

**SUSTAINABLE DESIGN
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CHAPTER A-14

SUSTAINABLE DESIGN

14.1 GENERAL.

14.1.1 Scope. This chapter states criteria, requirements and guidance for sustainable design. Specific submittal requirements in this chapter supplement the requirements of Volume 1. LEED is our primary internal measure of success for sustainable design.

14.1.2 Objective. The objective of the Corps of Engineers (COE) is to incorporate sustainable design into all projects to the maximum extent feasible in coordination with functional, operational, cost and other project requirements.

14.1.3 Army Projects and Projects Located on Army Installations. Unless indicated otherwise in Specific Instructions or predesign conference, all Army projects and projects located on Army installations shall comply with the USACE Army LEED Implementation Guide and the requirements of this chapter.

14.1.4 Air Force Projects and Projects Located on Air Force Installations. Unless indicated otherwise in Specific Instructions or predesign conference, all Air Force projects and projects located on Air Force installations shall comply with the USACE Army Implementation Guide as modified by Department of the Air Force Memorandum "Air Force Sustainable Design and Development (SDD) Implementing Guidance" dated 02 June 2011, and the requirements of this chapter.

14.1.5 LEED Project Certification. Generally, LEED certification by Green Building Certification Institute (GBCI) at Silver level is required on selected FY09-FY12 Army projects that meet LEED Minimum Program Requirements (MPR), all FY12 and beyond Air Force projects that meet MPR, all FY13 and beyond Army projects that meet MPR, and selected other/tenant projects. **For all projects that meet MPR, LEED Silver certification by GBCI is required except when indicated otherwise in the predesign conference or Specific Instructions.** Government validation review during project execution does not relieve or modify in any way the responsibility to satisfy all requirements for LEED certification as defined by GBCI.

14.1.6 LEED Project Registration. All projects that meet MPR are required to be registered at LEED OnLine, use the LEED Letter Templates/Forms for project documentation, and have all project LEED documentation compiled at LEED Online. For campus projects the party responsible for campus site design is also responsible for registering the campus Block, administering the Block and coordinating with all other involved building design teams. Some projects may have been previously registered during Code 3 activities. At the predesign conference coordinate with the Savannah District Project Manager (SAS PM) on whether the Government has previously registered any portion of the project. Unless indicated otherwise in Specific Instructions or predesign conference, register the project, pay registration fees, administer the on-line project and transfer the Project Administrator role for the registered on-line project to the SAS Project Manager when services are complete. **Registration requirement applies to all full design, RFP preparation, and Code 3 services.** See Technical Requirements paragraph for instructions on registering projects and transfer of Project Administrator role.

14.1.6.1 Special Operations Forces (SOF) and Sensitive Projects. For some projects the User prohibits posting drawings on the internet for security reasons. For all SOF projects and all other security-sensitive facility projects, coordinate with User on acceptability of posting drawings and other project data at LEED Online prior to registering the project. If User prohibits online posting of drawings, obtain installation concurrence for tenant project or prepare waiver request for Army project to do the following: meet all achievement requirements but document LEED credits in accordance with USACE LEED-NC Submittals for Unregistered Projects instead of using LEED OnLine and not obtain formal certification (if required). Waiver instructions are in the USACE Army LEED Implementation Guide.

14.1.7 Unregistered Projects. Projects that do not meet MPR will not be registered and will provide LEED documentation using and in accordance with USACE LEED-NC Submittals for Unregistered Projects (v2.2 or 2009 document as applicable), located at <http://en.sas.usace.army.mil/enweb>.

14.1.8 GBCI Design Review. GBCI Design Review (split certification) is required at the completion of final design for all full design projects that are registered, regardless of whether certification is required. GBCI Design Review is always required in case the Government chooses to seek certification later based on the completed design. **For all full design registered projects, apply for LEED Design Review, pay Design Review fees to GBCI and coordinate directly with GBCI on review results. Apply for Design Review no later than 15 days after resolution of final design review comments.** In the case where multiple design teams are working on the same project, coordinate design review submission with the other teams (Master Site must be submitted first). Provide evidence of GBCI Design Review application date and copies of all GBCI correspondence to Project Manager. Coordinate with Project Manager, revise design and LEED documentation as necessary and resubmit/appeal denied design credits to achieve all credits and prerequisites that are denied by GBCI Design Review due to design error.

14.1.9 LEED Accredited Professional. Provide a LEED Accredited Professional who is responsible for ensuring compliance with requirements herein, coordinating GBCI review, ensuring correct interpretation of LEED credit requirements by the design team, providing guidance and assistance to PDT members in developing suitable and complete documentation, tracking overall LEED accomplishments, monitoring individual actions of PDT members responsible for each specific LEED credit, and ensuring LEED documentation is complete and correct and uploaded to LEED OnLine if applicable. In the case where multiple design teams are working on the same project the LEED AP will facilitate coordination between teams to complete the LEED documentation for the overall project.

14.1.10 Enhanced Commissioning. For all full designs that meet MPR the LEED Enhanced Commissioning credit is required and the Government will provide the Commissioning Authority (CxA) unless indicated otherwise in Specific Instructions or predesign conference. Coordinate with the CxA during design development.

14.2 **APPLICABLE PUBLICATIONS.** The following publications form a part of this Manual to the extent indicated by the references thereto.

Department of the Air Force Memorandum "Air Force Sustainable Design and Development (SDD) Implementing Guidance dated 02 June 2011, located at the Whole Building Design

Guide (<http://wbdg>) Documents and References/Construction Criteria Base/Documents Library/Air Force Criteria

Army Memorandum "Sustainable Design and Development Policy Update (Environmental and Energy Performance)" dated 27 October 2010

Air Force MILCON Sustainability Requirements Reporting Scoresheet (LEED 2009), located at <http://en.sas.usace.army.mil/enWeb/>

USACE Army LEED Implementation Guide, August 21, 2011, located at <http://en.sas.usace.army.mil/enWeb/>

14.3 PRECONCEPT SUBMITTAL REQUIREMENTS.

LEED Project Checklist. Each scheme submitted shall include a LEED Project Checklist identifying the LEED points earned and those points which have good potential to be developed by the scheme. Each scheme and LEED Project Checklist shall include in the "Yes" column at least the minimum required points. Air Force projects - substitute Air Force MILCON Sustainability Requirements Reporting Scoresheet for LEED Project Checklist.

14.4 CODE 3 DESIGN REQUIREMENTS.

Comply with paragraphs 14.1.3 or 14.1.4 as applicable. Submittal content and format shall be as described in applicable year Project Definition Report (PDR) instructions (obtained from SAS PM). Include LEED registration information in the PDR (rating tool, version, all registered block/project numbers and names, name of SAS PM that Project Administrator role has been transferred to).

14.5 CONCEPT/EARLY PRELIMINARY (35 PERCENT) DESIGN SUBMITTAL REQUIREMENTS.

14.5.1 LEED Project Checklist. Provide completed LEED Project Checklist for each building showing credits project will pursue. Air Force projects - substitute Air Force MILCON Sustainability Requirements Reporting Scoresheet for LEED Project Checklist.

14.5.2 Owner's Project Requirements Document. Provide completed Owner's Project Requirements document as required by LEED Fundamental Commissioning prerequisite. A USACE Template for this document is available at <http://en.sas.usace.army.mil/enWeb/>. Use of this template is optional.

14.6 PRELIMINARY (60 PERCENT) SUBMITTAL REQUIREMENTS.

LEED Project Checklist. Provide completed LEED Project Checklist for each building showing credits project will pursue. Implement concept submittal review comments.

14.7 FINAL DESIGN SUBMITTAL REQUIREMENTS.

14.7.1 Design Credit Documentation. For all project credits and prerequisites, **provide all LEED design credit documentation that is due at Final Submittal** as indicated in the

applicable USACE LEED Submittals spreadsheet located at <http://en.sas.usace.army.mil/enWeb/>. For registered projects this generally means **all completed LEED Forms and all of their attachments as required by LEED OnLine**. Include completed LEED Project Checklist for each building showing credits that have been incorporated into the project. Implement all prior submittal review comments. Air Force projects - substitute Air Force MILCON Sustainability Requirements Reporting Scoresheet for LEED Project Checklist. **Locate this in the Sustainable Design section of the Final Design Analysis.**

14.7.2 LEED OnLine. For all registered projects upload all general project data and design credit data required by LEED Online by final submittal date. Invite the Government Team Members indicated in paragraph 14.10.5.5 to LEED Online projects no later than date of final submittal.

14.7.3 LEED Boundary. Show and label all building LEED project boundaries and LEED campus boundaries as applicable in contract drawings. If LEED project boundary is coincident with project limits of construction, note this in contract drawings. For campus projects follow the applicable LEED Application Guide for Multiple Building and On-Campus Projects (AGMBC) guidance for determining individual building and campus boundaries.

14.8 **CORRECTED FINAL DESIGN SUBMITTAL REQUIREMENTS.**

14.8.1 Corrected Final Submittal. The corrected final submittal is not to be considered a normal design level and will be provided in those cases in which the review comments require revision due to A-E error or omission. Implement final submittal review comments and **submit all revised documents that show implementation of the comments.**

14.8.2 GBCI Design Review. See paragraph 14.1.8 "GBCI Design Review" for design review application which occurs in conjunction with corrected final design.

14.9 **REQUIREMENTS FOR PREPARATION OF DESIGN/BUILD RFP SOLICITATION PACKAGES.**

Comply with USACE Army LEED Implementation Guide. Air Force projects - submit Air Force MILCON Sustainability Requirements Reporting Scoresheet at final RFP submittal (separate submittal – not in the RFP).

14.10 **TECHNICAL REQUIREMENTS.**

14.10.1 General. Comply with paragraphs 14.1.3 or 14.1.4 as applicable. If any portion of requirement cannot be met and a waiver request is needed, prepare the waiver request and all supporting technical documentation.

14.10.2 High Performance and Sustainable Buildings Guidance. In addition to the required LEED credits indicated in the USACE Army LEED Implementation Guide, all new construction and major renovation shall conform to the following requirements.

14.10.2.1 Integrated Design. Use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and

indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

14.10.2.2 Storm Water Management. Employ design and construction strategies (Best Management Practices) that reduce stormwater runoff, reduce discharges of polluted water offsite and maintain or restore predevelopment hydrology with respect to temperature, rate, volume and duration of flow to the maximum extent practicable. See Chapter A-1 Site Development.

14.10.2.3 Smoking Signage. Provide exterior and interior NO SMOKING signage that conveys building and grounds smoking policy.

14.10.2.4 EPA WaterSense Products and Contractors. Except where precluded by other project requirements, use EPA WaterSense labeled products where available and irrigation contractors that are certified through a WaterSense labeled program where available.

14.10.2.5 Process Water Conservation. When potable water is used to improve a building's energy efficiency, employ lifecycle cost effective water conservation measures to the maximum extent practicable.

14.10.2.6 Solar Hot Water Heating. Provide at least 30 percent of the domestic hot water requirements through solar heating methodologies unless the results of a life cycle cost analysis developed using the Building Life Cycle Cost program (BLCC) demonstrates that the solar water heating system is not life cycle cost effective. See Chapter A-4 Mechanical.

14.10.2.7 Energy Star and FEMP Products. Specify Energy Star or FEMP designated products.

14.10.2.8 Renewable Energy. The Government's goal is to implement on-site renewable energy generation for Government use when lifecycle cost effective. See ECB 2011-1.

14.10.2.9 Daylighting. Provide daylighting of occupied spaces to the maximum extent practicable. Except where precluded by other project requirements, do the following in at least 75 percent of all spaces occupied for critical visual tasks: achieve a 2 percent glazing factor (calculated in accordance with LEED credit EQ8.1), provide appropriate glare control and provide either automatic dimming controls or occupant-accessible manual lighting controls.

14.10.2.10 Low-Emitting Materials. Use materials with low pollutant emissions to the maximum extent practicable, including but not limited to composite wood products, adhesives, sealants, interior paints and finishes, carpet systems and furnishings.

14.10.2.11 Federal Recycled/Recovered Products Preferred Procurement Program (EPA Comprehensive Procurement Guidelines or CPG). The Resource Conservation and Recovery Act (RCRA) of 2002 required the U.S. Environmental Protection Agency (EPA) to create procurement preferences for recycled content products that are applicable to all federal procurement (to designate products for recycled content). SAS UFGS 01 62 35 10 RECYCLED/RECOVERED/BIOBASED MATERIALS, located at <http://en.sas.usace.army.mil/enweb>, addresses this requirement. Include this section in all full design projects and **follow the specifier notes contained in this UFGS** for incorporation of designated products and editing of other technical sections.

14.10.2.12 Federal Biobased Products Preferred Procurement Program (FB4P). The Farm Security and Rural Investment Act (FSRIA) of 2002 required the U.S. Department of Agriculture (USDA) to create procurement preferences for biobased products that are applicable to all federal procurement (to designate products for biobased content). SAS UFGS 01 62 35 10 RECYCLED/RECOVERED/BIOBASED MATERIALS, located at <http://en.sas.usace.army.mil/enweb>, addresses this requirement. Include this section in all full design projects and **follow the specifier notes contained in this UFGS** for incorporation of designated products and editing of other technical sections.

14.10.2.13 Biobased and Environmentally Preferable Products. Use materials with biobased content, materials with rapidly renewable content, certified wood products and products that have a lesser or reduced effect on human health and the environment over their lifecycle to the maximum extent practicable.

14.10.2.14 Energy Efficiency. Per ECB 2011-1 new construction through FY12 is required to achieve minimum 40% energy use reduction using ASHRAE 90.1 2007 baseline and beginning FY13 new construction must comply with ASHRAE 189.1 energy efficiency requirements. Note Optimize Energy requirements in USACE Army LEED Implementation Guide are also required and may exceed these requirements. See Chapter A-7 Energy Analyses, Economic Analyses, Control Systems, EMCS.

14.10.3 Army ASHRAE 189.1 Compliance. All FY13 and beyond Army projects and projects located on Army installations shall comply with ASHRAE 189.1 to the extent indicated in Army Memorandum “ Sustainable Design and Development Policy Update (Environmental and Energy Performance)” dated 27 OCT 2010 and ECB 2011-1.

14.10.4 USACE Viable Energy and Sustainability Enhancements List. “Viable Energy and Sustainability Enhancements List” is Attachment A of USACE ECB 2011-1 “High Performance Energy and Sustainability Policy” (available at the Whole Building Design Guide (<http://wbdg>) Documents and References/Construction Criteria Base/Documents Library/Army/COE Criteria). Review and incorporate items included in this list as appropriate to project site and facility type.

14.10.5 LEED Guidance.

14.10.5.1 SAS Guide Specifications. Several SAS versions of UFGS are located at <http://en.sas.usace.army.mil/enweb>. They address many of the requirements in this paragraph. Use these SAS UFGS in all applicable projects. **Follow the specifier notes contained in these UFGS** for editing of specifications.

14.10.5.2 Air Force projects. Require Contractor submittal of Air Force MILCON Sustainability Requirements Reporting Scoresheet submittal at construction completion in the contract documents for full design projects. Require Contractor submittal of the scoresheet at final design and again at construction completion in the RFP for design-build projects.

14.10.5.3 LEED OnLine Registration Instructions. Comply with the following when completing LEED project registrations. Include these instructions in all DB RFPs that require LEED registration by DB Contractor.

A. Project Title:

1st part of title identify client - ARMY, AIR FORCE or DOD as applicable

2nd part of title - project number from DD1391

3rd part of title – project and building name as applicable (if a separate registration is needed for each building in the project the name needs to indicate which building)

EXAMPLE: “ARMY 55355 Barracks Complex Ph3 COF 2”

EXAMPLE: “DoD 328166 McNair School”

EXAMPLE: “AIR FORCE 329238 Avionics Facility”

B. Project Owner Information

General Owner Organization: U.S. Army Corps of Engineers

May we publish project owner information?: pick “yes”

Owner Type: pick “Government Use: Federal”

Main Office: leave blank

Primary Contact: The Primary Contact is the USACE Project Manager. Confirmation of Agent Form is not needed.

14.10.5.4 Government LEED Team Members. For all SAS registered projects invite and assign “QA/QC” role to:

Judith.f.milton@usace.army.mil

Stephen.d.bentley@usace.army.mil

For all Fort Bragg registered projects invite and assign “QA/QC” role to:

Lynda.s.pfau.ctr@mail.mil

Include these instructions in all DB RFPs that require LEED registration by DB Contractor.

14.10.5.5 DoD Exemption to MPR 6. Invoke this exemption on all projects (LEED 2009 and beyond – not applicable to v2.2). Follow instructions “MPR 6 Department of Defense Exemption Process” located at <http://en.sas.usace.army.mil/enWeb/>. Include these instructions in all DB RFPs that require LEED registration by DB Contractor.

14.10.5.6 Transfer of LEED Online Project Administrator Role. Comply with the following and incorporate these requirements in all construction contracts and DB RFPs as applicable.

A. CODE 3 SERVICES:

- Design team that performs Code 3 services obtains all LEED registrations and pays registration fees (person who registers is Project Administrator). No input beyond registration is required – project is registered at this time only to ensure it can be executed using the same rating tool under which it is budgeted and is not subject to LEED rating tool updates.
- Design team transfers Project Administrator role to SAS Project Manager (PM) at completion of Code 3 services.

B. DESIGN BID BUILD (DBB) PROJECTS:

- Designer of Record (DOR) obtains all required LEED registrations and pays registration fees (coordinate with SAS PM on prior registrations in predesign conference). For all prior registrations, SAS PM transfers Project Administrator role to DOR at start of design.
- DOR pays for and obtains GBCI Design Review.
- Construction contract requires Contractor to pay for and obtain LEED certification (responsibility for design credits and GBCI Design Review by others).
- DOR transfers Project Administrator role to SAS PM after GBCI Design Review is complete.

- SAS PM transfers Project Administrator role to Construction Contractor after award.
- If construction contract is awarded before GBCI design review is complete, DOR assigns Team Manager role to Construction Contractor POC at start of construction to provide interim access to LEED OnLine.
- Construction Contractor pays for and obtains final LEED certification and transfers Project Administrator role to SAS Project Engineer after final LEED certification is complete.
- SAS Project Engineer coordinates with installation and, according to their direction, either transfers Project Administrator role to installation POC or contacts GBCI to cancel the project.

C. DESIGN-BUILD (DB) PROJECTS

- RFP Preparer obtains all required LEED registrations and pays registration fees (coordinate with SAS PM on prior registrations in predesign conference).
- RFP Preparer transfers Project Administrator role to SAS PM when RFP is complete.
- SAS PM transfers Project Administrator role to DB Contractor after award.
- DB Contractor pays for and obtains LEED certification and transfers Project Administrator role to SAS Project Engineer after final LEED certification is complete.
- SAS Project Engineer coordinates with installation and, according to their direction, either transfers Project Administrator role to installation POC or contacts GBCI to cancel the project.

14.10.5.7 Male/Female Ratio. GBCI is sometimes refusing to accept military male/female ratios in project water use reduction submittals. If design guidance indicates other than a 50/50 ratio, request backup documentation during design development to support the male/female ratio provided, including whether it accommodates anticipated future changes during building lifetime. Include this in the LEED documentation submitted to GBCI. If GBCI refuses to accept the male/female ratio, notify SAS PM and Judy Milton (Judith.f.milton@usace.army.mil), revise water reduction documentation to use a 50/50 ratio, and resubmit. **Design the project to include added LEED points as needed to compensate for the potential loss of points due to having to use a 50/50 ratio.**

14.10.5.8 Reporting of LEED Certifications. Include a requirement in all construction contracts and DB RFPs that Contractor shall notify SAS SDD POC Judy Milton by email when any certification is received at judith.f.milton@usace.army.mil. Include project number, building or buildings, installation, rating tool and certification level in notification.