - b. Structural 1
 - c. Single Floor
 5. Sheet Edge:
 - a. Tongue and Groove interlock.
 - b. Square Edge: Supported by blocking or framing.
- D. [Particleboard](#) (Including Chipboard, Flakeboard, Waferboard, Strandboard): Per ANSI A208.1.

NOTE: Particleboard can be made from wood, straw, bagasse (sugar cane), or made from 100 percent recovered & preconsumer recycled wood fiber.

1. Grade
 - a. H-1 (MOR 2393 psi; IB 130 psi)
 - b. H-2 (MOR 2973 psi; IB 130 psi)
 - c. H-3 (MOR 3408 psi; IB 145 psi)
 - d. M-1 (MOR 1595 psi; IB 58 psi)
 - e. M-S (MOR 1813 psi; IB 58 psi)
 - f. **M-2** (MOR 2103 psi; IB 65 psi), furniture grade
 - g. M-3 (MOR 2393 psi; IB 80 psi)

- h. LD-1 (MOR 435 psi; IB 15 psi)
- i. LD-2 (MOR 725 psi; IB 22 psi)
- j. PBU (MOR 1595 psi; IB 58 psi)
- k. D-2 (MOR 2393 psi; IB 80 psi)
- l. D-3 (MOR 2828 psi; IB 80 psi)

- E. Low, Medium and High Density Fiber Core Hardwood Plywood (LDF, [MDF](#), HDF): Per ANSI A208.2 (article [link](#))

NOTE: MDF & HDF can be made from wood, straw, bagasse (sugar cane), bamboo, wheat, sunflowers or made from 100 percent recovered & preconsumer recycled wood fiber.

- 1. Grade: Modulus of Rupture (MOR); Internal Bond (IB)
 - a. 110 (MOR 2030 psi; IB 44 psi)
 - b. 120 (MOR 2030 psi; IB 73 psi)
 - c. **130** (MOR 3481 psi; IB 87 psi)
 - d. 140 (MOR 3481 psi; IB 109 psi)
 - e. 150 (MOR 4496 psi; IB 131 psi)
 - f. 160 (MOR 4496 psi; IB 152 psi)
 - g. 210 (MOR 3046 psi; IB 51 psi)
 - h. 220 (MOR 4496 psi; IB 87 psi)
 - i. 230 (MOR 4496 psi; IB 145 psi)
 - j. 240 (MOR 6527 psi; IB 218 psi)
- 2. LDF Low or Light Density: < 50 pcf
- 3. MDF Density: 59 to 50 pcf
- 4. HDF Density: 60 to 69 pcf

- F. Medium Density Overlay (MDO): Per NIST – [US DoC PS 1](#), Group 1

- 1. Construction
 - a. Face Veneer Grade: B or better
 - b. Inner Veneer Plies: C

NOTE: Select one of the following two deleting the other.

- c. Back Veneer Grade: B (Standard)
- d. Back Veneer Grade: C (Siding)
- 2. Untreated: Class III (C)
- 3. Fire-Resistive Treated: Class I (A)

- G. High Density Overlay (HDO): Per NIST – [US DoC PS 1](#), Group 1

- 1. Construction
 - a. Face Veneer Grade: B or better

NOTE: Select one of the following two deleting the other.

- b. Inner Veneer Plies: C
- c. Inner Veneer Plies: C-Plugged
- d. Back Veneer Grade: B or better
- 2. Untreated: Class III (C)
- 3. Fire-Resistive Treated: Class I (A)

- H. Hardboard: Per CPA / [ANSI A135.4](#)

NOTE: Select one of the following deleting the other, and edit the class to suit.

- 1. Surface Type: S1S (smooth-one-side)

2. Surface Type: S2S (smooth-two-sides)
3. Class per ASTM D1037:
 - a. Tempered (MOR 6000 psi)
 - b. Service Tempered (MOR 4500 psi)
 - c. Standard (MOR 4500 psi)
 - d. Service (MOR 3000 psi)
 - e. Industrialite (MOR 2000 psi)
4. Density: ≥ 70 pcf

2.5 MISCELLANEOUS MATERIALS

- A. Multipurpose Construction Adhesive: Non-HAP 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 and 4.4 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).
- B. Glue: Non-HAP aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
1. Use glues that comply with LEED Credit EQ 4.1 and 4.4 requirements.

NOTE: Edit to project requirements or delete Wood Treatments article below if not required.

2.6 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 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. Floor joists, subflooring and other interior sheathing including plywood and OSB
 - b. Roof decks and sheathing including plywood and OSB
 - c. Roof and floor trusses
 2. Waterborne Preservative Material: AWPA 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: AWPA P25
 - 1). DOT. Disodium octoborate tetrahydrate
 - 2). BA. Boric Acid.
 - b. ACQ. Alkaline Copper Quat or Micronized Copper: AWPA P26 (Type A), P27 (Type B), P28 (Type C) and P29 (Type D)
 - c. CA-B. Copper Boron Azole, Type B: AWPA P32
 - d. CX-A. Copper HDO: AWPA P33
 - e. CuN-W. Copper Naphthenate: AWPA P34 (Strandboard)
 - f. PTI. Propiconazole Tebuconazole Imidacloprid: AWPA P45
3. Preservative Treatment by Pressure Process

- a. Preservative Treatment Standard: AWPA P5
- b. Structural Lumber Treatment Standard: Comply with AWPA C31
- c. Plywood: Comply with AWPA C9
4. 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 Formulation: AWPA C27 for Plywood
 - 1). Type A: Interior
 - 2). Type B: Exterior
 - c. UL listed eligible species of plywood for treatment:
 - 1). Plywood species include: Douglas fir, redwood, southern pine, lauan.
 - d. Flame spread of less than 25 per 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.
5. Kiln-Dried After Treatment (KDAT) Moisture Content: 18 percent for plywood
6. Hygroscopic Requirements: Per ASTM D3201 at relative humidity up to 95 percent.

2.7 ACCESSORIES

RED NOTE: Avoid specifying bright chromium plated metal finishes, which contain 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 for the intended life and use of the unit.

PART 3 - EXECUTION

3.1 FIELD CONDITIONS

- A. Do not install composite wood panels 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.

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 product manufacturers 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. Labels and other 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 manufacturer's written instructions, SECTION 017000 or 017300 or 017316, and the following:
 1. General:
 - a. Place composite wood panels to indicated levels and lines, with surfaces plumb, aligned, cut, and fitted.
 - b. Fit composite wood panels to other construction; scribe and cope as needed for accurate fit, but allowing for movement forces.
 - c. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - d. Install composite wood panels per ANSI / AF&PA [NDS-2005](#), unless otherwise noted.
 - e. Install composite wood panels per manufacturer's written instructions.
 - f. Provide fire blocking using fire resistive treated materials in furred spaces, stud spaces, and other concealed cavities as indicated, and as required by AHJ.
 - g. Fasten or anchor composite wood panel materials in a manner with fasteners appropriate to use and anticipated durability. Attach composite wood panel work to substrate securely by anchoring and fastening as indicated, complying with ICC Table 2304.9.1, Fastening Schedule, and ICC-ES / [ESR-1539](#).
 - 1). Do NOT use chromium-plated metal fasteners and anchors.
 - 2). Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials.
 - 3). Make tight connections between members.
 - 4). Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.
 - 5). 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 in accordance with appropriate untreated plywood span tables.
 - 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 through sound wood, sorting and selecting to avoid characteristic imperfections like knots and checks.

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.
- 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.
 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).
 - 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, or transport to local public recycling center / county solid waste district.

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

3.7 CLOSEOUT ACTIVITIES

- 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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RED NOTE: Be sure to obtain the latest version of this Guide Specification.

This Guide Specification is not a completed document ready for use. It must be edited deleting, adding, or modifying text, as required to suit project requirements.

The professional stamping and the contracting parties of the Contract Documents are responsible for the accuracy of issued project specifications, including any use of this Guide Specification.

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