

SECTION 01150 - SUSTAINABLE DESIGN REQUIREMENTS – LEED – CONSTRUCTION MANAGER – ADVISOR EDITION

PART 1 – GENERAL

1.1 Summary:

- A. All LEED-registered MCPS projects will be designed to achieve all prerequisites and no less than 37 points under the US Green Building Council's LEED® Green Building Rating System™ for Schools 2007 (LEED-S) , or the current version of LEED-Schools with all current revisions, for at least a LEED Silver-level Rating.
 - 1. Certain LEED prerequisites and credits needed to obtain LEED certification are dependent on material selections. Compliance with LEED prerequisites and credits shall be a basis of evaluation substitution requests.
 - 2. Additional LEED prerequisites and credits needed to obtain indicated LEED certification are dependent on Architect's design and other aspects of the Project that are not part of the Work.
- B. Refer to each project's LEED scorecard accompanying this Section for LEED-prerequisites and credits pursued for project.
- C. Contractor is responsible for all requirements of LEED-S that are contained throughout these Specifications.
- D. Contractor is not responsible for the application for LEED certification, nor for determination of methods of achieving LEED-S credits unless otherwise specifically indicated.

1.2 Related Work:

- A. Division 01 – Section 01524 "Construction Waste Management and Disposal" for detailed LEED-S requirements to be incorporated into construction process.
- B. Division 01 – Section 01410 "Indoor Air Quality Requirements" for detailed LEED-S requirements to be incorporated into construction process.
- C. Division 01 – Section 01815 "General Commissioning Requirements" for detailed commissioning requirements.
- D. Divisions 2-10, Sections for LEED-S requirements specific to Work of each of those sections. These requirements may or may not include references to LEED.

1.3 References:

- A. ANSI Standard S12.60-2002, Acoustical Performance Criteria, Design Requirements and Guidelines for Schools.
- B. ASHRAE Standard 52.2-1999: Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size.
- C. ASTM C1371-04 – Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.

- D. ASTM C1549-04 – Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
- E. ASTM E408-71(1996)e1 – Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
- F. ASTM E1918-97 – Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
- G. ASTM E1980-01 – Standard Practice for Calculating Solar Reflectance index of Horizontal and Low-Sloped Opaque Surfaces.
- H. ANSI/BIFMA M7.1-2005 and X7.1-2005 - Standard for Formaldehyde and TVOC Emissions of Low-Emitting Office Furniture Systems and Seating.
- I. California Department of Health Services Standard Practice for The Testing Of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.
- J. Carpet and Rug Institute (CRI) “Green Label Plus” IAQ Testing Program for Carpet System.
- K. Collaborative for High Performance Schools (CHPS) “Low-Emitting Materials (LEM) Table”
- L. Energy Policy Act 1992.
- M. EPA “Compendium of Methods for the Determination of Air Pollutants in Indoor Air,” PB90200288.
- N. EPA Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices (Chapter 3).
- O. Forest Stewardship Council (FSC) Guidelines.
- P. Green Building Certification Institute (GBCI).
- Q. GREENGUARD Environmental Institute - GREENGUARD Children and Schools Certification Program
- R. Green Seal (GC) Standard GC-03 “Anti-Corrosive Paints.”
- S. Green Seal (GS) Standard GS-11 “Paints.”
- T. Green Seal (GS) Standard GS-36 “Commercial Adhesives.”
- U. Green Seal (GS) Standard GS-42 “Commercial and Institutional Cleaning Services.”
- V. IESNA Recommended Practice 33-1999: Lighting for Exterior Environments.
- W. International Standard ISO 14021-1999 – Environmental Labels and Declarations – Self-Declared Environmental Claims (Type II Environmental Labeling).

- X. Resilient Floor Covering Institute (RFCI) “FloorScore Program”: vinyl, linoleum, laminate, wood (except solid wood) , rubber flooring.
 - Y. Scientific Certification Systems (SCS) “ Indoor Advantage Gold”: wall coverings, systems furniture, casework and insulation (non-flooring products).
 - Z. Sheet Metal and Air Conditioning-General Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 1995 2nd Edition-November 2007, Chapter 3.
 - AA. South Coast Air Quality Management District (SCAQMD) Rule #1113: “Architectural Coatings.”
 - BB. South Coast Air Quality Management District (SCAQMD) Rule #1168: “Adhesive and Sealant Applications.”
 - CC. USGBC (US Green Building Council) LEED-(Leadership in Energy and Environmental Design) Green Building Rating System: LEED-S Reference Guide, with all current revisions.
- 1.4 Definitions:
- A. Certified Wood: Wood grown in sustainably managed forest certified by an FSC accredited certification agency. FSC-certified wood products must have chain of custody from forest to manufacturer.
 - B. Chain-of-Custody: Tracking procedure documenting the status of wood products from the forest to the ultimate consumer. Used to verify compliance with Forest Stewardship Council (FSC) guidelines.
 - C. Construction Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition.
 - D. Core Learning Spaces: Space for educational activity where primary functions are teaching and learning; where good speech communication is critical to academic achievement. These spaces include, but are not limited to, classrooms (enclosed or open plan), instructional pods or activity areas, group instruction rooms, conference rooms, libraries, offices, speech clinics, offices used for educational purposes and music rooms for instruction, practice and performance (ANSI S12.60-2002).
 - E. Emissivity (a.k.a. infrared emittance): Indication of ability of a material to shed infrared radiation.
 - F. LEED-Online: USGBC project management tool where projects are registered, tracked, and submitted to USGBC for project certification. Information, resources, and support are made available to registered projects and project team members can upload credit templates, view and submit credit interpretation requests, manage key project details, and view and respond to reviewer comments.
 - G. Non-toxic: Neither immediately poisonous to humans, nor poisonous after a long period of exposure.
 - H. Post-consumer Recycled Content: Waste material generated by households or

by commercial industrial and institutional facilities in their role as end-users of the product, that can no longer be used for its intended purpose. Recycled content shall be defined in accordance with ISO Standard 14021.

- I. Pre-consumer Recycled Content: Material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind and scrap generated in a process and capable of being reclaimed within the same process that generated it. Recycled content shall be defined in accordance with ISO Standard 14021.
- J. Potable Water: Water suitable for drinking and supplied from wells or municipal water systems.
- K. Recycling: Collection, reprocessing, marketing and use of materials that were recovered or diverted from solid waste stream.
- L. Regionally Manufactured: Refers to location of final assembly of components into the building product furnished and installed by tradespeople.
- M. Regionally Extracted, Harvested, or Recovered: Refers to location where material was extracted, harvested or recovered. For products containing multiple materials, each material must be calculated separately.
- N. Salvage: Removal of existing materials or assemblies for re-installation or other use as directed by Owner.
- O. Sediment: Soil and other debris that has been eroded and transported by storm or production run-off water.
- P. Solar Reflectance Index: Measure of a material's ability to reject solar heat, as shown by a small temperature rise. It is calculated according to ASTM E1980 using material's Emittance and Reflectivity values. Standard black has an SRI of 0 and standard white has an SRI of 100.
- Q. Sustainable Design: Design which reduces negative effects on the environment using sound ecological, social, and economic methods, while considering the health and comfort of a building's occupants.
- R. Sustainable Forestry: The practice of managing forest resources to meet the long term product needs of humans while maintaining the biodiversity of forested landscapes. The primary goal is to restore, enhance, and sustain a full range of forest values, both economic and ecological.
- S. Toxic: Poisonous to humans, either immediately, or after a long period of exposure.
- T. Trash: Products or materials unable to be reused returned, recycled, or salvaged.
- U. Ventilation: The process of supplying and removing air to and from interior spaces by natural or mechanical means.
- V. Volatile Organic Compounds (VOC's): Carbon compounds that participate in atmospheric photochemical reactions, (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, and ammonium carbonate). The compounds vaporize (become a gas) at normal room temperatures. VOC content is calculated in grams/liter (g/L) according to 40 CFR 59, Subpart D (EPA method 24).

- W. Waste: Extra material or material that has reached end of its useful life in its intended use.
- 1.5 Action Plan Submittals:
- A. General: Within 30 days of contract award, submit a LEED-action plan based upon scorecard indications of LEED-credits pursued Contractor's approach to achievement of those credits.
 - B. Provide preliminary informational submittals indicating the following:
 - 1. Sustainable sites (SS) Credit 3: Design and construction credit compliance product data and calculation information:
 - a. For asbestos contamination: Documentation officially indicating property contaminated by a standard equivalent to the referenced ASTM standard, meeting intent to rehabilitate damaged sites where development is complicated by real or perceived environmental contamination above or below ground, such as a Comprehensive Asbestos Survey assessment performed in accordance with EPA Reg. 40CFR Part 763 as regulated by and in accordance with the Toxic Substances Control Act (TSCA), New York State Industrial Code Rule 56, and the New York City Department of Health Title 15,
 - 1) Copy of comprehensive asbestos investigation, which was performed by a certified asbestos investigator.
 - 2) Copy of remediation documentation.
 - b. Detailed narrative describing site contamination and remediation efforts undertaken by the project.
 - 2. Materials and resources (MR) Credit 2: Waste Management Plan complying with Division 1 Section 01524 "Construction Waste Management and Disposal."
 - 3. MR Credit 4: List of proposed materials with recycled content.
 - a. Provide a preliminary matrix, using LEED-S Online Template or spreadsheet verifying that credit requirements will be met based on identified materials containing recycled content.
 - b. Indicate post-consumer recycled and pre-consumer recycled content for each product having recycled content, its source, and estimated cost.
 - 4. MR Credit 5: List of proposed regionally manufactured and extracted, harvested, or recovered materials.
 - a. Provide a preliminary matrix, using LEED-S Online Template or spreadsheet, verifying that credit requirements will be met based on identified regionally manufactured and regionally extracted, harvested, or recovered materials.

- b. Identify each regionally manufactured material, and each regionally extracted, harvested, or recovered materials, its source, and estimated cost.
- 5. MR Credit 7: List of proposed certified wood products.
 - a. Provide a preliminary matrix, using LEED-S online template or spreadsheet, verifying that credit requirements will be met based on identified certified wood products.
 - b. Identify each FSC-certified wood product, its source, and estimated cost.
- 6. Indoor Environmental Quality (IEQ) Prerequisite 3: List of proposed acoustical ceiling finish materials to be installed in all classrooms and core learning spaces.
- 7. Indoor Environmental Quality (IEQ) Credit 3.1 and 3.2: Construction Indoor Air Quality Management Plan complying with Division 01 Section "Indoor Air Quality Requirements."

1.6 Product Data Submittals:

- A. General: Provide submittal information demonstrating LEED-compliance as described herein.
- B. Material Content Data: For each LEED-related product submitted for Divisions 02-10 provide the following data:
 - 1. Designation of percentages of post-consumer and pre-consumer recycled-content materials.
 - 2. Location of product manufacture and location of harvest/extraction/recovery of its primary raw materials.
 - 3. FSC-certification of sustainably harvested wood materials.
 - a. Provide vendor invoice listing each wood product on a line-item basis, FSC products identified by line-item, and material cost.
 - b. Vendor Chain of Custody number must be shown on invoice.
- C. Material Acoustical Performance: Provide Noise Reduction Coefficient (NRC) for acoustical ceiling finish materials in all classrooms and core learning spaces.
- D. Low-emitting materials: Provide manufacturer information as described in Division 01 Section 01410 "Indoor Air Quality Requirements."
- E. LEED-product submittals checklist: A Form shall be used as a cover sheet to each LEED-related submittal with the appropriate box(es) checked for each attribute being claimed for LEED-compliance.

1.7 Monthly Reports:

- A. Monthly progress tracking: With each application for payment, submit reports comparing actual purchasing and construction activities with LEED-action plans.

Provide updated information submittal using LEED-S online template or spreadsheet, for the following LEED-credits being sought for this Project:

1. Materials & Resources: Material costs per LEED-guidelines:
 - a. Credit 2 - Construction Waste Management.
 - b. Credit 4 - Recycled Content Materials.
 - c. Credit 5 - Regional Materials.
 - d. Materials and Resources: Total percentages of all permanently-installed wood value, for each item as it relates to the following credits.
 - 1) Credit 7 - Certified Wood Materials.
 - 2) Furniture may be included provided it is consistently included in Materials and Resources Credits 4-7.

1.8 Closeout Submittals:

- A. General: At completion of construction and prior to contract closeout, submit the following documentation in electronic format.
- B. Final package per requirements of Division 01 Section 01524 "Construction Waste Management."
- C. Final materials and resources package for MR Credits 4, 5 and 7: Provide individual electronic folders for each credit containing:
 1. Legible electronic copies of relevant material product data for each product listed on LEED-S online template.
 2. Final LEED-S online template including total project materials cost and a complete product list with costs demonstrating compliance with required level of achievement.
- D. Final Package for IEQ Prerequisite 3: Provide individual electronic folders for each credit containing:
 1. Legible electronic copies of relevant material product data for each product listed on LEED Online Template.
- E. IEQ Prerequisite 3, Minimum Acoustical Performance.
- F. Final packages per requirements of Division 01 Section 01410 "Indoor Air Quality Requirements."
- G. LEED-online: Final LEED-online template and associated required documentation uploaded to LEED-online project database for each of the following credits:
 1. Materials and Resources Credit 2, Construction Waste Management: As specified in Division 01 Section 01524 "Construction Waste Management and Disposal."
 2. Materials and Resources Credit 4, Recycled Content.
 3. Materials and Resources Credit 5, Regional Materials.

4. Materials and Resources Credit 7, Certified Wood.
5. Indoor Environmental Quality Credits: As specified in Division 01 Section 01410 “Indoor Air Quality Requirements.”

1.9 Project Meetings:

- A. Status of LEED-green building-related work shall be on the agenda of all required regularly scheduled job-site meetings.

1.10 Contractor LEED-Coordinator:

- A. Designate one LEED-accredited professional as the contractor LEED-coordinator for all LEED-registered projects.
 1. LEED-coordinator shall have access to LEED-online at project award and throughout project.
 2. LEED-coordinator shall be responsible for successful documentation of all credits stated to be Contractor responsibility.
 3. LEED-coordinator shall be present for all LEED-relevant meetings listed above.

PART 2 – PRODUCTS

2.1 General:

- A. Where specifications state that products shall meet certain LEED-criteria, these products shall be counted toward the minimum total materials required to meet the related LEED-MR Credits.
- B. Where specifications state that a preference shall be given to products with certain LEED criteria, these products may, at Contractor’s option, be counted toward the minimum total materials required to meet the related LEED-MR credit.
- C. Calculate material cost per LEED-guidelines, excluding labor, installation equipment, mechanical, electrical and plumbing components and specialty items such as elevators.

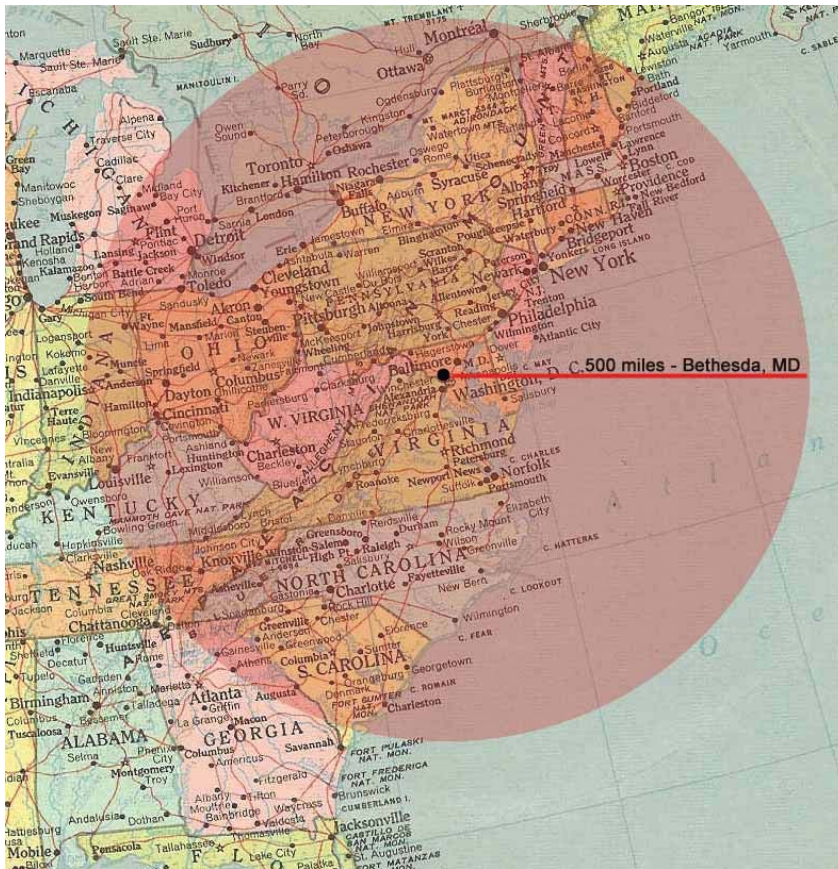
2.2 Recycled-Content Materials:

- A. Provide materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes a minimum 20 percent of total materials cost per LEED guidelines for MR Credit 4.

2.3 Regional Materials:

- A. Provide minimum 20 percent of materials that are harvested/extracted/recovered and manufactured within a 500-mile radius of project site as calculated by material cost per LEED guidelines for MR Credit 5.
- B. Refer to map below indicating 500-mile radius around Bethesda, MD for guidance:

Montgomery County Public Schools Facilities Guide
DIVISION 1 – GENERAL REQUIREMENTS



2.4 Certified Wood Materials:

- A. Provide wood-based products such that 50 percent of permanently installed wood-based materials are certified as sustainably harvested in accordance with the Forest Stewardship Council (FSC) guidelines, in compliance with LEED-Materials Credit 7.
 - 1. FSC Pure and FSC Mixed Credit shall be valued at 100 percent of product cost.
 - 2. FSC Mixed (NN) percent shall be valued at indicated percentage of their cost.
 - 3. FSC Recycled and FSC Recycled Credit do not contribute to this credit. These products qualify to contribute to MR Credit 4.
- B. Where FSC wood is combined with non-FSC wood in an assembly, all non-FSC wood shall meet the Controlled Wood criteria of the FSC. FSC wood in assemblies with non-Controlled Wood is not eligible for this credit

2.5 Minimum Acoustical Performance:

- A. Provide all classrooms and core learning spaces with ceiling finish materials with Noise Reduction Coefficient (NRC) of 0.70 or higher.

END OF SECTION
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