



NATIONAL GUARD BUREAU

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JOINT BASE ANDREWS MD 20762-5157

1 May 2015

MEMORANDUM FOR DISTRIBUTION

FROM: NGB/A7

SUBJECT: Air National Guard Engineering Technical Letter (ANGETL) 15-01-01:
“Sustainable Design, Development, and Resource Conservation”

1. **PURPOSE.** To inform and implement increasingly robust sustainability thresholds for best practices in sustainable planning, design and construction of sites and facilities as well as to comply with energy and water resource conservation federal directives.
2. **APPLICABILITY.**
 - 2.1. **Effective Date:** Immediately
 - 2.2. **Intended Users:** Base Civil Engineers (BCE) and architect-engineering consultants (A-E).
 - 2.3. This ANGETL applies to all new designs, designs for which NGB/A7O formal approval of the Type A-2 Concept Development Submittal has not yet been issued and for all projects undergoing code and criteria review. Application of this ANGETL for projects that have obtained formal approval of the Type A-2 Submittal shall be on a case-by-case basis and as directed by the NGB/A7O Project Manager.
3. **REFERENCE PUBLICATIONS.** Refer to Attachment 1 for a list of referenced publications.
4. **FEDERAL DIRECTIVES.** The requirements of the following directives are incorporated into this ANGETL:
 - 4.1. Energy Policy Act of 2005 (EPA05), 8 August 2005
 - 4.2. 10 CFR Part 433, Energy Efficiency Standards for New Federal Commercial and Multi-Family High-Rise Residential Buildings
 - 4.3. 10 CFR Part 436, Federal Energy Management and Planning Programs, Life Cycle Cost Analysis, Subpart A – Methodology and Procedures

- 4.4. Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (HPSB MOU), 17 January 2006
- 4.5. Executive Order (EO) 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 24, January 2007
- 4.6. Energy Independence and Security Act of 2007 (EISA 2007)
- 4.7. EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 5 October 2009
5. **ANG DIRECTIVES.** This ANGETL reinforces the Air National Guard's commitment to incorporate sustainable practices and resource conservation in the planning, programming, design and construction of facilities and infrastructure. All permanent construction activity on ANG installations in the United States and its territories shall comply with this ANGETL and Attachment 1.
6. **PROJECT SCOPE.** To incorporate sustainable concepts at the earliest point in a project, it is important for the BCE to coordinate with the NGB/A7O Project Manager to develop a set of sustainable design goals at the beginning of the design.
 - 6.1. These project-specific goals must incorporate applicable baseline sustainable development and energy intensity targets established by U.S. Green Buildings Council (USGBC) Leadership in Energy and Environmental Design (LEED) prerequisites, EOs federal statutes, DOD policy, and ANG policy.
 - 6.2. The NGB/A7O project manager establishes the project's category of work, sustainability goals and USGBC registration requirements. These requirements are conveyed to the USPFO and BCE in the design instruction (DI).
7. **PROJECT CATEGORIES**
 - 7.1. **Category of Work**
 - 7.1.1. ANG Sustainment, Restoration, and Modernization (SRM) and Military Construction (MILCON) projects fall into one of five sustainment categories of work, with unique sustainable design and energy conservation requirements associated with each category: General Construction, Horizontal, Utility, Industrial, and Vertical Construction. Whether or not a project is registered with USGBC, each category of work has a minimum LEED point requirement.
 - 7.1.1.1. **General Construction.** This category of work is typically assigned to projects which often have a specific and focused project scope. Such as roof repair, mechanical repair, electrical repair, interior renovations, etc.

- 7.1.1.2. Horizontal Construction.** This category of work is typically assigned to MILCON or SRM projects involving site development, significant earthwork, road repair and construction, airfield repair and construction, sidewalks, parking lots, revetments, curbs, and gutters.
- 7.1.1.3. Utility Construction.** This category of work is typically assigned to MILCON or SRM projects involving electric, gas, water, steam, wastewater, substations, lift stations, oil/water separators, storage tanks, and petroleum, oil, and lubricants (POL) line and transformer projects.
- 7.1.1.4. Industrial Construction.** This category of work is typically assigned to MILCON facility projects for which mechanical cooling and heating is provided for less than 50% of the building square footage. This category is rarely used in ANG construction but is typically assigned to unoccupied facilities such as a munitions storage igloos.
- 7.1.1.5. Vertical Construction.** This category of work includes construction of new buildings and whole-scale renovations which include changes to building envelope and interior building systems.

8. PROJECT SUSTAINABILITY GOALS

- 8.1. ANG Meritable Goal.** Project shall incorporate sustainable design practices and criteria to the maximum extent possible within the authorized scope of the project DD Form 1391. The project design shall include formal sustainable design analysis for all elements within the project scope, and the project shall be required to achieve the maximum possible (1 to 39 points) sustainable design points (within authorized program scope), in accordance with USGBC criteria. Project shall not be registered with USGBC and shall not achieve USGBC recognition.
- 8.2. ANG Certifiable Goal.** Project shall incorporate sustainable design practices and criteria and shall be designed and constructed such that it accomplishes a minimum of 40 points in accordance with USGBC criteria. The project design shall include formal sustainable design analysis for all elements within the scope of the project, in accordance with USGBC criteria. Project shall not be registered with USGBC and shall not achieve USGBC certification. The only difference between this goal and a USGBC Certified goal project is that the project will not go through USGBC registration and recognition process.
- 8.3. ANG Silver Certifiable Goal.** Project shall incorporate sustainable design practices and criteria and shall be designed and constructed such that it accomplishes a minimum of 50 points in accordance with USGBC criteria. The project design shall include formal sustainable design analysis for all elements within the scope of the project, in accordance with USGBC criteria. Project shall not be registered with USGBC and shall not achieve USGBC certification. The only difference between this goal and a

LEED-NC Silver goal is that the project will not go through the USGBC registration and recognition process.

- 8.4. LEED Certified Goal.** Project shall incorporate sustainable design practices and criteria and shall be designed and constructed such that it accomplishes a minimum of 40 points in accordance with USGBC criteria. The project design shall include formal sustainable design analysis for all elements within the project scope in accordance with USGBC criteria. Project shall be registered with USGBC and shall achieve USGBC certification.
- 8.5. LEED-NC Silver Goal.** Project shall incorporate sustainable design practices and criteria and shall be designed and constructed such that it accomplishes a minimum of 50 points in accordance with USGBC criteria. The project design shall include formal sustainable design analysis for all elements within the project scope in accordance with USGBC criteria. Project shall be registered with USGC and shall achieve USGBC Silver certification.

9. PROJECT SUSTAINABILITY REQUIREMENTS

- 9.1. Design Instruction Revisions:** During the course of design of the project, if the A-E demonstrates the project scope may achieve a higher sustainability goal, or the inability to meet the established goal, within the limits of the DD1391 scope and budget, then the NGB/A7O PM may issue a revised DI with the new sustainability goal. By the end of the design process, the sustainability goal as established by the DI shall become a contractual requirement for contractor.
- 9.2. General Construction Projects:** Will have an ANG Meritable goal, and will achieve as many points as the scope of the project allows.
- 9.3. Horizontal Construction Projects:**
- 9.3.1.** Will have an ANG Meritable goal, and will achieve as many points as the scope of the project allows, with a minimum of 9 points.
 - 9.3.2.** Reference Attachment 3 for those elements typically used to achieve points for projects in this category.
- 9.4. Utility Construction Projects:**
- 9.4.1.** Will have an ANG Meritable goal, and will achieve as many points as the scope of the project allows, with a minimum of 7 points.
 - 9.4.2.** Reference Attachment 4 for those elements typically used to achieve points for projects in this category.
- 9.5. Industrial Construction Projects:**

9.5.1. Projects meeting the USGBC Minimum Project Requirements (MPR) shall have a goal of LEED Silver, and shall achieve a minimum of 50 points. Projects in this category that do not meet the MPR will have a goal of ANG Silver Certifiable (not registered, minimum 50 points).

9.5.2. Reference Attachment 5 for those elements typically used to achieve points for projects in this category.

9.6. Vertical Construction Projects: Projects meeting the USGBC MPR's will have a goal of LEED Silver, and shall achieve a minimum of 50 points.

9.6.1. Projects in this category that do not meet the MPR will have a goal of LEED Certifiable Silver (not registered, minimum 50 points).

9.6.2. Reference Attachment 6 for those elements typically used to achieve points for projects in this category.

10. LEED™ CERTIFICATION PROCESS

10.1. General: ANG projects shall be executed using the LEED rating system.

10.1.1. Minimum Project Requirements (MPRs). The LEED rating system has MPRs that must be satisfied before a project can qualify for LEED certification.

10.1.1.1. Reference standards, such as ASHRAE 90.1, are used to determine prerequisite and credit thresholds and are tied to the registration date.

10.1.1.2. The A/E shall pay all fees and register the project with USGBC. Registration shall occur prior to the submission of the Type A-2 (Concept Development Submittal).

10.2. Specific ANG Project Registration Requirements

10.2.1. Project shall be registered to accomplish both USGBC Design Application review and USGBC Construction Certification review.

10.2.2. Project Home Page – Registration Details Tab – Project Information – Project Title: The project title shall be as follows: Unit designation followed by the DD 1391 project title. The A-E may abbreviate the DD 1391 title to stay within 40 character limit.

10.2.3. Project Home Page – Registration Details Tab – Project Information – Project Address: The project address shall be the US Postal Service approved address of the facility for which the project exists. Do not use BCE, Contracting Officer, United States Property and Fiscal Office (USPFO) or A-E firm office addresses for this data field.

- 10.2.4. Project Home Page – Registration Details Tab – Project Information: Project is confidential. Enter NO unless the project is classified or unless specifically directed otherwise by the ANG.
 - 10.2.5. Project Home Page – Registration Details Tab – Project Owner Information – Organization: The organization name shall be Air National Guard
 - 10.2.6. Project Home Page – Registration Details Tab – Project Owner Information – USGBC National Member: Enter YES
 - 10.2.7. Project Home Page – Registration Details Tab – Project Owner Information – Owner Type: Select Government use: Federal
 - 10.2.8. The USGBC Project Registration Access ID Number and the Project ID Number shall be provided to the NGB/A7O Project Manager.
 - 10.2.9. The NGB/A7O Project Manager and the NGB A7O Sustainable Programs POC shall both be invited to be online team members from project onset (2 invitations).
- 10.3. **Design Application Review.** The design application review shall be accomplished by and paid for by the A-E prior to the submission of the A-2 Concept Development Phase.
- 10.4. **Construction Application Review.** As part of Type C services, the A-E LEED AP will continue to oversee the LEED certification process (including preparing and submitting all required templates) during the construction phase and at the completion of construction shall oversee the USGBC construction application review and final certification.
- 10.5. **USGBC documentation.** Upon LEED certification, the design A-E shall provide the BCE and NGB/A7O with a final accounting of point status and energy efficiencies awarded.
- 10.5.1. Specific deliverables to meet this requirement are:
 - 10.5.1.1. ANG Sustainable Design and Energy Conservation Score Sheet (hereafter referred to as the ANG Score Sheet) see Attachment 2.
 - 10.5.1.2. USGBC construction review comments.

11. LEED AP WITH SPECIALTY

- 11.1. For all MILCON and SRM projects (regardless of LEED goal), the A-E firm shall provide a LEED AP with a specialty in Building Design and Construction (BD+C) as part of the design team. The A-E shall develop a strategy to accomplish the ANG Category of Work and the LEED goal objectives.

11.2. The optimal candidate for the team LEED AP is one who can be involved at the earliest point in a project and should be involved through the project completion.

12. COMMISSIONING AUTHORITY (CxA). For all MILCON and SRM projects, in which a CxA is required (regardless of LEED goal) for commissioning, the A-E shall provide CxA services for all building systems being affected.

12.1. The participation of a CxA is a requirement of Prerequisite 1, Energy and Atmosphere (EAp1), Fundamental Commissioning of the Building Energy Systems and is described in the USGBC reference guide for the BD+C rating systems.

12.2. The CxA shall perform the required actions to lead, review, and oversee the development of the required commissioning process activities.

12.3. A-E's CxA shall meet the requirements of USGBC; refer to the qualifications of the project team for Fundamental Commissioning in the EAp1 credit description in the USGBC reference guide for the appropriate rating system.

12.4. The project can earn additional point(s) for Credit 3, Energy and Atmosphere (EAc3), Enhanced Commissioning of the Building Energy Systems and is described in the USGBC reference guide for the BD+C rating systems with the participation of a qualified CxA.

12.5. The decision to pursue or not pursue enhanced commissioning shall be made at the Type A design stage so that the correct CxA services are provided as part of the A-E services.

13. DOCUMENTATION AND REPORTING REQUIREMENTS

13.1. Tracking. For all categories of work (general construction, vertical, horizontal, utility, and industrial), an ANG Score Sheet (Attachment 2) must be prepared by the A-E's LEED AP.

13.2. Documentation. Sustainable documentation for all projects will be done in a collaborative manner between the A-E, BCE, and NGB/A7O PM in accordance with ANG ETL 10-03 (Air National Guard Design Objectives and Procedures).

13.2.1. The ANG Score Sheet shall be provided to the A-E as part of the project documentation for the project (see ANGETL 12-07, Preparation of the Project Documentation Package).

13.2.2. Beginning in the Type A phase and continuing throughout the design, the A-E shall update the ANG Score Sheet, review it with the BCE and mutually establish possible sustainable elements that are appropriate to the project.

13.2.3. As the project progresses through design and construction, the A-E shall update and submit the score sheet with each design submittal and at the end of construction.

13.2.4. Documentation shall be maintained at the base and shall include the ANG Score Sheet, contract documents, the project sustainability design analysis, submittals, plans, receipts, reports, and all other items reviewed by the A-E's LEED AP during the sustainability status validation process.

13.3. Type C Services.

13.3.1. If Type C services are authorized by the NGB/A7O PM, the A-E's LEED AP shall track and manage the documentation process during the construction phase to ensure that the project's sustainable requirements are met.

13.3.2. If a project's sustainable goal does not require LEED certification, the A-E's LEED AP shall track and manage documentation to assure that the contract sustainability requirements are accomplished.

14. PROJECT DELIVERY SCOPE/METHOD

14.1. Design-Build (D-B). The Architect-Engineer-Contractor (A-E-C) team shall use the request for proposal (RFP) to develop documents which implement USGBC LEED strategies for design and construction in accordance with the contract scope of work.

14.1.1. The A-E developing the RFP for the government shall register the project with USGBC while developing performance documents.

14.1.2. The A-E responsible for the development of the performance documents shall translate the sustainable goals from the NGB/A7O PM into design/construction USGBC LEED requirements for the A-E-C team.

14.1.3. The A-E shall transfer the project in LEED Online to the awarded D-B Contractor.

15. UTILITY METERING REQUIREMENTS. All facilities shall have meters installed in accordance with UFC 1-200-02, High Performance and Sustainable Building Requirements.

16. ENERGY AND WATER CONSERVATION REQUIREMENTS

16.1. Optimizing energy and water conservation is a priority in the design of ANG construction projects. Energy and water efficiency design decisions shall utilize Life Cycle Cost Analysis (LCCA) that considers the specific project conditions including anticipated occupancy schedule and appropriate maintenance / repair costs in accordance with ANGETL 15-01-01, Air National Guard Design Policy. LCCA will utilize the Building Life Cycle Costing (BLCC) program.

16.2. EAct05

- 16.2.1.** EAct05 compliance shall be in accordance with the project DD1391 and UFC 1-200-02, High Performance and Sustainable Building Requirements.
- 16.2.2.** For projects with a limited scope, requiring work limited to building elements (such as roof, windows, HVAC or lighting), those elements shall be designed by the A-E such that they support a future ability for the building to be brought into full EAct05 compliance.
- 16.2.3.** Compliance requirements and application shall be in accordance with UFC 1-200-02, High Performance and Sustainable Building Requirements. Energy modeling/calculations must be provided for all projects that are required to comply with the EAct05. Initial project modeling results are to be provided with the Type A-2 submission and shall be updated/refined at each subsequent submission. Project energy model summary results for EAct05 shall be recorded on the appropriate tab of the ANG Score Sheet, see Attachment 2.

16.3. EISA 2007

- 16.3.1.** EISA 2007 compliance (as it relates to water conservation) is required for all MILCON and SRM projects, where applicable by scope.
- 16.3.2.** If applicable by project scope, the project shall be designed to supply a minimum of 30% of domestic hot water via solar heating systems, when demonstrated to be life cycle cost effective by the A-E's analysis.
- 16.3.3.** EISA 2007 Section 438 compliance is required for all MILCON and SRM projects, where applicable by scope. Reference Attachment 7 for implementation guidance.

17. RENEWABLE ENERGY TECHNOLOGIES. Renewable energy technologies should be considered early in the planning process to include evaluation of wind, solar hot water, ground source heat pumps, photovoltaic (PV) and passive solar, including daylighting and transpired heat walls, and shall include the required operation and maintenance for those systems. The following shall be accomplished, as the project scope allows:

- 17.1. Photovoltaic Systems:** The project shall pursue incorporation of the on-site renewable energy credits in the LEED rating system through the application of building-mounted PV systems, to the maximum extent possible if life cycle cost effective. If PV systems are not feasible due to project scope, cost constraints, LCCA, selected facility

sustainable goals or other approved reason, then as a minimum the following shall be accomplished, as project scope allows:

- 17.1.1. The project shall be designed such that the project base bid supports incorporation of renewable energy PV systems as a future ANG facility energy project. Concept design shall ensure that facility orientation and roofing design maximize potential for PV systems.
- 17.1.2. The base bid design shall ensure that the structural and roofing system can support roof-mounted PV.
- 17.1.3. Appropriate roof access shall be provided for installation and maintenance of the PV systems.
- 17.1.4. Conduit shall be prepositioned for electrical runs between the roof PV location(s) and the building electrical room.
- 17.1.5. The building electrical room shall be sized and designed to accommodate a PV system.
- 17.1.6. The electrical system shall be designed for easy incorporation of PV system (spare circuits, dedicated panels, etc.).

17.2. Domestic Solar Hot Water Systems:

- 17.2.1. If applicable by project scope, the design shall ensure that the facility orientation and roofing design maximize potential for domestic hot water systems.
- 17.2.2. If the use of a domestic solar hot water system is not feasible due to project scope constraints or not presently life cycle cost effective, then provisions similar to section 17.1 shall be incorporated in the base design to allow for easy future installation.

17.3. Ground Source Heating and Cooling systems: Ground source systems shall be considered as one of the three HVAC options for evaluation in accordance with ANGETL 15-01-04, Mechanical Engineering.

18. POINTS OF CONTACT: The point of contact for this ANGETL is Mr. Douglas Rowand, NGB/A70 at (240) 612-8112, DSN 612-8112, or email douglas.s.rowand.civ@mail.mil.



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Attachments:

1. Reference Publications
2. Air National Guard Sustainable Design and Energy Conservation Score Sheet, LEED 2009
3. Guidance on Applying LEED Principles to ANG Horizontal Construction Projects
4. Guidance on Applying LEED Principles to ANG Utility Construction Projects
5. Guidance on Applying LEED Principles to ANG Industrial Construction Projects
6. Guidance on Applying LEED Principles to ANG Vertical Projects, Not Meeting MPRs
7. Implementing Guidance to Meet EISA 2007 Section 438 Requirements
8. Current ANGETL Index

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