



SECTION 01 81 13 - SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents: The general provisions of the Contract, and Division I, General Requirements, apply to work specified in this Section, and are hereby made a part of this Section of the Specifications. PART A and DIVISION 1 of PART B are hereby made a part of this Section.
- B. This Section includes general requirements and procedures for the LEED Certification process.
- C. Sustainable Design Intent: Comply with project requirements to achieve a LEED-CI v4 Gold Rating, measured and documented according to the LEED Green Building Rating System, of the US Green Building Council.
1. Comply with LEED (Leadership in Energy and Environmental Design) For Commercial Interiors Green Building Rating System version 4 (LEED-CI v4).
 2. Refer to LEED Checklist/Scorecard attached at the end of this Section.
 3. Requirements in Section 01 81 13 shall supersede requirements contained in other sections, where conflicting sustainable design and submittal requirements may be listed.
- D. Contractor is responsible for compliance with and completion of the required documentation for the following LEED Credits:
1. Materials and Resources Prerequisite: Construction and Demolition Waste Management Planning
 2. Materials and Resources Credit: Construction and Demolition Waste Management (2 points)
 3. Materials and Resources Credit: Building Product Disclosure and Optimization – Environmental Product Declarations (Option 1 – EPDs, 1 point)
 4. Materials and Resources Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials (Option 2 – Leadership Extraction Practices, 1 point)
 5. Materials and Resources Credit: Building Product Disclosure and Optimization – Material Ingredients (Option 1 – Material Ingredient Reporting, 1 point)
 6. Indoor Environmental Quality Credit: Low Emitting Materials (1 point) – compliance categories include:
 - Paints and Coatings
 - Flooring
 - Products containing composite wood or agrifiber products and/or wood glues.
 7. Indoor Environmental Quality Credit IAQ Management Plan (1 point)
- D. Contractor is responsible for coordinating with the Early Demolition phase contractors to substantiate compliance with the following credits:
1. Materials and Resources Prerequisite: Construction and Demolition Waste Management Planning
 2. Materials and Resources Credit: Construction and Demolition Waste Management (2 points)
- E. Contractor is responsible for coordinating with the Owner and the Owner's consultants, including but not limited to the Architect, Engineers, and Commissioning Agent, in their efforts associated with all other LEED credits. Specifically, the contractor shall support and assist third parties with the following credits. Support shall include, but is not limited to, scheduling assistance, coordination with affected sub-trades, ensuring timely access to work areas, use of on-site equipment (such as ladders, hand tools, or cleaning equipment), etc. Allow for both project management and field supervision time for these activities.
1. Energy and Atmosphere Prerequisite: Fundamental Commissioning and Verification
 - a. To be performed by the Owner's Commissioning Agent
 - b. See 01 91 00 Commissioning
 - c. For more information, see: <https://www.usgbc.org/node/2732691?view=language>
 2. Energy and Atmosphere Credit: Enhanced Commissioning
 - a. To be performed by the Owner's Commissioning Agent
 - b. See 01 91 00 Commissioning
 - c. For more information, see: <https://www.usgbc.org/node/2613057?view=language>
 3. Indoor Environmental Quality Credit: Indoor Air Quality Assessment



- a. To be performed under supervision of the Owner's Commissioning Agent
 - b. For more information, see: <https://www.usgbc.org/node/4378081?view=language>
- F. Additional credit specific requirement information is available in the USGBC LEED-CI v4 credit library or within the USGBC's LEED ID+C Reference Guide:
<https://www.usgbc.org/credits/commercial-interiors/v4>
OR
The U.S. Green Building Council (USGBC)
2101 L Street, NW
Suite 500
Washington, DC 20037
Website: www.usgbc.org

1.2 RELATED WORK

- A. Examine Contract Documents for requirements that affect the work of this Section. Other Specification Sections that relate directly to work of this Section include, but are not limited to:
- Section 01 57 10, Construction Waste Management.
 - Section 01 51 50, Construction Indoor Air Quality.
 - Section 01 91 13, General Commissioning.
- Individual Specifications Sections identifying sustainable requirements.

1.3 DEFINITIONS

- B. Agrifiber Products: Composite panel products derived from recovered agricultural waste fiber from sources including, but not limited to, cereal straw, sugarcane bagasse, sunflower husk, walnut shells, coconut husks, and agricultural prunings.
- C. CDPH Standard Method v1.1: California Department of Public Health (CDPH) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, v1.1-2010, for the emissions testing and requirements of products and materials.
- D. Composite Wood: A product consisting of wood fiber or other plant particles bonded together by a resin or binder.
- E. Construction and Demolition Waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair and demolition operations. A construction waste management plan is to be provided by the Contractor as defined in Section 01 57 10.
- F. EPD: Environmental Product Declaration. A statement that the items meet the environmental requirements of ISO 14021-1999, ISO 14025-2006 and EN15804 or ISO 21930-2007.
- 1. Product-Specific Declaration: A product with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that has at least a cradle to gate scope.
 - 2. Industry-Wide (Generic) EPD: Provide products with third-party certification (Type III), including external verification, in which the manufacturer is explicitly recognized as a participant by the program operator. EPD must conform to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope.
 - 3. Product-Specific Type III EPD: A product with a third-party certification, including external verification, in which the manufacturer is explicitly recognized by the program operator. EPD must conform to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope.
- G. LCCA: Life Cycle Cost Analysis is a tool to determine the most cost-effective option among different competing alternatives to purchase, own, operate, maintain and, finally, dispose of an object or process, when each is equally appropriate to be implemented on technical grounds.
- H. LEED: The Leadership in Energy & Environmental Design green building rating systems developed and adopted by the U.S. Green Building Council
- I. Sealant: Any material that fills and seals gaps between other materials



- J. Volatile Organic Compounds (VOCs): Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. Compounds that have negligible photochemical reactivity, listed in EPA 40 CFR 51.100(s), are also excluded from this regulatory definition.

1.4 SUBMITTALS

- A. General: Submit each LEED submittal simultaneously with applicable product submittal.
- B. LEED Documentation Submittals:
1. General, Product Data Reporting Form: Project submittals must be accompanied by a completed Product Data Reporting Form. Submittal packages must also include highlighted documentation supporting the sustainability claims made on the Product Data Reporting Form.
- C. Sustainable Design Submittals Materials and Resources:
1. Applicable Reference Standards:
 - International Standard ISO 14021-1999, Environmental labels and declarations – Self Declared Claims (Type II Environmental Labeling): iso.org
 - International Standard ISO 14025-2006, Environmental labels and declarations – Self Declared Claims (Type III Environmental Declarations – Principles and Procedures): iso.org
 - International Standard ISO 14040-2006, Environmental management, Life cycle assessment principles, and frameworks: isg.org
 - International Standard ISO 14044-2006, Environmental management, Life cycle assessment requirements, and guidelines: iso.org
 - International Standard ISO 2193-2007 Sustainability in building construction-Environmental Declaration of building products: iso.org
 - Federal Trade Commission, Guides for the Use of Environmental Marketing Claims, 16 CFR 26.7 (e): ftc.gov/bcp/gmrule/guide980427.htm
 - Health Product Declarations: hpdcollaborative.org/
 - Cradle-to-Cradle Certified Product Standard: [c2ccertified.org/product certification](http://c2ccertified.org/product%20certification)
 - GreenScreen: cleanproduction.org/Greenscreen.vi-2.php
 2. Submittal requirements:
 - a. Construction and Demolition Waste Management: Comply with submittal requirements of Section 01 57 10 "Construction Waste Management".
 - b. Building Product Disclosure and Optimization: Environmental Product Declarations complying with LEED requirements: Submittals for materials and products that may contribute to the documentation.
 - 1) Provide EPDs that conform to ISO 14025, 14040, 14044 and EN 15804 or ISO 21930 and have a cradle to gate scope. Industry-Wide EPDs and Product-Specific Type III EPDs are acceptable.
 - c. Building Product Disclosure and Optimization: Product data, containing information regarding recycled content, compliant wood certification, reused material value, and bio-based material percentages, if applicable.
 - d. Building Product Disclosure and Optimization: Material Ingredient Reporting complying with LEED requirements: Submittals for materials and products that may contribute to the documentation include but are not limited to:
 - 1) Provide HPDs that provide full disclosure of known hazards in compliance with the Health Product Declaration open Standard.
 - 2) Provide Cradle to Cradle certification documentation
 - 3) Provide Declare product label indicating all ingredients evaluated and disclosed
 - e. Indoor Air Quality Management Plan: Comply with submittal requirements of Section 01 51 50, "Construction Indoor Air Quality".
 - f. Low-Emitting Materials: Product data, containing VOC content and General Emissions Evaluation documents that indicate compliance with requirements for low-emitting materials, for the following materials:



- 1) Paints and coatings.
- 2) Flooring.
- 3) Products containing composite wood or agrifiber products or wood glues.

- D. Project Materials Cost Data: Provide a spreadsheet in an electronic file indicating the total cost for the Project and the total cost of building materials used for the Project, as follows:
1. Not more than 60 days after the Preconstruction Meeting, the General Contractor shall provide to the Owner and Architect a preliminary schedule of materials costs for all materials used for the Project organized by specification section. Costs exclude site labor, overhead, and profit. Include breakout of costs for the following categories of items:
 - Wood construction materials.
 - Furniture.
 - Passive plumbing materials.
 - Passive mechanical (HVAC) materials.
 - Passive electrical materials.
 - Earthwork and exterior improvements, hard costs.
 2. Provide final versions of the above spreadsheets to the Owner and Architect not more than 14 days after Substantial Completion.

1.5 QUALITY ASSURANCE

- A. General: Perform the work of this Section as a supplement and in accordance with applicable requirements of Division 1 "Contractor Quality Control Program."
1. Preconstruction Meeting: After award of Contract and prior to the commencement of the Work, schedule and conduct meeting with Owner, Architect, and all Subcontractors to discuss the Construction Waste Management Plan, the required Construction Indoor Air Quality (IAQ) Management Plan, and all other Sustainable Design Requirements. The purpose of this meeting is to develop a mutual understanding of the Project's Sustainable Design Requirements and coordination of the Contractor's management of these requirements with the Contracting Officer and the Construction Quality Manager.
 2. Construction Job Conferences: The status of compliance with the Sustainable Design Requirements of these specifications will be an agenda item at all regular job meetings conducted during the course of work at the site.

PART 2 - PRODUCTS

2.1 PRODUCT ENVIRONMENTAL REQUIREMENTS

- A. Building Product Disclosure and Optimization, Environmental Product Declarations (EPD): Option 1. Provide at least 20 permanently installed products (sourced from at least 5 different manufacturers) which meet one of the following disclosure criteria:
1. Product-Specific Declaration: Valued as one quarter (1/4) of a product.
 2. Industry-Wide (Generic) EPD: Valued as one half (1/2) of a product.
 3. Product-Specific Type III EPD: Valued as one whole product.
- B. Building Product Disclosure and Optimization, Sourcing of Raw Materials: Option 2. Provide products that meet at least one of the below listed criteria for at least 25%, by cost, of the total value of permanently-installed building products in the project:
1. Recycled content: Reported as the sum of postconsumer recycled content plus one-half the preconsumer recycled content, based on cost.
 2. Wood products: Must be FSC certified or USGBC-approved equivalent.
 3. Bio-based materials: Must meet the Sustainable Agriculture Network's Sustainable Agriculture Standard.
 4. Materials reuse: Reuse includes salvaged, refurbished, or reused products.
 5. Regional materials: Products sourced (extracted/harvested and manufactured) from within 100 miles of the project site.



- C. Building Product Disclosure and Optimization, Material Ingredients: Option 1. Provide at least 20 permanently installed products (sourced from at least 5 different manufacturers) which meet one of the following disclosure criteria:
1. Health Product Declaration (HPD).
 2. Cradle to Cradle v2 “Basic Level” or Cradle to Cradle v3.
 3. Declare product label.
 4. ANSI/BIFMA e3 Furniture Sustainability Standard
 5. Cradle to Cradle material health Certificate
 6. Product Lens Certification
- D. Low-Emitting Materials, General Emissions Requirements: Products must demonstrate they have been tested and determined compliant in accordance with California Department of Public Health, (CDHP), Standard Method v1.1-2010, using the applicable exposure scenario. Manufacturer’s documentation demonstrating compliance must state the range of total VOCs (TVOC) after 14 days, measured as specified in the CDPH Standard Method v1.1 as follows:
- 0.5mg/m³ or less
 Between 0.5 and 5.0 mg/m³
 OR
 0.50 mg/m³ or more
- E. Low-Emitting Materials, Paints and Coatings: Paints and Coatings applied inside the building waterproofing system must meet the following standards:
1. CDPH Standard Method v1.1-2010
 2. VOC content: South Coast Air Quality Management District Rule 1113, Architectural Coatings, effective June 3, 2011, (see the table below)

Table 5: South Coast Rule #1133 VOC Limits for Architectural Coatings

Applications	VOC Limit (g/L)	Applications	VOC Limit (g/L)
Bond Breaker	350	Magnesite Cement Coatings	450
Clear Wood Finish – Varnish	275	Mastic Coatings	100
Clear Wood Finish – Sanding Sealer	275	Metallic Pigmented Coatings	150
Clear Wood Finish – Lacquer	275	Multi-Color Coatings	250
Colorant – Arch. Coating, excluding IM Coatings	275	Non-Flat Coatings	50
Colorant – Solvent Based IM	600	Pre-Treatment Wash Primers	420
Concrete – Curing Compounds	100	Primers, Sealers and Undercoats	100
Concrete – Curing Compounds for Roadways and Bridges	350	Reactive Penetrating Sealers	350
Concrete Surface Retarder	50	Recycled Coatings	250
Driveway Sealer	50	Roof Coatings	50
Dry-Fog Coatings	50	Roof Coatings, Aluminum	100
Faux Finishing Coatings – Clear Topcoat	100	Roof Primers, Bituminous	350
Faux Finishing Coatings – Decorative Coatings	350	Rust Preventative Coatings	50
Faux Finishing Coatings - Glazes	350	Stone Consolidator	450
Faux Finishing Coatings – Japan	350	Sacrificial Anti-Graffiti Coatings	50
Faux Finishing Coatings – Trowel Applied Coatings	50	Shellac – Clear	730
Fire-Proof Coatings	150	Shellac – Pigmented	550
Flats	50	Specialty Primers	100



Floor Coatings	50	Stains	100
Form Release Compounds	100	Stains – Interior	250
Graphic Arts (Sign) Coatings	150	Swimming Pool Coatings – Repair	340
Industrial Maintenance Coatings	100	Swimming Pool Coatings – Other	340
Low-Solid Coatings	120	Traffic Coatings	100
Industrial Maintenance Coatings – Non-Sacrificial Anti-Graffiti Coatings	100	Waterproofing Sealers	100
Industrial Maintenance Coatings – Zinc Rich IM Primers	100	Waterproofing Concrete Masonry Sealers	100
Industrial Maintenance Coatings – High Temp. IM Coatings	420	Wood Preservatives	350

- D. Low-Emitting Materials, Floor coverings: Comply with CDPH Standard Method v1.1-2010.
- E. Low-Emitting Materials, Composite Wood and Agrifiber Binders: Composite wood, agrifiber products, and adhesives shall be made using ultra-low-emitting formaldehyde (ULEF) resins as defined in the California Air Resources Board's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" or shall be made with no added formaldehyde.
- F. Additional Low-Emitting Requirements:
 - 1. If the applicable regulation requires subtraction of exempt compounds, any content of intentionally added exempt compounds larger than 1% weight by mass (total exempt compounds) must be disclosed.
 - 2. If a product cannot reasonably be tested as specified above, testing of VOC content must comply with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.
 - 3. Methylene chloride and perchloroethylene may not be intentionally added in paints, coatings, adhesives, or sealants.
- G. Indoor Water Use Reduction, Appliances: Provide ENERGY STAR or performance equivalent appliances.
- H. Indoor Water Use Reduction, Plumbing Fixtures:
 - 1. Do not exceed water flow requirements indicated in Division 22 – PLUMBING
 - 2. Water Closets, Urinals, Private Lavatory Faucets, and Showerheads are required to be WaterSense labeled.

PART 3 - EXECUTION

3.1 NON-SMOKING BUILDING

- A. Tobacco use is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes during construction.
 - 1. Refer to Section 01 51 50, "Construction Indoor Air Quality".

3.2 CONSTRUCTION WASTE MANAGEMENT

- A. Construction and Demolition Waste Management: Comply with Section 01 57 10 "Construction Waste Management".

3.3 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

- A. Construction Indoor Air Quality Management Plan: Comply with Section 01 51 50, "Construction Indoor Air Quality".

END OF SECTION