

**SECTION 01 81 13.02
SUSTAINABILITY CERTIFICATION REQUIREMENTS - LEED NC V4**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes requirements and procedures which are additive to and compatible with 01 81 13 SUSTAINABLE CONSTRUCTION REQUIREMENTS, and necessary to contribute to sustainability certification under the LEED v4 for New Construction and Major Renovations rating system (LEED NC v4).
- B. Refer to the 'Guiding Principles Checklist LEED v4 for New Construction and Major Renovations' for mandatory credits.

SPEC WRITER NOTE:

- 1. Ensure that the project specific checklist is provided as attachment to this section.
- C. A copy of the LEED NC v4 Project Checklist is attached at the end of this section.

1.2 RELATED WORK

- A. Section 01 81 13 SUSTAINABLE CONSTRUCTION REQUIREMENTS.

1.3 DEFINITIONS

- A. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-40-004 v3.0, "FSC Principles and Criteria for Forest Stewardship." Certificates must include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
- B. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles (160 km) of project site. If only a fraction of a product or material is extracted or harvested or recovered and manufactured locally, then only that percentage (by weight) must contribute to regional value. The purchase location, distribution and all points of manufacture are now included in the definition of regional materials.
- C. Biobased Material: Products which meet the Sustainable Agriculture Network's Sustainable Agriculture Standard. Biobased raw materials must be tested using ASTM Test Method D6866 and be legally harvested, as defined by the exporting and receiving country. Exclude hide products, such as leather and other animal skin material.

- D. Salvaged or reused materials: Construction materials recovered from existing buildings or construction sites and reused. Common salvaged materials include structural beams and post, flooring, doors, cabinetry, brick, and decorative items.
- E. Refurbished materials: Products that could have been disposed of as solid waste. These products have completed their life cycle as consumer items and are then refurbished for reuse without substantial alteration of their form. Refurbishing includes renovating, repairing, restoring or generally improving appearance, performance, quality, functionality, or value of a product.
- F. Environmental Product Declaration (EPD): A compliant EPD is a third-party declaration with external verification; is product-specific (not industry-wide); conforms to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930; and has at least a cradle-to-gate scope.
- G. Health Product Declaration (HPD): A compliant HPD provides full disclosure of known hazards and demonstrates chemical inventory of the product to at least 0.1 percent (1000 ppm).
- H. Extended producer responsibility: An environmental policy approach in which a producer's responsibility for a product is extended to the postconsumer stage of the product's lifecycle. An extended producer responsibility policy shifts responsibility (physically and/or economically, fully or partially) upstream toward the producer and away from municipalities; and creates incentives for producers to take into account environmental considerations when designing their products.

1.4 SUBMITTALS

- A. Additional Sustainability Action Plan requirements.
 - SPEC WRITER NOTE:
 - 1. If the Erosion and Sedimentation Control Plan is provided by the design team omit // //
- B. //Erosion and Sedimentation Control Plan which conforms to erosion and sedimentation requirements of the 2012 EPA Construction General Permit or local standards and codes, whichever is more stringent. The plan must describe measures implemented to accomplish the following objectives:
 - 1. To prevent loss of soil during construction by stormwater runoff and wind erosion, including protecting topsoil by stockpiling for reuse.
 - 2. To prevent sedimentation of storm sewers or receiving streams.
 - 3. To prevent pollution of air with dust and particulate matter.//

- C. Additional inclusions in Sustainable Construction Progress Reports:
 - 1. Inspection report or date-stamped photos confirming compliance with the Erosion and Sedimentation Control Plan
 - 2. Provide updated information submittal using LEED Online forms and USGBC-provided spreadsheets for the following LEED Credits sought for Project.
- D. //Cut sheets for all plumbing fixtures used in the project.//
- E. //Receipts for salvaged and refurbished materials used for Project, indicating sources and costs for salvaged and refurbished materials.//
- F. //Additional Product Submittals to be provided with manufacturer documentation:
 - 1. Life-cycle assessment conforming to ISO 14044 with cradle to gate scope.
 - 2. Environmental Product Declaration.
 - 3. Corporate Sustainability Report.
 - 4. Evidence of manufacturer participation in an extended producer responsibility program.
 - 5. Health Product Declaration.
Regional Materials: Indicate location and distance from project site of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and fraction by weight that is considered regional. Show the purchase location, distribution and all points of manufacture.//
 - 6. //Biobased Materials: Indicate percent of biobased content. Include statement indicating cost of each relevant product and fraction by weight that is considered biobased material.//
 - 7. //Provide chain-of-custody certificates for products containing certified wood. Include statement indicating cost for each product with certified wood and fraction by weight that is certified wood.
//
 - 8. //Construction and Waste management Calculator tracking recycling for the project. Provide documentation for all activities.//
 - 9. //Calculator, product information showing product information, MSDS, third party certifications, testing reports for low emitting materials.//

10. //IAQ Management plan, including checklists, protection measures description, photographs of IAQ measures and records for filtration media.//
11. For paints and coatings applied on site within the weatherproofing membrane provide documentation of compliance with low-emitting materials requirements:
 - a. The manufacturer or third-party certification must state the exposure scenario used to determine compliance. Claims of compliance for wet-applied products must state the amount applied in mass per surface area.
 - b. Manufacturers' claims of compliance with the California Department of Public Health (CDPH) Standard Method v1.1-2010 must also state range of total VOCs after 14 days (336 hours), measured as specified in the CDPH Standard Manual v1.1: 0.5 mg/cubic meter or less; between 0.5 and 5.0 mg/cubic meter; or 5.0 mg/cubic meter or more.
 - c. VOC content for each product.
12. For adhesives and sealants applied on site within the weatherproofing membrane provide documentation of compliance with low-emitting material requirements:
 - a. The manufacturer or third-party certification must state the exposure scenario used to determine compliance. Claims of compliance for wet-applied products must state the amount applied in mass per surface area.
 - b. Manufacturers' claims of compliance with the California Department of Public Health (CDPH) Standard Method v1.1-2010 must also state the range of total VOCs after 14 days (336 hours), measured as specified in the CDPH Standard Manual v1.1: 0.5 mg/cubic meter or less; between 0.5 and 5.0 mg/cubic meter; or 5.0 mg/cubic meter or more.
 - c. VOC content for each product.
13. For flooring installed on site within the weatherproofing membrane provide documentation of compliance with low-emitting material requirements:
 - a. Manufacturers' claims or third-party certification of compliance with the California Department of Public Health (CDPH) Standard Method v1.1-2010 which states the exposure scenario used to determine compliance.

14. Composite wood products: manufacturer documentation which confirms low formaldehyde emissions that meet the California Air Resources Board Composite Wood Products Airborne Toxic Control Measures (ATCM) for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins (NAUF).
15. Ceiling, wall, thermal and acoustic insulation products:
 - a. Manufacturers' claims or third-party certification of compliance with the California Department of Public Health (CDPH) Standard Method v1.1-2010 which states the exposure scenario used to determine compliance.

SPEC WRITER NOTE:

1. The following is relevant only if the project is pursuing LEED v4 for Healthcare.

- G. // Batt insulation products: manufacturer or third-party documentation which confirms the product contains no added formaldehyde.//

SPEC WRITER NOTE:

1. The following is relevant only if the project is pursuing LEED v4 for Healthcare Low Emitting Materials for Furniture.

1. // New furniture and furnishing products:
 - a. Manufacturer or third-party documentation of testing in accordance with ANSI/BIFMA Standard Method M7.1-2011, and compliance with ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 and 7.6.2 using either concentration modeling approach or emissions factor approach, and using the appropriate modeling scenario.
 - b. Confirmation of modeling scenario used.//

SPEC WRITER NOTE:

1. The following is relevant only if the project is pursuing LEED v4 for Healthcare.

2. // Exterior applied adhesives, sealants, coatings, roofing, and waterproofing materials applied on site:
 - a. Manufacturer documentation demonstrating compliance with VOC limits of California Air Resources Board (CARB) 2007 Suggested Control Measure (SCM) for Architectural Coatings and South Coast Air Quality Management District (SCAQMD) Rule 1168, effective July 1, 2005.
 - b. A statement confirming that roofing installations did not use hot-mopped asphalt installation techniques.

- c. A statement confirming that parking lots and other paved surfaces did not use coal tar sealants.//

H. Additional Closeout Submittals

1. LEED Online: Final completed LEED Online forms and associated required documentation uploaded to LEED Online for the following prerequisites and credits:
 - a. Construction activity pollution prevention.
 - b. Construction and demolition waste management planning.
 - c. //Building product disclosure and optimization - environmental product declaration.//
 - d. //Building product disclosure and optimization - sourcing of raw materials.//
 - e. //Building product disclosure and optimization - material ingredients.//
 - f. Construction and demolition waste management.
 - g. Low-emitting materials.
 - h. Construction indoor air quality management plan.
 - i. Indoor air quality assessment.
- SPEC WRITER NOTE:
1. Omit the following if indoor air testing is not planned for the project.
2. //Report from testing and inspecting agency indicating results of indoor-air-quality testing and documentation showing compliance with indoor-air-quality testing procedures and requirements.//

1.5 APPLICABLE PUBLICATIONS

- A. LEED v4 for New Construction and Major Renovations Rating System.
- B. LEED Reference Guide for Building Design and Construction, 2013 Edition.
- C. Forest Stewardship Council Principles and Criteria for Forest Stewardship (FSC STD-40-004 v3.0).
- D. Sustainable Agriculture Network's Sustainable Agriculture Standard.
- E. 2012 EPA Construction General Permit.
- F. California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, Emission Testing method for California Specification 01350 (CDPH Standard Method V1.1-2010).

- G. California Air Resources Board Composite Wood Products Airborne Toxic Control Measures (ATCM).
- H. California Air Resources Board (CARB) 2007 Suggested Control Measure (SCM) for Architectural Coatings.
- I. ANSI/BIFMA Standard Method M7.1-2011.
- J. ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 and 7.6.2.
- K. South Coast Air Quality Management District (SCAQMD) Rule 1168, July 1, 2005 and rule amendment date of January 7, 2005.
- L. Global Reporting Initiative (GRI) Sustainability Report.
- M. Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises.
- N. U.N. Global Compact: Communication of Progress.
- O. ISO 26000: 2010 Guidance on Social Responsibility.
- P. Chemical Abstract Service Registration Number (CASRN).
- Q. Health Product Declaration open Standard.
- R. Cradle to Cradle Certified.
- S. GreenScreen v1.2 Benchmark.
- T. GreenScreen List Translator.
- U. REACH Optimization.
- V. EPA's "Compendium of Methods for the Determination of Air Pollutants in Indoor Air".

PART 2 - PRODUCTS

2.1 PERFORMANCE CRITERIA

SPEC WRITER NOTE:

1. The following are options for the LEED v4 credit 'Building product disclosure and optimization - environmental product declarations.' Coordinate with project team to determine which option is being pursued. When this credit is not being pursued omit // //.
- A. //At least 20 permanently installed products from at least 5 different manufacturers must have one of the following:
1. Publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that has at least a cradle to gate scope. For credit calculation purposes, this is valued at one quarter of a product.
 2. Environmental Product Declarations (EPD):
 - a. Industry-wide (generic) EPD - Products with third-party certification (Type III), including external verification in

which the manufacturer is explicitly recognized as a participant by the program operator are valued as one half of a product for the purposes of credit achievement calculation.

- b. Product-specific Type III EPD - Products with third-party certification (Type III), including external verification, in which the manufacturer is explicitly recognized as the participant by the program operator are valued as one whole product for the purposes of credit achievement calculation. [OR]
- B. Products that comply with one of the criteria below account for at least 50 percent by cost of total value of permanently installed products:
- 1. Third party certified products that demonstrate impact reduction below industry average in at least three of the following categories:
 - a. Global warming potential (greenhouse gases), in CO₂e.
 - b. Depletion of stratospheric ozone layer, in kg CFC-11.
 - c. Acidification of land and water sources, in moles H⁺ or kg SO₂.
 - d. Eutrophication, in kg nitrogen or kg phosphate.
 - e. Formation of tropospheric ozone, in kg NO_x, kg O₃ eq, or kg ethane.
 - f. Depletion of nonrenewable energy resources, in MJ.
 - 2. For Credit achievement calculation, these products are valued at 100 percent of their cost for credit achievement calculations. Products sourced (extracted, manufactured, purchased) within 100 miles (160 km) of project site are valued at 200 percent of their base contributing cost.
 - 3. Structure and enclosure materials may not constitute more than 30 percent of value of compliant building products.//

SPEC WRITER NOTE:

- 1. The following are options for the LEED v4 credit 'Building product disclosure and optimization - sourcing of raw materials.' Coordinate with project team to determine which option is being pursued and edit accordingly. When this credit is not being pursued omit // //.
- C. //At least 20 permanently installed products from at least 5 different manufacturers must have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use,

a commitment to reducing environmental harms from extraction and manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria.

1. Products sourced from manufacturers with self-declared reports are valued as one half (1/2) of a product for credit achievement.
 2. Third-party verified corporate sustainability reports (CSR) which include environmental impacts of extraction operations and activities associated with the manufacturer's product and the product's supply chain, are valued as one whole product for credit achievement calculation. Acceptable CSR frameworks include the following:
 - a. Global Reporting Initiative (GRI) Sustainability Report.
 - b. Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises.
 - c. U.N. Global Compact: Communication of Progress.
 - d. ISO 26000: 2010 Guidance on Social Responsibility.
 - e. USGBC approved program: Other USGBC approved programs meeting CSR criteria. [OR]
- D. Products that meet at least one of the responsible extraction criteria below account for at least 25 percent by cost of total value of permanently installed products:
1. Responsible extraction criteria:
 - a. Extended producer responsibility. Products purchased from a manufacturer (producer) that participates in an extended producer responsibility program or is directly responsible for extended producer responsibility. Products meeting extended producer responsibility criteria are valued at 50 percent of their cost for the purposes of credit achievement calculation.
 - b. Biobased materials. Biobased products must meet the Sustainable Agriculture Network's Sustainable Agriculture Standard. Biobased raw materials must be tested using ASTM Test Method D6866 and be legally harvested, as defined by the exporting and receiving country. Exclude hide products, such as leather and other animal skin material. Products meeting biobased materials criteria are valued at 100 percent of their cost for the purposes of credit achievement calculation.

- c. Wood products. Wood products must be certified by the Forest Stewardship Council or USGBC-approved equivalent. Products meeting wood products criteria are valued at 100 percent of their cost for the purposes of credit achievement calculation.
 - d. Materials reuse. Reuse includes salvaged, refurbished, or reused products. Products meeting materials reuse criteria are valued at 100 percent of their cost for the purposes of credit achievement calculation.
 - e. Recycled content. Recycled content is the sum of postconsumer recycled content plus one-half the pre-consumer recycled content, based on cost. Products meeting recycled content criteria are valued at 100 percent of their cost for the purposes of credit achievement calculation.
 - f. USGBC approved program. Other USGBC approved programs meeting leadership extraction criteria.
2. For credit achievement calculation, products sourced (extracted, manufactured, and purchased) within 100 miles (160 km) of project site are valued at 200 percent of their base contributing cost. For credit achievement calculation, the base contributing cost of individual products compliant with multiple responsible extraction criteria is not permitted to exceed 100 percent its total actual cost (before regional multipliers) and double counting of single product components compliant with multiple responsible extraction criteria is not permitted and in no case is a product permitted to contribute more than 200 percent of its total actual cost.
 3. Structure and enclosure materials may not constitute more than 30 percent of value of compliant building products.//

SPEC WRITER NOTE:

1. The following are options for the LEED v4 credit 'Building product disclosure and optimization - material ingredients.' Coordinate with project team to determine which option(s) is being pursued and edit accordingly. Options 2 and 3 may be used together. When this credit is not being pursued omit // //.
- E. //(Option 1) At least 20 permanently installed products from at least 5 different manufacturers must use any of the following programs to demonstrate chemical inventory of the product to at least 0.1 percent (1000 ppm).

1. Manufacturer Inventory. The manufacturer has published complete content inventory for the product following these guidelines:
 - a. A publicly available inventory of ingredients identified by name and Chemical Abstract Service Registration Number (CASRN).
 - b. Materials defined as trade secret or intellectual property may withhold the name and CASRN but must disclose role, amount and GreenScreen benchmark, as defined in GreenScreen v1.2.
 - c. Health Product Declaration. The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.
 - d. Cradle to Cradle. The end use product has been certified at the Cradle to Cradle v2 Basic level or Cradle to Cradle v3 Bronze level.
 - e. Declare. The Declare product label must indicate that all ingredients have been evaluated and disclosed down to 1000 ppm.
 - f. ANSI/BIFMA e 3 Furniture Sustainability Standard. The documentation from the assessor or scorecard from BIFMA must demonstrate the product earned at least 3 points under 7.5.1.3 Advanced Level in e3-2014 or 3 points under 7.4.1.3 Advanced Level in e3-2012.
 - g. Cradle to Cradle Material Health Certificate. The product has been certified at the Bronze level or higher and at least 90% of materials are assessed by weight.
 - h. Product Lens Certification
 - i. Facts - NSF/ANSI 336: Sustainability Assessment for Commercial Furnishings Fabric at any certification level
 - j. USGBC-approved program. Other USGBC-approved programs meeting the material ingredient reporting criteria. [OR]
- F. (Option 2) Products that document their material ingredient optimization using paths below for at least 25 percent by cost of total value of permanently installed products:
 1. GreenScreen v1.2 Benchmark. Products that have fully inventoried chemical ingredients to 100 ppm that have no Benchmark 1 hazards:
 - a. If any ingredients are assessed with the GreenScreen List Translator, value these products at 100 percent of cost.
 - b. If ingredients have undergone a full GreenScreen Assessment, value these products at 150 percent of cost.

2. Cradle-to-Cradle Certified. End use products are certified Cradle to Cradle. Products will be valued as follows:
 - a. Cradle to Cradle v2 Gold: 100 percent of cost.
 - b. Cradle to Cradle v2 Platinum: 150 percent of cost.
 - c. Cradle to Cradle v3 Silver: 100 percent of cost.
 - d. Cradle to Cradle v3 Gold or Platinum: 150 percent of cost.
 3. International Alternative Compliance Path - REACH Optimization. End use products and materials that do not contain substances that meet REACH criteria for substances of very high concern. If the product contains no ingredients listed on the REACH Authorization or Candidate list, value at 100 percent of cost.
 4. USGBC-approved program. Products that comply with USGBC approved building product optimization criteria. [OR]
- G. (Option 3) Use building products for at least 25 percent, by cost, of total value of permanently installed products in Project that meet the following criteria:
1. Products are sourced from product manufacturers who engage in validated and robust safety, health, hazard, and risk programs which at a minimum document at least 99 percent (by weight) of the ingredients used to make the building product or building material.
 2. Products are sourced from product manufacturers with independent third party verification of their supply chain that at a minimum verifies:
 - a. Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation.
 - b. Processes are in place to identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients.
 - c. Processes are in place to implement measures to manage health, safety and environmental hazard and risk of chemical ingredients.
 - d. Processes are in place to optimize health, safety and environmental impacts when designing and improving chemical ingredients.
 - e. Processes are in place to communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain.

- f. Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain.
 3. Products meeting Option 3 criteria are valued at 100 percent of their cost for the purposes of credit achievement calculation.
 4. For credit achievement calculation of options 2 and 3, products sourced (extracted, manufactured, purchased) within 100 miles (160 km) of project site are valued at 200 percent of their base contributing cost. For credit achievement calculation, the value of individual products compliant with either option 2 or 3 can be combined to reach the 25 percent threshold but products compliant with both option 2 and 3 may only be counted once.
 5. Structure and enclosure materials may not constitute more than 30 percent of value of compliant building products.//
- H. Low Pollutant-Emitting Materials additional requirements:
1. Paints and coatings applied on site within the weatherproofing membrane must comply with the following criteria:
 - a. 90 percent by volume of interior paints and coatings applied to walls, floors, and ceilings must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010, using the applicable exposure scenario.
 - b. 100 percent of products must meet the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011:
 - 1) Anti-Corrosive/Antirust Paints: 100 g/L.
 - 2) Clear Wood Finish, Lacquer: 275 g/L.
 - 3) Clear Wood Finish, Sanding Sealer: 275 g/L.
 - 4) Clear Wood Finish, Varnish: 275 g/L.
 - 5) Floor Coating: 50 g/L.
 - 6) Interior Flat Paint, Coating or Primer: 50 g/L.
 - 7) Interior Non-Flat Paint, Coating or Primer: 50 g/L.
 - 8) Shellac, Clear: 730 g/L.
 - 9) Shellac, Pigmented: 550 g/L.
 - 10) Stain: 250 g/L.
 - 11) Concrete Curing Compounds: 100 g/L.
 - 12) Japans/Faux Finishing Coatings: 350 g/L.

- 13) Magnesite Cement Coatings: 450 g/L.
 - 14) Waterproofing Sealers: 100 g/L.
 - 15) Wood Preservatives: 350 g/L.
 - 16) Low-Solids Coatings: 120 g/L.
2. Each flooring element installed in the building interior which is not inherently non-emitting (stone, ceramic, powder-coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished or untreated solid wood flooring) must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010, using the applicable exposure scenario.
 3. Composite wood products within the weatherproofing membrane must be documented to have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins (NAUF).
 4. Ceiling, wall, thermal and acoustic insulation products which are not inherently non-emitting (stone, ceramic, powder-coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished or untreated solid wood flooring) must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010, using the applicable exposure scenario.
 5. Furniture: 90 percent, by cost, of new furniture and furnishing items must be tested in accordance with ANSI/BIFMA Standard Method M7.1-2011, and comply with ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 (for half credit, by cost) or 7.6.2 (full credit, by cost) using either the concentration modeling approach or the emissions factor approach, using the appropriate modeling scenario.

PART 3 - EXECUTION

3.1 SPECIAL REQUIREMENTS

SPEC WRITER NOTE:

1. For the LEED credit Indoor Air Quality Assessment, Option 1 Flush-Out is satisfied by the requirements included in 01 81 13. Retain below only when air testing is also to be included in the project.

- A. Construction Indoor Air Quality Management additional requirement:

1. Perform air quality testing.
 - a. Conduct baseline indoor-air-quality testing, after construction ends and prior to occupancy, using testing protocols consistent with the EPA's "Compendium of Methods for the Determination of Air Pollutants in Indoor Air," and as additionally detailed in the LEED Reference Guide for Building Design and Construction, 2013 Edition.
 - b. Demonstrate that contaminant maximum concentrations listed below are not exceeded:
 - 1) Formaldehyde: 27 ppb.
 - 2) Particulates (PM10): 50 micrograms/cu. m.
 - 3) Ozone (for buildings in EPA nonattainment areas): 0.075 ppm.
 - 4) Total Volatile Organic Compounds (TVOC): 500 micrograms/cu. m.
 - 5) Target chemicals listed in CDPH Standard Method v1.1, Table 4-1, except formaldehyde: CDPH Standard Method v1.1-2010, Allowable Concentrations, Table 4-1.
 - 6) Carbon Monoxide: 9 ppm and no greater than 2 ppm above outdoor levels.
 - c. For each sampling point where maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from same locations as in the first test.
 - d. Air-sample testing must be conducted as follows:
 - 1) Measurements must be conducted prior to occupancy but during normal occupied hours, and with building ventilation system starting at the normal daily start time and operated at minimum outside air flow rate for occupied mode throughout duration of air testing.
 - 2) Building must have all interior finishes installed including millwork, doors, paint, carpet, and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for testing.
 - 3) Number of sampling locations varies depending on size of building and number of ventilation systems. For each portion of building served by a separate ventilation system, number of sampling points must not be less than one per 25,000 sq. ft.

(2300 sq. m) or for each contiguous floor area, whichever is larger, and must include areas with the least ventilation and greatest presumed source strength.

- 4) Air samples must be collected between 3 and 6 feet (0.9 and 1.8 m) from the floor to represent the breathing zone of occupants, and over a minimum four-hour period.

3.2 ATTACHMENTS

A. LEED NC v4 Project Checklist

-----END-----