

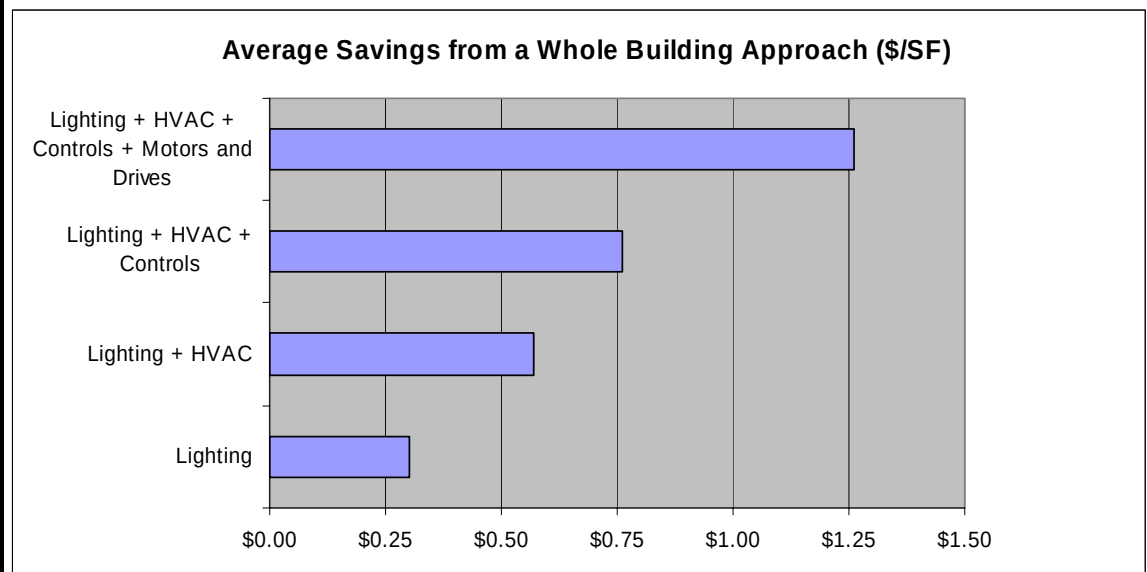


**US Army Corps
of Engineers®**
Engineer Research and
Development Center

Implementation of the U.S. Green Building Council's LEED® as the Army's Green Building Rating System

Richard L. Schneider and Annette L. Stumpf

January 2006



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Final Report

Approved for public release; distribution is unlimited.

Prepared for: U.S. Army Corps of Engineers
Washington, DC 20314-1000

ABSTRACT: The United States has more than 76 million residential and nearly 5 million commercial buildings, and the number of Army facilities is also significant. Construction, renovation, and operation of these facilities consumes enormous quantities of raw materials and energy. In 2000, the Deputy Assistant Secretary of the Army established the Army's policy of incorporating Sustainable Design and Development (SDD) principles into installation planning and infrastructure projects, including development of technical guidance for policy implementation to better enable facilities to minimize non-renewable energy use, pollution, and wastes, while increasing occupants' comfort, health, and safety.

The U.S. Army Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory (CERL), in coordination with the Office of the Assistant Chief of Staff for Installation Management (OACSIM), published the Sustainable Project Rating Tool (SPiRiT), a self-assessment tool that helps quantify and measure the sustainability of infrastructure plans and projects. OACSIM directed the use of SPiRiT to evaluate facility construction and repair projects, and is currently considering whether to continue to use SPiRiT, or to adopt the Leadership in Energy and Environmental Design (LEED) Green Building Rating System®. This work compares and evaluates the two rating systems, and makes recommendations regarding further development and implementation, including the adoption of LEED® NC (New Construction) without modification or supplement. This work also reviewed 40 sample projects to reveal patterns of successful LEED® use within the Army.

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Executive Summary

Introduction

The U.S. Army Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory (CERL), in coordination with the Office of the Assistant Chief of Staff for Installation Management (OACSIM), published the Sustainable Project Rating Tool (SPiRiT), a self-assessment tool that helps quantify and measure the sustainability of infrastructure plans and projects. OACSIM directed the use of SPiRiT to evaluate facility construction and repair projects, and is currently considering whether to continue to use SPiRiT, or to adopt the Leadership in Energy and Environmental Design (LEED) Green Building Rating System®. This work compares and evaluates the two rating systems, and makes recommendations regarding further development and implementation.

Recommendations

Adopt LEED®-NC for MILCON Projects

This study recommends the adoption of LEED®-NC (New Construction) *without modification or supplement*. LEED®-NC is a tool to help in the assessment of the sustainability of building projects, as such, it is not regulatory in nature. If the Army requires standards not referenced in LEED®-NC, or standards higher than those set by LEED®-NC references, they should be separately established. If establishment of a minimum LEED score for “Optimize Energy Performance” will not suffice, there is nothing to preclude Army prescription of specific energy technologies by separate guidance. Energy technologies requirements could be prescribed through an update to UFC 3-400-01 *Design: Energy Conservation*.

Establish Initial LEED Rating of “Silver”

This study recommends establishing an initial target LEED rating of LEED “Silver” for the a probationary period of no less than 1 year based on evaluated project case history scores and credits achieved, and a projection of probable scoring results.

Identify “Required” LEED Credits Based on Federal, DOD & Army Policy

This study recommends that project teams be instructed to achieve certain LEED credits which have been identified as being “required” per existing or pending Federal, DOD & Army Policy. Figure ES1 shows these credits highlighted in blue.

Project teams need to know at the beginning of the project what is expected of them, because they may not take the time to read policy documents themselves. Achievement of the required energy related credits will improve the energy efficiency of our new facilities in compliance with the 2005 Federal Energy Policy Act.

Army Target LEED®-2.2 Credits

Figure ES1 shows the LEED®-NC 2.2 Army Target credits which most projects should be expected to achieve. Target credits are based on those that the majority of the sample projects were able to earn. It is recommended that all project teams earn the “required” credits, focusing first on earning the “Target” credits (highlighted in Green) where cost effective. Each project has unique site conditions that may make certain Target credits infeasible while other credits may be easier to achieve.

30% Energy Target Key to LEED Gold

Achieving the LEED Energy & Atmosphere – Optimize Energy Performance Credit at the 30% efficiency level, plus the other “required” credits is KEY to Army projects being able to earn LEED Gold. Few if any of the sample buildings would have met the desired 30% energy efficiency above ASHRAE 90.1 – 2004 target to meet the 2005 Federal Energy Policy Act mandates.

Designing and building energy efficient LEED Gold buildings may cost slightly more, both in energy analysis/design time and actual first costs. Careful analysis of LEED Cost Studies (see Chapter 4) shows an increase in first cost to reach Gold of between 0.1% and 8%. High performance buildings, which use 50% less energy than typical buildings, are predicted to cost less than 10% more first cost. A very conservative analysis shows the savings in energy and operating expenses should result in a Life Cycle Cost payback of less than 10 years. Army MILCON projects must be designed and built with energy efficiency in mind, because energy costs keep rising and we will continue to pay the bills.

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)

**Army LEED NC 2.2 Army Required & Target Credits**

Sustainable Sites			9 Pts	Materials & Resources			4 Pts
Prereq 1	Construction Activity Pollution Prevention	Required		Prereq 1	Storage & Collection of Recyclables	Required	
Credit 1	Site Selection	1		Credit 1.1	Building Reuse , Maintain 75% of Existing Walls, Floors & Roof	N	
Credit 2	Development Density & Community Connectivity	1		Credit 1.2	Building Reuse , Maintain 95% of Existing Walls, Floors & Roof	N	
Credit 3	Brownfield Redevelopment	N		Credit 1.3	Building Reuse , 50% of Interior Non-Structural Elements	N	
Credit 4.1	Alternative Transportation , Public Transportation Access	?		Credit 2.1	Construction Waste Management , Divert 50% from Disposal	1	
Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1		Credit 2.2	Construction Waste Management , Divert 75% from Disposal	?	
Credit 4.3	Alternative Transportation , Low Emitting & Fuel Efficient Vehicles	N		Credit 3.1	Materials Reuse , 5%	N	
Credit 4.4	Alternative Transportation , Parking Capacity	1		Credit 3.2	Materials Reuse , 10%	N	
Credit 5.1	Site Development , Protect or Restore Habitat	1		Credit 4.1	Recycled Content , 10% (post-consumer + ½ pre-consumer)	1	
Credit 5.2	Site Development , Maximize Open Space	1		Credit 4.2	Recycled Content , 20% (post-consumer + ½ pre-consumer)	?	
Credit 6.1	Stormwater Design , Quantity Control	1		Credit 5.1	Regional Materials , 10% Extracted, Processed & Manufactured Regionally	1	
Credit 6.2	Stormwater Design , Quality Control	?		Credit 5.2	Regional Materials , 20% Extracted, Processed & Manufactured Regionally	?	
Credit 7.1	Heat Island Effect , Non-Roof	1		Credit 6	Rapidly Renewable Materials	N	
Credit 7.2	Heat Island Effect , Roof	?		Credit 7	Certified Wood	1	
Credit 8	Light Pollution Reduction	1					
Water Efficiency			3 Pts	Indoor Environmental Quality			12 Pts
Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1		Prereq 1	Minimum IAQ Performance	Required	
Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required	
Credit 2	Innovative Wastewater Technologies	N		Credit 1	Outdoor Air Delivery Monitoring	?	
Credit 3.1	Water Use Reduction , 20% Reduction	1		Credit 2	Increased Ventilation	1	
Credit 3.2	Water Use Reduction , 30% Reduction	?		Credit 3.1	Construction IAQ Management Plan , During Construction	1	
				Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1	
				Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1	
				Credit 4.2	Low-Emitting Materials , Paints & Coatings	1	
				Credit 4.3	Low-Emitting Materials , Carpet Systems	1	
				Credit 4.4	Low-Emitting Materials , Composite Wood & Agrifiber Products	1	
				Credit 5	Indoor Chemical & Pollutant Source Control	1	
				Credit 6.1	Controllability of Systems , Lighting	1	
				Credit 6.2	Controllability of Systems , Thermal Comfort	1	
				Credit 7.1	Thermal Comfort , Compliance	1	
				Credit 7.2	Thermal Comfort , Validation	?	
				Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1	
				Credit 8.2	Daylight & Views , Views for 90% of Spaces	?	
Energy & Atmosphere			9 Pts	Innovation & Design Process			2 Pts
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required		Credit 1.1	Innovation in Design (Charrette Process)	1	
Prereq 2	Minimum Energy Performance	Required		Credit 1.2	Innovation in Design	N	
Prereq 3	Fundamental Refrigerant Management	Required		Credit 1.3	Innovation in Design	N	
Credit 1	Optimize Energy Performance (Target 30% energy reduction over ASHRAE 90.1 -2004)	6		Credit 1.4	Innovation in Design	N	
Credit 2	On Site Renewable Energy	N			LEED™ Accredited Professional	1	
Credit 3	Enhanced Commissioning	1					
Credit 4	Enhanced Refrigerant Management	1					
Credit 5	Measurement & Verification	1					
Credit 6	Green Power	N					
KEY							
	Target Credits						
	Credits reqd by Federal, DOD or Army Policy						

Project Total Army Req'd & Target Credits 39 Pts

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure ES1. LEED®-NC 2.2 Army Target credits.

Consider Raising LEED Rating to “Gold” Following Probationary Period

This study recommends that consideration be given to raising the target LEED performance level to “Gold” after a probationary period, allowing a gradual transition to use of LEED as the Army green building rating tool and the implementation of design strategies essential to achieving higher LEED performance levels. Based on project case histories and MILCON experience to date, the key to achieving LEED “Gold” is: (1) consistent achievement of “most likely” and “required” credits, (2) implementation of “best practice” approaches to achievement of previously unattained credits; (3) implementation of “best practice” approaches to achievement of design innovation credits; and (4) achievement of key credits under LEED Energy and Atmosphere, primarily LEED EA Credit 1, “Optimize Energy Performance,” and optimally, LEED EA Credit 2 “Renewable Energy.”

Adoption of Additional LEED Rating Tools Requires Further Study

LEED®-EB

This study recommends the establishment of an Office of the Assistant Chief of Engineers, Installation Management (OACSIM), Installation Directorate of Public Works (DPW) and Engineer Research and Development Center (ERDC) working group, to further explore the efficacy of adopting the USGBC LEED®-EB as the green building rating tool for Army existing buildings, and for minor construction and renovation projects. If adopted, LEED®-EB would be almost exclusively used by installation Directorate of Public Works (DPW) staff, either to assess the sustainability of existing facilities, or as a tool to guide the planning, design, and execution of minor construction and renovation projects. This project focused on MILCON process participants and issues associated with potential adoption of LEED®-NC for MILCON projects.

LEED®-H

The Army plans to enter MILCON Family Housing projects at Fort Lee, VA and Fort Huachuca, AZ into the USGBC LEED®-H Pilot program to evaluate the effectiveness of LEED®-H for rating Army Family Housing and Residential Communities Initiative (RCI) housing. OACSIM requested on 30 August 2005 that the U.S. Army Corps of Engineers, Norfolk District (CENAO), as the Center of Standardization for Family Housing, lead the Army participation in the LEED-H Pilot Program. Norfolk District is currently preparing a proposal for OACSIM.

LEED®-ND

This study recommends further study on the efficacy of adopting the USGBC LEED®-ND (Neighborhood Development) as the green neighborhood (installation) rating tool for the Army. LEED®-ND has the potential to be used to rate Army Installations as a whole at the master planning level, opposed to project by project or facility by facility basis as is the case with current LEED or SPiRiT tools. The draft rating tool was unavailable for evaluation as originally anticipated. LEED®-ND was released in preliminary pilot draft form 13 September 2005 for comment; however, it needs careful evaluation and scrutiny for potential Army use.

SDD Support Project Execution

SPiRiT LEED Project Evaluation

Table ES1 lists the results of a sampling of 40 MILCON projects evaluated to estimate the scores that they might expect to achieve had they been rated using LEED®-NC, the LEED version SPiRiT was based on. The LEED Rating “Estimated” reflects a straight projected rating based on the SPiRiT; “Potential” reflects an estimated score increased to reflect achievement of common or likely credits from other projects; “Probable” reflects an estimated score plus probable points Project Delivery Teams indicated the project might receive; and “Adjusted” reflects an estimated score plus credit points considered required by regulation. The results varied widely. Chapter 2, “SPiRiT-LEED Sample Project Evaluations” and Appendix A “SPiRiT-LEED Sample Project Evaluations Project Data” give further details.

Table ES1. All sample projects (40 projects).

Rating	SPiRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	22	55%	3	7.5%	9	22.5%	7	17.5%	12	30%
Silver	15	37.5%	4	10%	15	37.5%	7	17.5%	11	27.5%
Bronze/Certified	3	7.5%	11	27.5%	15	37.5%	9	22.5%	15	37.5%
No Rating	0	0%	22	55%	1	2.5%	17	42.5%	2	5%

Modification of Project Objectives

Project objectives were modified early in the project to accommodate conflicting Military Construction (MILCON) Program and U.S. Green Building Council “rating tool” delivery schedules; and a preference to “adopt” commercial standards where appropriate and cost effective for the Army, as follows:

- Release of SPiRiT 2.1 Canceled
- Development of a DA LEED®-ND Project Checklist and Supplement Deleted.

- Development of a DA LEED®-H Project Checklist and Supplement Deferred.
- Development of a DA LEED®-EB Project Checklist and Supplement Deferred.
- Emphasis shifted to a focus on LEED rating tool implementation in lieu of development of DA LEED® Project Checklist and Supplements.

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Conversion Factors

Non-SI* units of measurement used in this report can be converted to SI units as follows:

Multiply	By	To Obtain
acres	4,046.873	square meters
cubic feet	0.02831685	cubic meters
cubic inches	0.00001638706	cubic meters
degrees (angle)	0.01745329	radians
degrees Fahrenheit	$(5/9) \times (^\circ\text{F} - 32)$	degrees Celsius
degrees Fahrenheit	$(5/9) \times (^\circ\text{F} - 32) + 273.15$	kelvins
feet	0.3048	meters
gallons (U.S. liquid)	0.003785412	cubic meters
horsepower (550 ft-lb force per second)	745.6999	watts
inches	0.0254	meters
kips per square foot	47.88026	kilopascals
kips per square inch	6.894757	megapascals
miles (U.S. statute)	1.609347	kilometers
pounds (force)	4.448222	newtons
pounds (force) per square inch	0.006894757	megapascals
pounds (mass)	0.4535924	kilograms
square feet (SF)	0.09290304	square meters
square miles	2,589,998	square meters
tons (force)	8,896.443	newtons
tons (2,000 pounds, mass)	907.1847	kilograms
yards	0.9144	meters

* *Système International d'Unités* ("International System of Measurement"), commonly known as the "metric system."

Preface

This study was conducted for the Office of the Assistant Chief of Staff Installation Management, OACSIM DAIM-FDF. OACSIM sponsors were Robert Sperberg, Chief, Facilities Policy Division, DAIM-FDF, and John A. Scharl, DAIM-FDF-FE. The technical monitor was Harry Goradia, CECE-CE-D.

The work was performed by the Engineering Processes Branch (CF-N) of the Facilities Division (CF), Construction Engineering Research Laboratory (CERL). The CERL Project Manager was Donald K. Hicks. CERL Principal Investigators were Richard L. Schneider (CN-E) and Annette Stumpf (CF-N). Donald K. Hicks is Chief, CEERD-CF-N; and L. Michael Golish is Chief, CEERD-CF. The technical editor was William J. Wolfe, Information Technology Laboratory. The associated Technical Director is Dr. William Severinghaus, CEERD-CV-T. The Acting Director of CERL is Ilker R. Adiguzel.

CERL is an element of the U.S. Army Engineer Research and Development Center (ERDC), U.S. Army Corps of Engineers. The Commander and Executive Director of ERDC is COL James R. Rowan, and the Director of ERDC is Dr. James R. Houston.

1 Introduction

Background

The built environment significantly impacts our natural resources. The United States today has more than 76 million residential and nearly 5 million commercial buildings. Army facilities are also significant, with a reported 1,000,000,000 SF. Each year the construction, renovation and operation of these facilities consumes:

- 40% of the raw materials produced
- 30-40% of our nation's energy and 60% of our electricity
- 17% of all fresh water use
- 25% of the global wood harvest.

It is estimated that about one-quarter of the increase of atmospheric CO₂ is due to buildings. Building construction is responsible for an estimated 2–2.5 pounds of solid waste per SF; 35% of landfill space is devoted to building construction and demolition waste. According to the U.S. Department of Energy, by the year 2010, another 38 million buildings will be constructed. Meanwhile, energy costs are rising. According to the Army Energy Report to Congress, the Army spent \$892M (FY04), \$994M (FY05), and \$1123M (FY06) on energy.

The challenge of Sustainable Design and Development (SDD) is to build intelligently, so that our facilities use a minimum of non-renewable energy, produce a minimum of pollution and wastes, while increasing the comfort, health, and safety of the people who live and work in them. In April 2000, the Deputy Assistant Secretary of the Army (Installations & Housing) established the Army's policy of incorporating SDD principles into installation planning and infrastructure projects, which included developing technical guidance to implement the Army's SDD policy.

The U.S. Army Corps of Engineers (USACE), Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory (CERL), in coordination with the Office of the Assistant Chief of Staff for Installation Management (OACSIM), published SPiRiT Version 1.4 (The Sustainable Project Rating Tool) in April 2001. SPiRiT is a self-assessment tool that helps installations and designers quantify and measure the sustainability of infrastructure plans and projects.

SPiRiT Version 1.4.1, published in June 2001,^{*} is now being applied to military construction and repair projects. OACSIM directed the use of SPiRiT to evaluate the sustainability of facility construction and repair projects effective 01 June 2001, and is currently considering whether to continue to use SPiRiT, or to adopt the Leadership in Energy and Environmental Design (LEED) Green Building Rating System®. This work compares and evaluates the two rating systems, and makes recommendations regarding further development and implementation.

Objectives

The objectives of this work were to:

1. Assess SPiRiT v.1.4.1 for potential update to SPiRiT version 2.1 based on LEED®-NC 2.1 coordinated with the USGBC
2. Compare LEED scores to SPiRiT Scores for sample FY03-05 projects and recommend target LEED ratings
3. Assess LEED®-NC 2.2 for potential adoption by the Army as the Army's "Green Building Rating Tool" for new construction
4. Assess LEED®-H/ND for potential adoption by the Army as the Army's "Green Building Rating Tool" for housing/ neighborhood development
5. Assess LEED®-EB for potential adoption by the Army as the Army's "Green Building Rating Tool" for existing buildings.

Approach

To achieve these objectives, researchers:

1. Evaluated SPiRiT v.1.4.1

Researchers assessed SPiRiT v.1.4.1 for consistency with LEED®-2.1 and the latest USACE Standards and prepared a Draft SPiRiT Version 2.1, for potential publication.

^{*}SPiRiT Version 1.4.1 is available through URL: <https://eko.usace.army.mil/fa/sdd>

2. Assessed LEED®-NC 2.2 for Potential Adoption by the Army as the Army Green Building Rating Tool for New Construction

Researchers evaluated the efficacy of adopting the USGBC LEED®-NC as the green building rating tool for the Army. They developed a “prototype” Department of the Army (DA) supplement to LEED®-NC 2.2 containing SPiRiT 2.1 elements updated as appropriate to parallel LEED®-NC 2.2. They also evaluated and compared the Army Sustainable Project Rating Tool (SPiRiT) with the most current version of the U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design, New Construction (LEED®-NC) 2.2, green building rating tool 2nd Public Comment Draft, dated June 2005. An evaluation was prepared on a credit by credit basis:

- to determine if SPiRiT requirements are Army unique
- to determine whether they are already regulated under other Federal, DOD, or DA requirements
- to determine whether a SPiRiT credit should be retained as a supplement to LEED or through other Army guidance (e.g., Army Installation Design Standard, Army master planning components, Army Standard Designs, or specific project requirements)
- to compile key references
- to recommend implementation language.

3. Compared LEED vs. SPiRiT Scores for Sample FY03-05 Projects and Recommended Target LEED Rating

Researchers scored a sample of FY02 and FY03 Army Sustainable Design and Development Showcase Projects, Army Family Housing projects, and FY05 MILCON projects paralleling MILCON Transformation “Tier 1” facility types (Barracks, Dining, Battalion / Brigade Headquarters (BN/BG HQ), Company Operations (COF), and Tactical Equipment Maintenance Facilities (TEMF) using both SPiRiT 1.4.1 and LEED® NC 2.0 green building rating systems. Score results were compared to support the establishment of a target LEED® NC 2.2 rating score for Army projects and identify optimal credits to be achieved.

4. Developed a DA LEED® H/ND Project Checklist and DA LEED® H/ND Supplement (Housing/Neighborhood Development)

Researchers evaluated the efficacy of adopting the USGBC LEED®-H (draft) and LEED®-ND (draft) as the green housing and neighborhood (installation) rating tools for the Army. They developed a “prototype” DA supplement to LEED®-H and

LEED®-ND containing SPiRiT 2.1 elements updated as appropriate to parallel LEED®-H and LEED®-ND. They also coordinated with both the USGBC LEED®-H and LEED®-ND committees to formulate the draft LEED products and develop a strategy for assessment of the draft rating tools for Army application.

5. Assessed LEED®-EB for Potential Adoption by the Army as the Army Green Building Rating Tool for Existing Buildings

Researchers evaluated the efficacy of adopting the USGBC LEED®-EB as the green building rating tool for Army existing buildings, and for minor construction and renovation projects. They developed a “prototype” DA supplement to LEED®-EB containing SPiRiT 2.1 elements updated as appropriate to parallel LEED®-NC 2.2. Pilot testing of LEED®-EB was conducted and the final version of LEED®-EB was released October 2004. CERL coordinated with the USGBC LEED®-EB Committee on the evaluation and/or adoption by the Army as necessary and developed a strategy for assessment of the draft rating tools for Army application.

6. Provided SDD Expertise

Researchers provided direct support to Army Project Delivery Teams on matters associated with the use of SPiRiT and LEED, and on sustainable Design and Development, specifically, by:

- *Providing SPiRiT Criteria and Point Interpretation/Adjudication to Army PDTs.* Researchers act as Single POC(s) for resolution of all inquiries for SPiRiT interpretation /adjudication, staffing as appropriate for preparation of a response; respond to Project Delivery Team inquiries, both from U.S. Army Engineer Districts and U.S. Army Installations, and provide final interpretation of SPiRiT credits and requirements, email resulting SPiRiT interpretation/adjudication information to USACE Sustainable Design and Development Points of Contact, USACE Showcase Project Managers, U.S. Army LEED® Accredited Professionals, and U.S. Army Installation Sustainable Design and Development Points of Contact. They post resulting SPiRiT interpretation/adjudication information to “frequently asked questions” (FAQs) on the ERDC/CERL Sustainable Design and Development Resource website, available through URL:

<http://www.cecer.army.mil/sustdesign/>

and the Engineer Knowledge Online™ (EKO) Sustainable Design website, available through URL::

<https://eko.usace.army.mil/fa/sdd/>

- *Managing Army USGBC Membership.* Researchers represent the Army in USGBC actions; participate in key USGBC committees, process dues, maintain Points of Contact (POCs) lists, and disseminate topical information to SDD POCs.
- *Update and Maintain ERDC/CERL Sustainable Design and Development (SDD) Resource Website.* Essential information on the existing ERDC/CERL *Sustainable Design and Development Website* will be transitioned to the EKO Sustainable Design Website to make it more user friendly and functional. The old ERDC/CERL *Sustainable Design and Development Resource* is available through URL:

<http://www.cecer.army.mil/sustdesign/>

and the EKO *Sustainable Design* website is available through URL:

<https://eko.usace.army.mil/fa/sdd/>

SPiRiT interpretation/adjudication information will be posted as FAQs on the EKO *Sustainable Design* website.

Scope

Information contained in this document is current as of 30 September 2005.

Mode of Technology Transfer

This report will be made accessible through the World Wide Web (WWW) at URLs:

<http://www.cecer.army.mil>

<https://eko.usace.army.mil/fa/sdd/>

2 SPiRiT-LEED Sample Project Evaluations

Scoring of Army Projects Using LEED®-NC

It is difficult at best to make a simple translation of SPiRiT to LEED scores, even though SPiRiT is based on LEED®-NC 2.0. There is no one-to-one relationship between SPiRiT and LEED credits, since SPiRiT has added credits and points to the LEED scoring scheme. Numerically, SPiRiT Gold scores span the breadth of LEED Certified, Silver, and Gold performance levels: A low SPiRiT Gold rating of 50-55 points is equivalent to a high LEED certified score of 30-32 points; A SPiRiT Gold rating of 55-63 points is equivalent to a LEED Silver rating of 33-38 points; and a high SPiRiT Gold, 65-74 points is equivalent to a LEED Gold, 39-49 points. To establish a baseline for recommending a target LEED score, it was necessary to determine how Army projects might score if rated under LEED.

OACSIM prepared a sample list of ten (10) FY02 and FY03 Army Sustainable Design and Development Showcase Projects for evaluation. Arrangements were made for LEED Accredited Professionals at Georgia Tech Research Institute (GTRI) to prepare the LEED assessments on the sample projects. Of the 10 sample projects identified, data was obtained only for six, and GTRI was only able to prepare LEED scores for three. (See asterisked annotation, Table 2 below.) The sample obtained was considered too small to be representative of the MILCON program. In addition, a new requirement that the sample projects parallel Tier 1 MILCON Transformation project facility types was identified (Barracks, Dining, Battalion / Brigade Headquarters [BN/BG HQ], Company Operations [COF], and Tactical Equipment Maintenance Facilities [TEMF]). A new sample of projects from the FY05 program was prepared. The final list of projects evaluated follows grouped by applicability to MILCON Transformation facility type:

Barracks Facilities

023654 Barracks Complex—1CD, Fort Hood, PA \$49,888K, Fort Worth District, CE

033406	Fort Drum Barracks Complex—Wheeler Sack AAF Ph 2 (PN033409), Fort Drum, PA \$48,000K, New York City District, CE
035311	Barracks Complex—Kelly Hill Barracks, Fort Benning, PA \$49,565K, Savannah District, CE
035311	Barracks Complex—Main Post Barracks, Fort Benning, PA \$49,565K, Savannah District, CE
044794*	WBR Barracks Buildings—RFP Proposal FY04, Fort Lewis, PA \$48,000K, Seattle District, CE
044795*	Barracks Complex—41st Division Drive/B Street Phase 4, Fort Lewis, PA \$48,000K, Seattle District, CE
047125	Barracks Complex—Neely Rd, Fort Wainwright, PA \$39,815K, Alaska District, CE
047348	Barracks Complex—Bastogne Drive Phase 2 Barracks, Fort Bragg, PA \$48,000K, Savannah District, CE
048441	Barracks Complex—Donovan Street, Fort Bragg, PA \$15,500K, Savannah District, CE
048785	Barracks Complex Renewal—Phase 2E SB, Schofield Barracks, PA \$48,000K, Honolulu District, CE
053608	Barracks Complex—Hospital Area, Fort Carson, PA \$14,108K, Omaha District, CE
055977	Barracks Complex—Grafenwohr, PA \$28,500K, Europe District, CE
055979	Barracks Complex—Brigade, Grafenwohr, PA \$34,000K, Europe District, CE
056486	Myer Barracks Complex—Sheridan Avenue Barracks, Fort Myer, PA \$49,526K, Baltimore District, CE
058047	FTR166 Barracks Phase 5, Fort Richardson, PA \$7,600K, Alaska District, CE
059447	Barracks—Mobilization & Training, Fort Riley, PA \$22,000K, Kansas City District, CE

Battalion / Brigade Headquarters and Administrative Facilities

002298	Education Center, Fort Polk, PA \$10,800K, Fort Worth District, CE
018696	Command & Control Center, Fort Campbell, PA \$33,000K, Louisville District, CE
030629†	Communications Facility, Fort Gordon, PA \$11,000K, Savannah District, CE

* Fort Lewis projects developed and scored by Seattle District using LEED.

035311	Barracks Complex—Battalion Headquarters, Fort Benning, PA \$49,565K, Savannah District, CE
035311	Barracks Complex—Brigade Headquarters, Fort Benning, PA \$49,565K, Savannah District, CE
042039	Command & Control Center, Fort Stewart, PA \$24,695K, Savannah District, CE
047348	Barracks Complex-Bastogne Drive Phase 2, Battalion Headquarters, Fort Bragg, PA \$48,000K, Savannah District, CE
053321	Recruiting Brigade Operations Building, Fort Gillem, PA \$5,800K, Savannah District, CE
057225*	General Instruction Facility, Fort Sam Houston, PA \$11,400K, Fort Worth District, CE
057708	General Instruction Building, Fort Drum, PA \$5,700K, New York City District, CE

Company Operations Facilities

035311	Barracks Complex—Company Operations Facility, Fort Benning, PA \$49,565K, Savannah District, CE
047348	Barracks Complex-Bastogne Drive Phase 2 Company Operations Facility (Large COF), Fort Bragg, PA \$48,000K, Savannah District, CE
047348	Barracks Complex-Bastogne Drive Phase 2, Company Operations Facility (Quad COF), Fort Bragg, PA \$48,000K, Savannah District, CE
056486	Myer Barracks Complex-Sheridan Ave—Company Operations Facility, Fort Myer, PA \$49,526K, Baltimore District, CE

Tactical Equipment Maintenance Facilities

048575	Vehicle Maintenance Shop, Fort Riley, PA \$15,500K, Kansas City District, CE
056223	Tactical Equipment Complex, Fort Stewart, PA \$10,200K, Savannah District, CE
057421	Vehicle Maintenance Facility—Increment 1, Schofield Barracks, PA \$49,000K, Honolulu District, CE

Other Facilities

015091	Child Development Center, Fort McPherson, PA \$4,900K, Savannah District, CE

* Projects scored using LEED by GTRI LEED Accredited Professionals.

019636	Physical Fitness Training Center, Fort Benning, PA \$18,362K, Savannah District, CE
044772*	Chapel Center with Religious Education, Fort Lewis, PA \$8,200K, Seattle District, CE
057320	Child Development Center, Fort Shafter, PA \$940K, Honolulu District, CE
057803	Chapel, Fort Stewart, PA \$9,500K, Savannah District, CE
058604	Family Housing, Fort Huachuca, PA \$27,000K, Los Angeles District, CE
058677†	Family Housing, Fort Knox, PA \$41,000K, Louisville District, CE

When a project is scored using LEED, the Project Delivery Team rates the project, documents how the project has achieved each credit using USGBC prescribed “LEED Letter Templates,” and submits the templates to the USGBC for certification under LEED. MILCON projects scored using SPiRiT are only required to record SPiRiT results in the project files using a simple SPiRiT score sheet. LEED scores for the sample projects, therefore, had to be prepared based on available project information. GTRI was provided project data for the sample projects consisting of plans, specifications, design analyses, and SPiRiT scores. GTRI prepared the scores using LEED®-NC 2.0 based on available information, following up their evaluations with telephone interviews with project personnel as necessary. LEED®-NC 2.0 was used in lieu of the current version, LEED®-NC 2.1 or the draft version, LEED®-NC 2.2, since 2.0 formed the basis for SPiRiT 1.4.1 and is the closest matching LEED-NC tool.

For the expanded sample, LEED scores were projected based on SPiRiT scores provided by the project delivery team, and therefore only as accurate as the data on which they are based. Data on the expanded sample, consisting only of single page SPiRiT scores and back-up where provided, was obtained by 14 September 2005. No cost breakdowns or data on various systems and mechanical components costs with which to determine actual costs or efficiencies of HVAC and other systems (such as walls and roofing) were received. Therefore we can only use the actual project SPiRiT credits to estimate the relative energy efficiency of the project. Time did not permit a thorough assessment of plans, specifications, and design analyses, rather, projections were made on the basis of a comparison of SPiRiT and LEED

* Fort Lewis projects developed and scored by Seattle District using LEED.

† Projects scored using LEED by GTRI LEED Accredited Professionals.

credits where identical or similar, and results of the GTRI assessment. Basic results are in Table 2 below. Complete results, score sheets, and project data may be found in Appendix A, “SPiRiT-LEED Sample Project Evaluations Project Data.” Table 2 presents SPiRiT ratings in comparison to projected LEED ratings as follows:

- LEED Rating Estimated – 1:1 “translation” of SPiRiT v.1.4.1 to LEED®-NC 2.2 (Draft) rating without modification; includes an assumed 2 credit points under “Innovation and Design Process,” 1 point for an “Innovation in Design” (for adherence to SPiRiT 1.4.1, Facility Delivery Process, Holistic Delivery of Facility) and 1 credit point for “LEED Accredited Professional” following GTRI rating assumptions.
- LEED Rating Potential – “LEED Rating Estimated” plus: credit points typically obtained by Army projects; credit points identified as “probable” by GTRI and/or the Project Delivery Teams for the preliminary sample projects; 2 credit points under “Innovation and Design Process” (as above); and 1 credit point for “Enhanced Refrigeration Management” contained in LEED®-NC 2.0, deleted from SPiRiT 1.4.1, but considered “probable” by GTRI. Probable points added are indicated in the individual project score sheets in Appendix A.
- LEED Rating Probable – “LEED Rating Estimated” plus: credit points identified as “probable” by GTRI and/or the Project Delivery Teams for the preliminary sample projects; credit points identified as “probable” by the Project Delivery Teams for the expanded sample projects; 2 credit points under “Innovation and Design Process” (as above); and 1 point for “Enhanced Refrigeration Management” contained in LEED®-NC 2.0, deleted from SPiRiT 1.4.1, but considered “probable” by GTRI. Probable points added are indicated in the individual project score sheets in Appendix A.
- LEED Rating Adjusted – LEED Rating “Probable” plus: points identified as pertaining to credits “required” under Federal, Department of Defense (DOD) or Army regulations plus up to 6 credit points for “Energy Optimization” reflecting a 30% Federal Energy Policy Act of 2005 energy reduction target for Federal facilities. See Chapter 4, “SPiRiT / LEED Implementation Issues” (p 36), and Figures 1 and 2 (pp 18, 19, respectively).

Table 1. LEED assessment on sample projects (barracks facilities).

1391 No.	Project Name	Location Name	PA \$000	DB	SPiRiT Rating		LEED Rating								Dsn %	Constr Award	Cns %	BOD
							Estimated		Potential		Probable		Adjusted					
023654	Barracks Complex--1CD	Ft Hood	49,888	HL	Gold	53	None	25	Silver	34	Certified	28	Silver	35	100%	30-Sep-05	0%	1-Jan-08
033406	Ft Drum--Barracks Complex- Wheeler Sack AAF Ph 2 (PN033409)	Ft Drum	48,000	AE	Gold	56	Certified	28	Silver	36	Certified	31	Silver	38	100%	21-Dec-04(A)	14%	1-Feb-07
035311	Barracks Complex--Main Post Barracks	Ft Benning	49,565	HL	Silver	39	None	18	Certified	30	None	21	Certified	30	100%	24-Jun-05(A)	0	5-Sep-08
035311	Barracks Complex--Kelly Hill Bar- racks	Ft Benning	49,565	HL	Silver	39	None	18	Certified	30	None	21	Certified	30	100%	24-Jun-05(A)	0%	5-Sep-08
044794	WBR Barracks Bldgs--RFP Pro- posal FY04	Ft Lewis	48,000		Gold	59	Gold*	39	Gold*	39	Gold*	39	Gold	44		18-May-04	42%	3-Nov-06
044795	Barracks Complex-41st Div Dr/B St Ph 4	Ft Lewis	48,000	HL	Gold	62	Gold*	42	Gold*	43	Gold*	43	Gold	47	35%	26-Apr-05(A)	3%	28-Jul-07
047125	Barracks Complex--Neely Rd	Ft Wainwright	39,815	AE	Gold	51	Certified	26	Silver	34	Certified	29	Silver	37	100%	14-Apr-05(A)	60%	19-Jun-06
047348	Barracks Complex-Bastogne Dr Ph 2 Barracks	Ft Bragg	48,000	HL	Silver	39	None	16	Certified	26	None	19	Certified	28	100%	13-Dec-04(A)	24%	29-Jan-07
048441	Barracks Complex-Donovan Street	Ft Bragg	15,500	AE	Silver	39	None	22	Silver	34	None	25	Certified	32	100%	20-Dec-04(A)	9%	27-Feb-07
048785	FY2005 MCA PN48785 Barracks Complex Renewal--Phase 2E SB	Schofield Barracks	48,000	HL	Gold	51	None	25	Silver	35	Certified	28	Silver	36	100%	13-Sep-05	0%	24-Sep-08
053608	Barracks Complex--Hospital Area	Ft Carson	14,108	HL	Gold	55	Certified	29	Gold	47	Gold	47	Gold	50	100%	10-Feb-05	27%	25-Sep-06
055977	Barracks Complex	Grafenwohr	28,500	ID	Gold	61	Silver	31	Gold	39	Silver	34	Silver	37	100%	26-Apr-05(A)	0%	25-Sep-06
055979	Barracks Complex-Brigade	Grafenwohr	34,000	ID	Gold	61	Silver	31	Gold	39	Silver	34	Silver	37	100%	03-May-05(A)	5%	25-Sep-06
056486	Myer Barracks Complex-Sheridan Avenue Barracks	Ft Myer	49,526	HL	Gold	54	Silver	37	Gold	43	Gold	40	Gold	47	100%	05-Oct-05	0%	24-Jun-08
058047	FTR166 Barracks Phase 5	Ft Richardson	7,600	HL	Gold	53	Certified	28	Silver	34	Certified	31	Gold	40	100%	14-Feb-05(A)	0%	20-Jun-06

1391 No.	Project Name	Location Name	PA \$000	DB	SPiRiT Rating		LEED Rating								Dsn %	Constr Award	Cns %	BOD
							Estimated		Potential		Probable		Adjusted					
059447	Barracks—Mobilization & Training	Ft Riley	22,000	AE	Gold	50	None	25	Silver	34	Certified	28	Silver	35	0%	25-Jul-05	0%	5-Jan-06

Table 1. Cont'd (battalion/brigade headquarters and administrative facilities).

1391 No.	Project Name	Location Name	PA \$000	DB	SPiRiT Rating		LEED Rating								Dsn %	Constr Award	Cns %	BOD
							Estimated		Potential		Probable		Adjusted					
002298	Education Center	Ft Polk	10,800	HL	Gold	50	Certified	27	Silver	35	Silver	35	Gold	42	100%	23-Jul-02	100%	Complete
018696	Command & Control	Ft Campbell	33,000	AE	Gold	54	Certified	27	Silver	33	Certified	30	Silver	37	100%	31-Mar-05	7%	22-Apr-07
030629	Communications Facility	Ft Gordon	11,000	DC	Gold	68	Certified	29	Silver	35	Silver	35	Gold	40	100%	17-Jun-02	100%	
035311	Barracks Complex–Brigade HQ	Ft Benning	49,565	HL	Silver	37	None	16	Certified	27	None	19	Certified	28	100%	24-Jun-05(A)	0%	5-Sep-08
035311	Barracks Complex–Battalion HQ	Ft Benning	49,565	HL	Silver	37	None	16	Certified	27	None	19	Certified	28	100%	24-Jun-05(A)	0%	5-Sep-08
042039	Command & Control Center	Ft Stewart	24,695	AE	Gold	53	Certified	28	Silver	36	Certified	31	Silver	37	100%	29-Aug-05	0%	13-Jun-07
047348	Barracks Complex-Bastogne Dr Ph 2 Battalion Headquarters	Ft Bragg	48,000	HL	Silver	38	None	16	Certified	26	None	19	Certified	29	100%	13-Dec-04(A)	24%	29-Jan-07
053321	Recruiting Brigade Operations Building	Ft Gillem	5,800	DC	Gold	57	Certified	31	Silver	37	Silver	35	Gold	41	100%	29-Mar-05(A)	13%	2-Mar-07
057225	General Instruction Facility	Ft Sam Houston	11,400	HL	Gold	50	None	24	Silver		Certified	27	Silver	34	100%	30-Sep-05	0%	27-Mar-07
057708	General Instruction Building	Ft Drum	5,700		Silver	41	None	22	Certified	30	None	25	Certified	31	10%	16-Sep-05	0%	19-Oct-07

Table 1. Cont'd (company operations facilities).

1391 No.	Project Name	Location Name	PA \$000	DB	SPiRiT Rating		LEED Rating								Dsn %	Constr Award	Cns %	BOD
							Estimated		Potential		Probable		Adjusted					
035311	Barracks Complex—Kelley Hill/Main Post—COF	Ft. Benning	49,565	HL	Silver	37	None	16	Certified	27	None	19	Certified	28	100%	24-Jun-05	0%	5-Sep-08
047348	Barracks Complex-Bastogne Dr Ph 2 Company Operations Facility (Quad COF)	Ft Bragg	48,000	HL	Silver	38	None	16	Certified	26	None	19	Certified	28	100%	13-Dec-04(A)	24%	29-Jan-07
047348	Barracks Complex-Bastogne Dr Ph 2 Company Operations Facility (Large COF)	Ft Bragg	48,000	HL	Silver	38	None	15	Certified	25	None	19	Certified	28	100%	13-Dec-04(A)	24%	29-Jan-07
056486	MYER Barracks Complex-Sheridan Ave—COF	Ft Myer	49,526	HL	Gold	54	Silver	37	Gold	43	Gold	40	Gold	47	100%	19-Dec-05	0%	24-Jun-08

Table 1. Cont'd. (tactical equipment maintenance facilities).

1391 No.	Project Name	Location Name	PA \$000	DB	SPiRiT Rating		LEED Rating								Dsn %	Constr Award	Cns %	BOD
							Estimated		Potential		Probable		Adjusted					
048575	Vehicle Maintenance Shop	Ft Riley	15,500	AE	Silver	37	None	19	Certified	31	None	22	Certified	29	0%	15-Jul-05(A)	0%	21-Jan-05
056223	Tactical Equipment Complex	Ft Stewart	10,200	HL	Silver	40	None	17	None	22	None	20	Certified	27	100%	21-Jul-05(A)	1%	12-Apr-07
057421	Vehicle Maintenance Facility – Incr 1 SB	Schofield Barracks	49,000	HL	Bronze	30	None	15	Certified	30	None	18	Certified	27	100%	21-Jun-05(A)	0%	2-Aug-07

Table 1. Cont'd. (other facility types).

1391 No	Project Name	Location Name	PA \$000	DB	SPiRiT Rating		LEED Rating								Dsn %	Constr Award	Cns %	BOD
							Estimated		Potential		Probable		Adjusted					
015091	Child Development Center	Ft McPherson	4,900	AE	Bronze	32	None	14	Certified	27	None	17	None	25	100%	28-Feb-05	1%	8-Sep-06
019636	Physical Fitness Training Center	Ft Benning	18,362	DC	Silver	37	None	20	Silver	33	Silver	33	Gold	40	100%	30-Jun-05(A)	0%	16-Apr-07
044772	Chapel Center with Religious Edu- cation	Ft Lewis	8,200	HL	Gold	64	Gold*	40	Gold*	48	Gold*	48	Gold	51	90%	29-Aug-05	0%	7-Feb-07
057320	Child Development Center	Ft Shafter	940	HL	Bronze	31	None	11	Certified	26	None	14	None	24	100%	17-Dec-04(A)	33%	26-Oct-05
057803	Chapel	Ft Stewart	9,500	AE	Gold	57	Certified	31	Silver	34	Silver	34	Silver	38	100%	24-Jun-05(A)	0%	1-Jun-07
058604	Family Housing	Ft Huachuca	27,000	DC	Silver	40	None	15	Certified	26	None	18	Certified	26	100%	28-Sep-04	24%	2-Jan-07
058677	Family Housing	Ft Knox	41,000	DC	Gold	54	Certified	31	Gold	39	Gold	39	Gold	45	100%	15-Apr-04	16%	21-Dec-06
Key: AE = Architect-Engineer DC = Design-Construct or Turnkey HL = Hired Labor ID = Indirect Design TL = Troop Labor TS = Technical Services US = Using Service or Agency																		

SPIRiT-LEED Project Evaluation Results

Table 2. SPIRiT-LEED project evaluation results—all sample projects (40 projects).

Rating	SPIRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	22	55%	3	7.5%	9	22.5%	7	17.5%	12	30%
Silver	15	37.5%	4	10%	15	37.5%	7	17.5%	11	27.5%
Bronze/Certified	3	7.5%	11	27.5%	15	37.5%	9	22.5%	15	37.5%
No Rating	0	0%	22	55%	1	2.5%	17	42.5%	2	5%

Table 3. SPIRiT-LEED project evaluation results—barracks facilities projects (16 projects).

Rating	SPIRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	12	75%	2	12.5%	6	37.5%	4	25%	5	31.25%
Silver	4	25%	3	43.8%	7	43.75%	2	12.5%	7	43.75%
Bronze/Certified	0	0%	4	25%	3	43.75%	6	37.5%	4	25%
No Rating	0	0%	7	43.8%	0	0%	4	10%	0	0%

Table 4. SPIRiT-LEED project evaluation results—battalion / brigade headquarters and administrative facilities projects (10 projects).

Rating	SPIRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	6	60%	0	0%	0	0%	0	0%	3	30%
Silver	4	40%	0	0%	6	60%	3	30%	3	30%
Bronze/Certified	0	0%	5	50%	4	40%	3	30%	4	40%
No Rating	0	0%	5	50%	0	0%	4	40%	0	0%

Table 5. SPIRiT-LEED project evaluation results—company operations facilities projects (4 projects).

Rating	SPIRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	1	25%	0	0%	1	25%	1	25%	1	25%
Silver	3	75%	1	25%	0	0%	0	0%	0	0%
Bronze/Certified	0	0%	0	0%	3	75%	0	0%	3	75%
No Rating	0	0%	3	75%	0	0%	3	75%	0	0%

Table 6. SPiRiT-LEED project evaluation results—tactical equipment maintenance facilities projects (3 projects).

Rating	SPiRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	0	0%	0	0%	0	0%	0	0%	0	0%
Silver	2	66.7%	0	0%	0	0%	0	0%	0	0%
Bronze/Certified	1	33.3%	0	0%	2	66.7%	0	0%	3	100%
No Rating	0	0%	3	100%	1	33.3%	3	100%	0	0%

Table 7. SPiRiT-LEED project evaluation results—“other” facilities projects (7 projects).

Rating	SPiRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	3	42.9%	1	14.3%	2	28.5%	1	14.3%	3	42.9%
Silver	2	28.5%	0	0%	2	28.5%	1	14.3%	1	14.3%
Bronze/Certified	2	28.5%	2	28.5%	3	42.9%	0	0%	1	14.3%
No Rating	0	0%	4	57.1%	0	0%	3	42.9%	2	28.5%

3 LEED®-NC 2.2 Project Credit Evaluations

Credits Required by Federal, DOD, or Army Policy (Blue)

Existing Federal, DOD, and Army policy was evaluated and compared against individual LEED®-NC 2.2 (Draft) credit requirements to determine the credits that should be considered as “required” for project teams to achieve. The CERL team sought expert guidance and OACSIM concurrence when establishing the LEED®-NC 2.2 (Draft) credit requirements. LEED®-NC 2.2 (Draft) credit requirements can be less or more stringent than existing policy requirements, but it was determined that ALL the LEED®-NC 2.2 (Draft) credits highlighted in blue in Figure 1 must be fulfilled to comply with existing policy.

Project teams need to know at the beginning of the project what is expected of them, because they will not take the time to read policy documents themselves. Figure 2 lists existing and pending policy corresponding with each required LEED®-NC 2.2 (Draft) credit. Appendix C, “SPiRiT LEED Comparison” (cf. credits highlighted in blue) provides further discussion of the rationale behind selecting these credits as “required” per Federal, DOD, or Army policy.

Project requirements based on Army policy corresponds quite closely to the LEED requirements for several LEED credits, but there are a few exceptions. Complying with LEED Materials and Resources credits 4.1 and 4.2 does not ensure that the project complies with the Federal requirements to purchase recycled content materials per RCRA section 6002. The following credits are considered as being required based on pending updates to current Army policy:

- Water Efficiency Credit 3.1, “Water Use Reduction, 20% Reduction”
- Energy and Atmosphere Credit 1, “Optimize Energy Performance” (Army Target 30% better than ASHRAE 90.1 – 2004 baseline)
- Energy and Atmosphere Credit 5, “Measurement and Verification”
- Materials and Resources Credit 2.1, “Construction Waste Management, Divert 50% from Disposal”
- Indoor Environmental Quality Credit 6.2, “Controllability of Systems, Thermal Comfort.”

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)



LEED-NC 2.2 Credits reqd by Federal, DOD or Army Policy

Sustainable Sites			14 Pts	Materials & Resources			13 Pts
Prereq 1	Construction Activity Pollution Prevention	Required		Prereq 1	Storage & Collection of Recyclables	Required	
Credit 1	Site Selection	1		Credit 1.1	Building Reuse , Maintain 75% of Existing Walls, Floors & Roof	1	
Credit 2	Development Density & Community Connectivity	1		Credit 1.2	Building Reuse , Maintain 95% of Existing Walls, Floors & Roof	1	
Credit 3	Brownfield Redevelopment	1		Credit 1.3	Building Reuse , 50% of Interior Non-Structural Elements	1	
Credit 4.1	Alternative Transportation , Public Transportation Access	1		Credit 2.1	Construction Waste Management , Divert 50% from Disposal	1	
Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1		Credit 2.2	Construction Waste Management , Divert 75% from Disposal	1	
Credit 4.3	Alternative Transportation , Low Emitting & Fuel Efficient Vehicles	1		Credit 3.1	Materials Reuse , 5%	1	
Credit 4.4	Alternative Transportation , Parking Capacity	1		Credit 3.2	Materials Reuse , 10%	1	
Credit 5.1	Site Development , Protect or Restore Habitat	1		Credit 4.1	Recycled Content , 10% (post-consumer + ½ pre-consumer)	1	
Credit 5.2	Site Development , Maximize Open Space	1		Credit 4.2	Recycled Content , 20% (post-consumer + ½ pre-consumer)	1	
Credit 6.1	Stormwater Design , Quantity Control	1		Credit 5.1	Regional Materials , 10% Extracted, Processed & Manufactured Regionally	1	
Credit 6.2	Stormwater Design , Quality Control	1		Credit 5.2	Regional Materials , 20% Extracted, Processed & Manufactured Regionally	1	
Credit 7.1	Heat Island Effect , Non-Roof	1		Credit 6	Rapidly Renewable Materials	1	
Credit 7.2	Heat Island Effect , Roof	1		Credit 7	Certified Wood	1	
Credit 8	Light Pollution Reduction	1					
Water Efficiency			5 Pts	Indoor Environmental Quality			15 Pts
Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1		Prereq 1	Minimum IAQ Performance	Required	
Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required	
Credit 2	Innovative Wastewater Technologies	1		Credit 1	Outdoor Air Delivery Monitoring	1	
Credit 3.1	Water Use Reduction , 20% Reduction	1		Credit 2	Increased Ventilation	1	
Credit 3.2	Water Use Reduction , 30% Reduction	1		Credit 3.1	Construction IAQ Management Plan , During Construction	1	
				Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1	
				Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1	
				Credit 4.2	Low-Emitting Materials , Paints & Coatings	1	
				Credit 4.3	Low-Emitting Materials , Carpet Systems	1	
				Credit 4.4	Low-Emitting Materials , Composite Wood & Agrifiber Products	1	
				Credit 5	Indoor Chemical & Pollutant Source Control	1	
				Credit 6.1	Controllability of Systems , Lighting	1	
				Credit 6.2	Controllability of Systems , Thermal Comfort	1	
				Credit 7.1	Thermal Comfort , Compliance	1	
				Credit 7.2	Thermal Comfort , Validation	1	
				Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1	
				Credit 8.2	Daylight & Views , Views for 90% of Spaces	1	
Energy & Atmosphere			17 Pts	Innovation & Design Process			5 Pts
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required		Credit 1.1	Innovation in Design	1	
Prereq 2	Minimum Energy Performance	Required		Credit 1.2	Innovation in Design	1	
Prereq 3	Fundamental Refrigerant Management	Required		Credit 1.3	Innovation in Design	1	
Credit 1	Optimize Energy Performance (<i>Energy Policy 30% better than ASHRAE 90.1 2004</i>)	1-10		Credit 1.4	Innovation in Design	1	
Credit 2	On Site Renewable Energy	1		Credit 2	LEED™ Accredited Professional	1	
Credit 3	Enhanced Commissioning	1					
Credit 4	Enhanced Refrigerant Management	1					
Credit 5	Measurement & Verification	1					
Credit 6	Green Power	1					
LEED-NC 2.2 Credits reqd by Federal, DOD or Army Policy				Project Totals			69 Pts
				Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points			

Figure 1. LEED®-NC 2.2 (Draft) credits required by Federal, DOD, or Army policy.

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)



LEED-NC 2.2 Credits reqd by Federal, DOD or Army Policy

Sustainable Sites

Prereq 1

Construction Activity Pollution Prevention
AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)
DA Pam 200-1 Environmental Protection and Enhancement 2002
40 CFR 122.26, the Clean Water Act, and State Regulations

Credit 6.1

Stormwater Design, Quantity Control
AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)
DA Pam 200-1 Environmental Protection and Enhancement 2002
40 CFR 122.26, the Clean Water Act, and State Regulations
UFC 3-210-10 Design: Low Impact Development Manual

Water Efficiency

Credit 3.1

Water Use Reduction, 20% Reduction
AR 420-1 Chap 23 Army Energy Program (Final pending)
Energy Policy Act of 2005 (from EAct 1992) Fixture Performance Requirements
UFGS 15400 Plumbing, General Purpose

Energy & Atmosphere

Prereq 1

Fundamental Commissioning of the Building Energy Systems
IBC - International Building Code
ER 1110-345-723 - Systems Commissioning Procedures
UFGS 15995A - Commissioning of HVAC Systems
ECB 2005-14 Building Commissioning Versus Corps of Engineers Military Design/Construction Process

Materials & Resources

Prereq 1

Storage & Collection of Recyclables
DA Pam 200-1 Environmental Protection and Enhancement 2002
AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)
Installation Solid Waste Management Plan Reduce by 40% disposed in landfill or incinerated by reduction in use, reuse or recycling. (Reqd by DOD Measure of Metric from EO 13101)
Recommend revision to Army IDS Installation Design Standards to include reqt for Building Recycling Area and Central Recycling Area

Credit 2.1

Construction Waste Management, Divert 50% from Disposal

Credit 2.2

Construction Waste Management, Divert 75% from Disposal
FAR Part 23 - Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace – Provisions and Contract Clauses 52.223-10 Waste Reduction Program .
DAIM-ZA Memorandum - Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005
DAIM-FD Memorandum - Requirements for Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005
DAIM-FD Memorandum - Management of Construction & Demolition (C&D) Wastes, 31 August 2001

Credit 4.1

Recycled Content, 10% (post-consumer + ½ pre-consumer)

Credit 4.2

Recycled Content, 20% (post-consumer + ½ pre-consumer)
Section 6002 of the Resource Conservation and Recovery Act
Executive Order 13101 Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition
Comprehensive Procurement Guidelines (CPGs), found in 40 CFR 247
Recovered Materials Advisory Notice (RMAN)
FAR Part 23.4 - Use of Recovered Materials
FAR Part 52 - Clauses - 52.223-4 Recovered Materials Certification, and 52.223-9 Estimate of Percentage of Recovered Material Content for EPA-Designated Products

Figure 2. Existing and pending policy corresponding with each required LEED®-NC 2.2 (Draft) credit.

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)



LEED-NC 2.2 Credits reqd by Federal, DOD or Army Policy

Prereq 2	Minimum Energy Performance 2005 Federal Energy Policy Act 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings 10 CFR Part 435 Energy Conservation Voluntary Performance Standards for New Buildings; Mandatory for Federal Buildings AR 420-1 Chap 23 Army Energy Program (Final pending) Army Energy Campaign Plan (pending) UFC 3-400-1 Design: Energy Conservation	Indoor Environmental Quality Prereq 1 Minimum IAQ Performance 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings ASHRAE 62.1 - 2004 Ventilation for Acceptable Indoor Air Quality UFC 3-440-06 Cooling Buildings by Natural Ventilation UFC 3-410-01FA Design - Heating, Ventilation, and Air Conditioning
Prereq 3	Fundamental Refrigerant Management FAR Part 23 - 52.223-11 Ozone Depleting Substances UFGS 15601N Central Refrigeration Equipment for Air Conditioning UFGS 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems	Prereq 2 Environmental Tobacco Smoke (ETS) Control EO 13058 Protecting Federal Employees and the Public From Exposure to Tobacco Smoke in the Federal Workplace DoD Instruction 1010.15 Smoke-Free DoD Facilities 02 Jan 2001
Credit 1	Optimize Energy Performance (Energy Policy 30% better than ASHRAE 90.1 2004) 2005 Federal Energy Policy Act 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings 10 CFR Part 435 Energy Conservation Voluntary Performance Standards for New Buildings; Mandatory for Federal Buildings AR 420-1 Chap 23 Army Energy Program (Final pending) Army Energy Campaign Plan (pending) UFC 3-400-1 Design: Energy Conservation (needs to be updated to require 30% better performance)	Credit 6.2 Controllability of Systems, Thermal Comfort 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings ASHRAE 62.1 - 2004 Ventilation for Acceptable Indoor Air Quality ASHRAE 55 - 2004 Thermal Environmental Conditions for Human Occupancy AR 420-1 Chap 23 Army Energy Program (Final pending) & Army Energy Campaign Plan (pending)
Credit 3	Enhanced Commissioning IBC - International Building Code ER 1110-345-723 - Systems Commissioning Procedures UFGS 15995A - Commissioning of HVAC Systems ECB 2005-14 Building Commissioning Versus Corps of Engineers Military Design/Construction Process	Credit 7.1 Thermal Comfort, Compliance 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings ASHRAE 55 - 2004 Thermal Environmental Conditions for Human Occupancy UFGS 13801, 15901N, 15910N. 15951
Credit 5	Measurement & Verification AR 420-1 Chap 23 Army Energy Program (Final pending) Army Energy Campaign Plan (pending) UFC 3-401-01FA - Utility Monitoring Control Systems (UCMS) UFGS 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems	KEY LEED-NC 2.2 Credits reqd by Federal, DOD or Army Policy LEED-NC 2.2 Credits reqd by Project Requirements POLICY NEEDED TO Require this Prerequisite/CREDIT!!

Figure 2. (Cont'd).

There was no equivalent subset of “required” SPiRiT credits established for the case study projects evaluated in this report, or for any other Army projects. Project teams earned SPiRiT (or LEED®-NC 2.2 [Draft]) credits based on their feasibility and project economics. Figures 3 to 6 show the results of analysis of the case study projects with respect to Estimated, Potential, and Probable scores. These charts only “observe” if any of the “required” credits were earned. The final LEED®-NC 2.2 (Draft) ratings were not adjusted to see how well the projects would have done if they earned all the “required” credits in addition to other credits, however this analysis was done in a later step to consider what a reasonable Army LEED target ratings would be.

Project Credit Histories Results – Probable LEED®-NC 2.2 (Draft) Ratings

Forty Army Case study projects were obtained and evaluated to determine what the probable LEED rating would be. For each grouping of projects (Not Certified, Certified, Silver, and Gold), a figure was created showing the LEED®-NC 2.2 (Draft) credits that were Likely (YES = earned by 50% or more of the projects), Unlikely (NO = earned by few or no projects), and Possible (earned by fewer than 50% of the projects). For visual reference, LEED credits considered “required” have been highlighted in Blue, Likely credits are colored Green, Unlikely credits are colored Grey, and Possible credits are colored Yellow. The LEED rating sum at the bottom right corner of the figure is the sum of all Likely credits (YES = highlighted in Green).

Project details for each of these 40 projects are available in Appendix A, “SPiRiT-LEED Sample Project Evaluation Project Data.”

Non Certifiable

Figure 3 shows the overview of the 17 out of 40 Army case study projects that were unable to reach LEED®-NC 2.2 (Draft) Certified. The probable LEED®-NC 2.2 (Draft) score possible by earning each of the Likely LEED®-NC 2.2 (Draft) credits highlighted in Green is 18 points. The average Probable LEED®-NC 2.2 (Draft) score earned by the 17 projects was 19 points. These projects (almost 43% of our sample) did not do well under either the SPiRiT or LEED rating system.

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)

**Army Probable LEED-NC 2.2 Non Certifiable Projects (17 of 40)**

Sustainable Sites		7 Pts	Materials & Resources		3 Pts
Prereq 1	Construction Activity Pollution Prevention	Required	Prereq 1	Storage & Collection of Recyclables	Required
Credit 1	Site Selection	1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	N
Credit 2	Development Density & Community Connectivity	1	Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	N
Credit 3	Brownfield Redevelopment	N	Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	N
Credit 4.1	Alternative Transportation, Public Transportation Access	N	Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1	Credit 2.2	Construction Waste Management, Divert 75% from Disposal	N
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	N	Credit 3.1	Materials Reuse, 5%	N
Credit 4.4	Alternative Transportation, Parking Capacity	1	Credit 3.2	Materials Reuse, 10%	N
Credit 5.1	Site Development, Protect or Restore Habitat	N	Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	1
Credit 5.2	Site Development, Maximize Open Space	1	Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	N
Credit 6.1	Stormwater Design, Quantity Control	1	Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1
Credit 6.2	Stormwater Design, Quality Control	N	Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	N
Credit 7.1	Heat Island Effect, Non-Roof	N	Credit 6	Rapidly Renewable Materials	N
Credit 7.2	Heat Island Effect, Roof	N	Credit 7	Certified Wood	N
Credit 8	Light Pollution Reduction	1			
Water Efficiency		1 Pts	Indoor Environmental Quality		4 Pts
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1	Prereq 1	Minimum IAQ Performance	Required
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	N	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Credit 2	Innovative Wastewater Technologies	N	Credit 1	Outdoor Air Delivery Monitoring	N
Credit 3.1	Water Use Reduction, 20% Reduction	N	Credit 2	Increased Ventilation	N
Credit 3.2	Water Use Reduction, 30% Reduction	N	Credit 3.1	Construction IAQ Management Plan, During Construction	N
			Credit 3.2	Construction IAQ Management Plan, Before Occupancy	N
			Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
			Credit 4.2	Low-Emitting Materials, Paints & Coatings	1
			Credit 4.3	Low-Emitting Materials, Carpet Systems	1
			Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	N
			Credit 5	Indoor Chemical & Pollutant Source Control	1
			Credit 6.1	Controllability of Systems, Lighting	N
			Credit 6.2	Controllability of Systems, Thermal Comfort	N
			Credit 7.1	Thermal Comfort, Compliance	N
			Credit 7.2	Thermal Comfort, Validation	N
			Credit 8.1	Daylight & Views, Daylight 75% of Spaces	N
			Credit 8.2	Daylight & Views, Views for 90% of Spaces	N
Energy & Atmosphere		1 Pts	Innovation & Design Process		2 Pts
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required	Credit 1.1	Innovation in Design	1
Prereq 2	Minimum Energy Performance	Required	Credit 1.2	Innovation in Design	N
Prereq 3	Fundamental Refrigerant Management	Required	Credit 1.3	Innovation in Design	N
Credit 1	Optimize Energy Performance	0	Credit 1.4	Innovation in Design	N
Credit 2	On Site Renewable Energy	N	Credit 2	LEED™ Accredited Professional	1
Credit 3	Enhanced Commissioning	N			
Credit 4	Enhanced Refrigerant Management	1			
Credit 5	Measurement & Verification	N			
Credit 6	Green Power	N			
KEY					
YES Credits Earned by > 50% of projects					
PROBABLE Credits earned by >50% of projects					
NO Credits earned by <50% of projects					
Credits reqd by Federal, DOD or Army Policy					

Project Totals

18 Pts

Sample Project Average Probable Rating

19 Pts

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure 3. Overview of Army case study projects unable to reach LEED®-NC 2.2 (Draft) certified.

Certified

Figure 4 shows an overview of the 9 out of 40 Army case study projects that were able to reach LEED®-NC 2.2 (Draft) Certified. The probable LEED®-NC 2.2 (Draft) score possible by earning each of the Likely LEED®-NC 2.2 (Draft) credits highlighted in Green is 26 points. The average Probable LEED®-NC 2.2 (Draft) score earned by the 9 projects was 29 points. Due to the differences between SPiRiT and LEED, some of these projects achieved higher SPiRiT ratings than LEED ratings.

Silver

Figure 5 shows the overview of the seven out of 40 Army case study projects that were able to reach LEED®-NC 2.2 (Draft) Silver. The probable LEED®-NC 2.2 (Draft) score possible by earning each of the Likely LEED®-NC 2.2 (Draft) credits highlighted in Green is 32 points. The average Probable LEED®-NC 2.2 (Draft) score earned by the 7 projects was 34 points. Due to the differences between SPiRiT and LEED, some of these projects achieved higher SPiRiT ratings than LEED ratings.

Gold

Figure 6 shows the overview of the seven out of 40 Army case study projects that were able to reach LEED®-NC 2.2 (Draft) Gold within current Program Amounts. The probable LEED®-NC 2.2 (Draft) score possible by earning each of the Likely LEED credits highlighted in Green is 37 points. The average LEED®-NC 2.2 (Draft) score earned by the 7 projects was 42 points. These projects did very well under both SPiRiT and LEED rating systems.

Note: Seattle District has been using LEED®-NC 2.1 (the current version of LEED®-NC) to rate projects at Fort Lewis, and, at the time of this writing, they predict LEED® Gold ratings within their current budgets. The Seattle region is very progressive in requiring construction of sustainable facilities and low impact development, and local designers and builders are more familiar with these techniques than project teams in other parts of the country. Seattle was the first municipality in the nation to adopt a LEED® Silver standard for construction projects over 5000 SF of occupied space. According to (Kats 2003) Pennsylvania, Portland and Seattle have all experienced a trend of declining costs for green buildings as the local project teams gain expertise.

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)

**Army Probable LEED-NC 2.2 Certified Projects (9 of 40)**

Sustainable Sites		6 Pts	Materials & Resources		4 Pts
Prereq 1	Construction Activity Pollution Prevention	Required	Prereq 1	Storage & Collection of Recyclables	Required
Credit 1	Site Selection	1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	N
Credit 2	Development Density & Community Connectivity	1	Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	N
Credit 3	Brownfield Redevelopment	N	Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	N
Credit 4.1	Alternative Transportation, Public Transportation Access	N	Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1	Credit 2.2	Construction Waste Management, Divert 75% from Disposal	N
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	N	Credit 3.1	Materials Reuse, 5%	N
Credit 4.4	Alternative Transportation, Parking Capacity	N	Credit 3.2	Materials Reuse, 10%	N
Credit 5.1	Site Development, Protect or Restore Habitat	1	Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	1
Credit 5.2	Site Development, Maximize Open Space	N	Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	N
Credit 6.1	Stormwater Design, Quantity Control	1	Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1
Credit 6.2	Stormwater Design, Quality Control	N	Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	N
Credit 7.1	Heat Island Effect, Non-Roof	N	Credit 6	Rapidly Renewable Materials	N
Credit 7.2	Heat Island Effect, Roof	N	Credit 7	Certified Wood	1
Credit 8	Light Pollution Reduction	1			
Water Efficiency		1 Pts	Indoor Environmental Quality		12 Pts
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1	Prereq 1	Minimum IAQ Performance	Required
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	N	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Credit 2	Innovative Wastewater Technologies	N	Credit 1	Outdoor Air Delivery Monitoring	1
Credit 3.1	Water Use Reduction, 20% Reduction	N	Credit 2	Increased Ventilation	1
Credit 3.2	Water Use Reduction, 30% Reduction	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
			Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
			Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
			Credit 4.2	Low-Emitting Materials, Paints & Coatings	1
			Credit 4.3	Low-Emitting Materials, Carpet Systems	1
			Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1
			Credit 5	Indoor Chemical & Pollutant Source Control	1
			Credit 6.1	Controllability of Systems, Lighting	N
			Credit 6.2	Controllability of Systems, Thermal Comfort	1
			Credit 7.1	Thermal Comfort, Compliance	N
			Credit 7.2	Thermal Comfort, Validation	N
			Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
			Credit 8.2	Daylight & Views, Views for 90% of Spaces	1
Energy & Atmosphere		3 Pts	Innovation & Design Process		2 Pts
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required	Credit 1.1	Innovation in Design	2
Prereq 2	Minimum Energy Performance	Required	Credit 1.2	Innovation in Design	N
Prereq 3	Fundamental Refrigerant Management	Required	Credit 1.3	Innovation in Design	N
Credit 1	Optimize Energy Performance	0	Credit 1.4	Innovation in Design	N
Credit 2	On Site Renewable Energy	N	Credit 2	LEED™ Accredited Professional	1
Credit 3	Enhanced Commissioning	1			
Credit 4	Enhanced Refrigerant Management	1			
Credit 5	Measurement & Verification	1			
Credit 6	Green Power	N			
KEY					
YES Credits Earned by > 50% of projects					
PROBABLE Credits earned by >50% of projects					
NO Credits earned by <50% of projects					
Credits reqd by Federal, DOD or Army Policy					
Project Totals		26 Pts			
Sample Project Average Probable Rating		29 Pts			
Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points					

Figure 4. Overview of the 9 out of 40 Army case study projects able to reach LEED®-NC 2.2 (Draft) Certified.

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Sustainable Sites

10 Pts

Materials & Resources

3 Pts

Prereq 1	Construction Activity Pollution Prevention	Required	Prereq 1	Storage & Collection of Recyclables	Required
Credit 1	Site Selection	1	Credit 1.1	Building Reuse , Maintain 75% of Existing Walls, Floors & Roof	N
Credit 2	Development Density & Community Connectivity	1	Credit 1.2	Building Reuse , Maintain 95% of Existing Walls, Floors & Roof	N
Credit 3	Brownfield Redevelopment	N	Credit 1.3	Building Reuse , 50% of Interior Non-Structural Elements	N
Credit 4.1	Alternative Transportation, Public Transportation Access	1	Credit 2.1	Construction Waste Management , Divert 50% from Disposal	?
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1	Credit 2.2	Construction Waste Management , Divert 75% from Disposal	?
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	N	Credit 3.1	Materials Reuse , 5%	N
Credit 4.4	Alternative Transportation, Parking Capacity	1	Credit 3.2	Materials Reuse , 10%	N
Credit 5.1	Site Development, Protect or Restore Habitat	1	Credit 4.1	Recycled Content , 10% (post-consumer + ½ pre-consumer)	1
Credit 5.2	Site Development, Maximize Open Space	N	Credit 4.2	Recycled Content , 20% (post-consumer + ½ pre-consumer)	N
Credit 6.1	Stormwater Design, Quantity Control	1	Credit 5.1	Regional Materials , 10% Extracted, Processed & Manufactured Regionally	1
Credit 6.2	Stormwater Design, Quality Control	1	Credit 5.2	Regional Materials , 20% Extracted, Processed & Manufactured Regionally	1
Credit 7.1	Heat Island Effect, Non-Roof	1	Credit 6	Rapidly Renewable Materials	N
Credit 7.2	Heat Island Effect, Roof	?	Credit 7	Certified Wood	N
Credit 8	Light Pollution Reduction	1			

2 Pts

Credit 1.1	Water Efficient Landscaping , Reduce by 50%
Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation
Credit 2	Innovative Wastewater Technologies
Credit 3.1	Water Use Reduction , 20% Reduction
Credit 3.2	Water Use Reduction , 30% Reduction

4 Pts

Energy & Atmosphere	
Prereq 1	Fundamental Commissioning of the Building Energy Systems
Prereq 2	Minimum Energy Performance
Prereq 3	Fundamental Refrigerant Management
Credit 1	Optimize Energy Performance (Ave 2)
Credit 2	On Site Renewable Energy
Credit 3	Enhanced Commissioning
Credit 4	Enhanced Refrigerant Management
Credit 5	Measurement & Verification
Credit 6	Green Power

YES Credits Earned by > 50% of projects

PROBABLE Credits earned by < 50% of projects

NO Credits earned by few or no projects

Credits reqd by Federal, DOD or Army Policy

11 Pts

Prereq 1	Minimum IAQ Performance	Required
Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Credit 1	Outdoor Air Delivery Monitoring	1
Credit 2	Increased Ventilation	?
Credit 3.1	Construction IAQ Management Plan, During Construction	1
Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
Credit 4.2	Low-Emitting Materials, Paints & Coatings	1
Credit 4.3	Low-Emitting Materials, Carpet Systems	1
Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1
Credit 5	Indoor Chemical & Pollutant Source Control	1
Credit 6.1	Controllability of Systems, Lighting	1
Credit 6.2	Controllability of Systems, Thermal Comfort	N
Credit 7.1	Thermal Comfort, Compliance	N
Credit 7.2	Thermal Comfort, Validation	N
Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
Credit 8.2	Daylight & Views, Views for 90% of Spaces	N

2 Pts

Credit 1.1	Innovation in Design	1
Credit 1.2	Innovation in Design	N
Credit 1.3	Innovation in Design	N
Credit 1.4	Innovation in Design	N
Credit 2	LEED™ Accredited Professional	1

32 Pts

Sample Project Average Probable Rating 34 Pts

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-69 points

Figure 5. Overview of Army case study projects able to reach LEED®-NC 2.2 (Draft) Silver.

LEED-NC® 2.2

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Army LEED NC 2.2 Probable GOLD Projects (7 of 40)

Sustainable Sites		11 Pts	Materials & Resources		7 Pts
Prereq 1	Construction Activity Pollution Prevention	Required	Prereq 1	Storage & Collection of Recyclables	Required
Credit 1	Site Selection	1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	N
Credit 2	Development Density & Community Connectivity	1	Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	N
Credit 3	Brownfield Redevelopment	N	Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	N
Credit 4.1	Alternative Transportation, Public Transportation Access	1	Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1	Credit 2.2	Construction Waste Management, Divert 75% from Disposal	1
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	N	Credit 3.1	Materials Reuse, 5%	N
Credit 4.4	Alternative Transportation, Parking Capacity	1	Credit 3.2	Materials Reuse, 10%	N
Credit 5.1	Site Development, Protect or Restore Habitat	1	Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	1
Credit 5.2	Site Development, Maximize Open Space	1	Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	1
Credit 6.1	Stormwater Design, Quantity Control	1	Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1
Credit 6.2	Stormwater Design, Quality Control	1	Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	1
Credit 7.1	Heat Island Effect, Non-Roof	1	Credit 6	Rapidly Renewable Materials	?
Credit 7.2	Heat Island Effect, Roof	?	Credit 7	Certified Wood	1
Credit 8	Light Pollution Reduction	1			
Water Efficiency		3 Pts	Indoor Environmental Quality		12 Pts
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1	Prereq 1	Minimum IAQ Performance	Required
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Credit 2	Innovative Wastewater Technologies	N	Credit 1	Outdoor Air Delivery Monitoring	N
Credit 3.1	Water Use Reduction, 20% Reduction	1	Credit 2	Increased Ventilation	1
Credit 3.2	Water Use Reduction, 30% Reduction	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
			Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
			Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
			Credit 4.2	Low-Emitting Materials, Paints & Coatings	1
			Credit 4.3	Low-Emitting Materials, Carpet Systems	1
			Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1
			Credit 5	Indoor Chemical & Pollutant Source Control	1
			Credit 6.1	Controllability of Systems, Lighting	1
			Credit 6.2	Controllability of Systems, Thermal Comfort	1
			Credit 7.1	Thermal Comfort, Compliance	1
			Credit 7.2	Thermal Comfort, Validation	?
			Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
			Credit 8.2	Daylight & Views, Views for 90% of Spaces	N
Energy & Atmosphere		2 Pts	Innovation & Design Process		2 Pts
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required	Credit 1.1	Innovation in Design	1
Prereq 2	Minimum Energy Performance	Required	Credit 1.2	Innovation in Design	N
Prereq 3	Fundamental Refrigerant Management	Required	Credit 1.3	Innovation in Design	N
Credit 1	Optimize Energy Performance (Ave .87)	0	Credit 1.4	Innovation in Design	N
Credit 2	On Site Renewable Energy	N		LEED™ Accredited Professional	1
Credit 3	Enhanced Commissioning	1			
Credit 4	Enhanced Refrigerant Management	?			
Credit 5	Measurement & Verification	1			
Credit 6	Green Power	N			
KEY					
YES Credits Earned by > 50% of projects					
PROBABLE Credits earned by < 50% of projects					
NO Credits earned by few or no projects					
Credits reqd by Federal, DOD or Army Policy					
Project Totals		37 Pts	Sample Project Average Probable Rating		42 Pts

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure 6. Overview of Army case study projects able to reach LEED®-NC 2.2 (Draft) Gold within current Program Amounts.

Observations about the Case Study Projects

The four figures depicting the probable LEED Uncertified, Certified, Silver, and Gold projects can offer patterns of success for Army projects. Table 1 shows break-outs of probable LEED ratings by facility type: all projects; Barracks Facilities; Battalion/Brigade Headquarters and Administrative Facilities; Company Operations Facilities; Tactical Equipment Maintenance Facilities (TEMF); and other projects (including Child Care Centers). For most facility types, the probable LEED ratings were distributed between Gold, Silver, and Certified.

There were two exceptions: the sample TEMF and childcare centers performed poorly. We do not have enough site data or design analysis on the projects that performed poorly to know the precise reasons for their low LEED ratings. Perhaps project teams did not focus on sustainability during the design, or site conditions made many of the no-cost or low-cost credits unachievable. In the case of TEMF facilities, it is possible that LEED Sustainable Site credits were difficult to achieve because of the pavement required, and because the buildings were not energy efficient due to the air changes required to service vehicles. There is really no good reason that the two childcare centers in this sample cannot attain “LEED Certified.” There is a national movement to design and build healthy, sustainable, energy-efficient daylight schools to improve the health and performance of students (Kats 2003). Chapter 4, “SPiRiT-LEED Implementation Issues,” further discusses factors that affect project sustainability, energy efficiency, and budgets, based on available LEED Cost reports, and commercial and private sector project data.

Summary Target Credits

The results of the 40 Army Case Study projects were used to create figures depicting LEED®-NC 2.2 (Draft) credits that could be considered Unlikely, Likely, Cost-Driven or Situational.

Very Unlikely and Unlikely LEED-NC 2.2 Credits

Figure 7 shows the LEED credits that the Case Study projects were Very Unlikely, and Unlikely to achieve. The actual percentage of Case Study projects achieving the credits are noted next to the credit title. Credits shaded in grey are considered Very Unlikely because few projects were able to earn them. Credits shaded in purple are considered Unlikely, yet about a third of the Case Study projects were able to achieve them.

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Army LEED NC 2.2 Unlikely Credits (Based on 40 Projects)

Sustainable Sites			14 Possible Points	Materials & Resources			13 Possible Points
Prereq 1	Construction Activity Pollution Prevention	Required		Prereq 1	Storage & Collection of Recyclables	Required	
Credit 1	Site Selection	1		Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	0%	N
Credit 2	Development Density & Community Connectivity	1		Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	0%	N
Credit 3	Brownfield Redevelopment	33%	N	Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	0%	N
Credit 4.1	Alternative Transportation, Public Transportation Access	1		Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1	
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1		Credit 2.2	Construction Waste Management, Divert 75% from Disposal	1	
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	23%	N	Credit 3.1	Materials Reuse, 5%	13%	N
Credit 4.4	Alternative Transportation, Parking Capacity	1		Credit 3.2	Materials Reuse, 10%	5%	N
Credit 5.1	Site Development, Protect or Restore Habitat	1		Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	1	
Credit 5.2	Site Development, Maximize Open Space	1		Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	1	
Credit 6.1	Stormwater Design, Quantity Control	1		Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1	
Credit 6.2	Stormwater Design, Quality Control	43%	?	Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	1	
Credit 7.1	Heat Island Effect, Non-Roof	1		Credit 6	Rapidly Renewable Materials (	10%	N
Credit 7.2	Heat Island Effect, Roof	30%	?	Credit 7	Certified Wood	1	
Credit 8	Light Pollution Reduction	1					
Water Efficiency			5 Possible Points	Indoor Environmental Quality			15 Possible Points
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1		Prereq 1	Minimum IAQ Performance	Required	
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required	
Credit 2	Innovative Wastewater Technologies (	10%	N	Credit 1	Outdoor Air Delivery Monitoring (	43%	N
Credit 3.1	Water Use Reduction, 20% Reduction	1		Credit 2	Increased Ventilation	1	
Credit 3.2	Water Use Reduction, 30% Reduction	10%	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1	
				Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1	
				Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1	
				Credit 4.2	Low-Emitting Materials, Paints & Coatings	1	
				Credit 4.3	Low-Emitting Materials, Carpet Systems	1	
				Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1	
				Credit 5	Indoor Chemical & Pollutant Source Control	1	
				Credit 6.1	Controllability of Systems, Lighting	1	
				Credit 6.2	Controllability of Systems, Thermal Comfort	1	
				Credit 7.1	Thermal Comfort, Compliance	1	
				Credit 7.2	Thermal Comfort, Validation (	25%	N
				Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1	
				Credit 8.2	Daylight & Views, Views for 90% of Spaces	40%	N
Energy & Atmosphere			17 Possible Points	Innovation & Design Process			5 Possible Points
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required		Credit 1.1	Innovation in Design	1	
Prereq 2	Minimum Energy Performance	Required		Credit 1.2	Innovation in Design	N	
Prereq 3	Fundamental Refrigerant Management	Required		Credit 1.3	Innovation in Design	N	
Credit 1	Optimize Energy Performance	0		Credit 1.4	Innovation in Design	N	
Credit 2	On Site Renewable Energy	3%	N		LEED™ Accredited Professional	1	
Credit 3	Enhanced Commissioning	1					
Credit 4	Enhanced Refrigerant Management	1					
Credit 5	Measurement & Verification	1					
Credit 6	Green Power	8%	N				
KEY							
Case Study Projects Range 0 - 5 Points							
Unlikely Credits earned by <43% of projects							
Very Unlikely - Credits earned by <33% of projects							
Credits reqd by Federal, DOD or Army Policy							
Percentage of Sample Projects Achieving Credit			###%				

Project Totals

69 Possible Points

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure 7. LEED credits case study projects were very unlikely, and unlikely to achieve.

Note that Sustainable Sites Credit 7.2, “Heat Island Effect, Roof,” was earned by 30% of the projects, and more projects could earn it if they were able to select appropriate roofing materials that worked with the Installation Design Guide color scheme. This is a credit that should be considered when assembling standards for the Installation Design Guide because it can affect both the thermal performance and visual aspects of the roofing.

Attainment of Indoor Environmental Quality Credit 8.2, “Daylight and Views, Views for 90% of Spaces,” depends on the building type and configuration. Barracks and building types that have single loaded corridors with individual rooms may be able to earn this credit easier than other building types.

Situational LEED-NC 2.2 Credits

Figure 8 shows the LEED credits that could be considered Situational. The ability of a project to earn these credits depends on regional and local site conditions. Credits shaded in Pink are typically easier for “rural” sites, while credits shaded in Orange are considered easier for “urban” sites (Matthiessen and Morris 2004). Credits shaded in Yellow are totally dependent on site and installation conditions. For a more complete discussion of how “rural” and “urban” site conditions might affect Army projects, see Chapter 4, “SPiRiT-LEED Implementation Issues.”

Cost Driven, LEED-NC 2.2 Credits

Figure 9 shows the credits that can be considered Cost-Driven. High Cost-Driven LEED credits (colored Bright Green) are those that may not be shown to be cost effective for typical Army projects. “Innovative Wastewater Technologies” is an expensive credit, and would be very unlikely to show reasonable payback unless the site is really remote and sewer hookup is not available. On-site Renewable Energy may prove to be cost effective as new PV integrated building products become more common. For instance, Solar Integrated Photovoltaic Roofing Systems are now available, and with the cost incentives offered by the state of New Jersey, the project simple payback for new construction was 6.1 years. Also, Renewable Energy targets are mentioned in the new Energy Policy Act.

Moderate Cost-Driven LEED credits (colored Light Green) are those that some Army projects can earn, but others find too expensive to afford. For instance-Stormwater Design – Quality Control is much easier to attain with a large site and low impact design measures, than a small site where a more expensive storage sys-

tem must be installed. The 30% Water Use Reduction credit might be possible at a reasonable cost with the use of waterless urinals.

Likely LEED-NC 2.2 Credits

Figure 10 shows the credits that can be considered Likely based on the 40 Projects that were evaluated. Likely LEED Credits (colored Green) are those that were achieved by a majority of the Army projects studied. The percent of case study projects earning each Likely credit is listed in parentheses. This chart also indicates the Very Unlikely credits (colored Grey) for ease of reference. Note that the Energy & Atmosphere – Optimize Energy credit is highlighted in aqua. Many of our case study projects (30 out of 40) earned 0 points for this credit. Note that we were not able to validate the accuracy of the Sample Project rating sheets provided to us.

Army LEED-NC 2.2 Required and Target Credits

Figure 11 is a summary chart showing the LEED-NC 2.2 credits that are required based on existing (and pending) Federal, DOD, and Army policy, and those that should be targeted based on project experience. Note that the total credits add up to 39, which is the minimum number of credits to earn LEED Gold. One credit was added to this list to make the Gold target of 39 – Water Efficiency – Credit 1.2, “Water Efficient Landscaping” (No Potable Use or No Irrigation). This is a no-cost or low-cost credit and should be possible for most projects to achieve if they use xeriscaping (with indigenous plants) and do not install permanent irrigation.

This chart does NOT assume that we can attain LEED Gold within the allowable Military construction budgets. Instead, this chart is the result of a consensus on which LEED-NC 2.2 credits should be required based on policy, and observations of which credits our projects are currently able to achieve. Many of the sample projects did not achieve the Energy & Atmosphere, and Indoor Environmental Quality credits that we hope to require in the future. Please see further discussion of the costs of improving energy efficiency in Chapter 4: “SPiRiT LEED Implementation Issues.”

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**Army LEED NC 2.2 Situational Credits**

Sustainable Sites			14 Possible Points	Materials & Resources			13 Possible Points
Prereq 1	Construction Activity Pollution Prevention	Required		Prereq 1	Storage & Collection of Recyclables	Required	
Credit 1	Site Selection	1		Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	1	
Credit 2	Development Density & Community Connectivity	1		Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	1	
Credit 3	Brownfield Redevelopment	1		Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	1	
Credit 4.1	Alternative Transportation, Public Transportation Access	1		Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1	
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1		Credit 2.2	Construction Waste Management, Divert 75% from Disposal	1	
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	1		Credit 3.1	Materials Reuse, 5%	1	
Credit 4.4	Alternative Transportation, Parking Capacity	1		Credit 3.2	Materials Reuse, 10%	1	
Credit 5.1	Site Development, Protect or Restore Habitat	1		Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	1	
Credit 5.2	Site Development, Maximize Open Space	1		Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	1	
Credit 6.1	Stormwater Design, Quantity Control	1		Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1	
Credit 6.2	Stormwater Design, Quality Control	1		Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	1	
Credit 7.1	Heat Island Effect, Non-Roof	1		Credit 6	Rapidly Renewable Materials	1	
Credit 7.2	Heat Island Effect, Roof	1		Credit 7	Certified Wood	1	
Credit 8	Light Pollution Reduction	1					
Water Efficiency			5 Possible Points	Indoor Environmental Quality			15 Possible Points
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1		Prereq 1	Minimum IAQ Performance	Required	
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required	
Credit 2	Innovative Wastewater Technologies	1		Credit 1	Outdoor Air Delivery Monitoring	1	
Credit 3.1	Water Use Reduction, 20% Reduction	1		Credit 2	Increased Ventilation	1	
Credit 3.2	Water Use Reduction, 30% Reduction	1		Credit 3.1	Construction IAQ Management Plan, During Construction	1	
				Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1	
				Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1	
				Credit 4.2	Low-Emitting Materials, Paints & Coatings	1	
				Credit 4.3	Low-Emitting Materials, Carpet Systems	1	
				Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1	
				Credit 5	Indoor Chemical & Pollutant Source Control	1	
				Credit 6.1	Controllability of Systems, Lighting	1	
				Credit 6.2	Controllability of Systems, Thermal Comfort	1	
				Credit 7.1	Thermal Comfort, Compliance	1	
				Credit 7.2	Thermal Comfort, Validation	1	
				Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1	
				Credit 8.2	Daylight & Views, Views for 90% of Spaces	1	
Energy & Atmosphere			17 Possible Points	Innovation & Design Process			5 Possible Points
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required		Credit 1.1	Innovation in Design	1	
Prereq 2	Minimum Energy Performance	Required		Credit 1.2	Innovation in Design	1	
Prereq 3	Fundamental Refrigerant Management	Required		Credit 1.3	Innovation in Design	1	
Credit 1	Optimize Energy Performance	1 - 10		Credit 1.4	Innovation in Design	1	
Credit 2	On Site Renewable Energy	1 - 3			LEED™ Accredited Professional	1	
Credit 3	Enhanced Commissioning	1					
Credit 4	Enhanced Refrigerant Management	1					
Credit 5	Measurement & Verification	1					
Credit 6	Green Power	1					
KEY							
Credits Easier on "Rural" sites							
Credits Easier on "Urban" sites							
Credit Depends on Site/Local Conditions							
Credits reqd by Federal, DOD or Army Policy							
Project Totals							69 Possible Points
Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points							

Figure 8. LEED credits could be considered "Situational."

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)

**Army LEED NC 2.2 Cost-Driven Credits****Sustainable Sites**

14 Possible Points

Prereq 1	Construction Activity Pollution Prevention	Required
Credit 1	Site Selection	1
Credit 2	Development Density & Community Connectivity	1
Credit 3	Brownfield Redevelopment	1
Credit 4.1	Alternative Transportation, Public Transportation Access	1
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	1
Credit 4.4	Alternative Transportation, Parking Capacity	1
Credit 5.1	Site Development, Protect or Restore Habitat	1
Credit 5.2	Site Development, Maximize Open Space	1
Credit 6.1	Stormwater Design, Quantity Control	1
Credit 6.2	Stormwater Design, Quality Control	1
Credit 7.1	Heat Island Effect, Non-Roof	1
Credit 7.2	Heat Island Effect, Roof	1
Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
Credit 2	Innovative Wastewater Technologies	1
Credit 3.1	Water Use Reduction, 20% Reduction	1
Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required
Prereq 2	Minimum Energy Performance	Required
Prereq 3	Fundamental Refrigerant Management	Required
Credit 1	Optimize Energy Performance	1 - 10
Credit 2	On Site Renewable Energy	1 - 3
Credit 3	Enhanced Commissioning	1
Credit 4	Enhanced Refrigerant Management	1
Credit 5	Measurement & Verification	1
Credit 6	Green Power	1

KEY**High Cost Driven Credits****Moderate Cost Driven Credits****Credits reqd by Federal, DOD or Army Policy****Materials & Resources**

13 Possible Points

Prereq 1	Storage & Collection of Recyclables	Required
Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	1
Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	1
Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	1
Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1
Credit 2.2	Construction Waste Management, Divert 75% from Disposal	1
Credit 3.1	Materials Reuse, 5%	1
Credit 3.2	Materials Reuse, 10%	1
Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	1
Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	1
Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1
Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	1
Credit 6	Rapidly Renewable Materials	1
Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Prereq 1	Minimum IAQ Performance	Required
Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Credit 1	Outdoor Air Delivery Monitoring	1
Credit 2	Increased Ventilation	1
Credit 3.1	Construction IAQ Management Plan, During Construction	1
Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
Credit 4.2	Low-Emitting Materials, Paints & Coatings	1
Credit 4.3	Low-Emitting Materials, Carpet Systems	1
Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1
Credit 5	Indoor Chemical & Pollutant Source Control	1
Credit 6.1	Controllability of Systems, Lighting	1
Credit 6.2	Controllability of Systems, Thermal Comfort	1
Credit 7.1	Thermal Comfort, Compliance	1
Credit 7.2	Thermal Comfort, Validation	1
Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

Credit 1.1	Innovation in Design	1
Credit 1.2	Innovation in Design	1
Credit 1.3	Innovation in Design	1
Credit 1.4	Innovation in Design	1
	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure 9. Credits that can be considered "Cost-Driven."

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Army LEED NC 2.2 Likely Credits (Based on 40 Projects)

Sustainable Sites				Materials & Resources			
9 Pts				4 Pts			
Prereq 1	Construction Activity Pollution Prevention	Required		Prereq 1	Storage & Collection of Recyclables	Required	
Credit 1	Site Selection	95%	1	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	0%	N
Credit 2	Development Density & Community Connectivity	93%	1	Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	0%	N
Credit 3	Brownfield Redevelopment	33%	N	Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	0%	N
Credit 4.1	Alternative Transportation, Public Transportation Access	43%	?	Credit 2.1	Construction Waste Management, Divert 50% from Disposal	70%	1
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	90%	1	Credit 2.2	Construction Waste Management, Divert 75% from Disposal	30%	?
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	23%	N	Credit 3.1	Materials Reuse, 5%	13%	N
Credit 4.4	Alternative Transportation, Parking Capacity	65%	1	Credit 3.2	Materials Reuse, 10%	5%	N
Credit 5.1	Site Development, Protect or Restore Habitat	63%	1	Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	85%	1
Credit 5.2	Site Development, Maximize Open Space	60%	1	Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	23%	?
Credit 6.1	Stormwater Design, Quantity Control	75%	1	Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	93%	1
Credit 6.2	Stormwater Design, Quality Control	43%	?	Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	43%	?
Credit 7.1	Heat Island Effect, Non-Roof	48%	1	Credit 6	Rapidly Renewable Materials	10%	N
Credit 7.2	Heat Island Effect, Roof	30%	?	Credit 7	Certified Wood	50%	1
Credit 8	Light Pollution Reduction	90%	1				
Water Efficiency				Indoor Environmental Quality			
2 Pts				11 Pts			
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	75%	1	Prereq 1	Minimum IAQ Performance	Required	
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	35%	?	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required	
Credit 2	Innovative Wastewater Technologies	10%	N	Credit 1	Outdoor Air Delivery Monitoring	43%	?
Credit 3.1	Water Use Reduction, 20% Reduction	40%	1	Credit 2	Increased Ventilation	58%	1
Credit 3.2	Water Use Reduction, 30% Reduction	10%	?	Credit 3.1	Construction IAQ Management Plan, During Construction	58%	1
				Credit 3.2	Construction IAQ Management Plan, Before Occupancy	55%	1
				Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	83%	1
				Credit 4.2	Low-Emitting Materials, Paints & Coatings	93%	1
				Credit 4.3	Low-Emitting Materials, Carpet Systems	85%	1
				Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	50%	1
				Credit 5	Indoor Chemical & Pollutant Source Control	83%	1
				Credit 6.1	Controllability of Systems, Lighting	60%	1
				Credit 6.2	Controllability of Systems, Thermal Comfort	35%	?
				Credit 7.1	Thermal Comfort, Compliance	60%	1
				Credit 7.2	Thermal Comfort, Validation	25%	?
				Credit 8.1	Daylight & Views, Daylight 75% of Spaces	65%	1
				Credit 8.2	Daylight & Views, Views for 90% of Spaces	40%	?
Energy & Atmosphere				Innovation & Design Process			
3 Pts				2 Pts			
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required		Credit 1.1	Innovation in Design	1	
Prereq 2	Minimum Energy Performance	Required		Credit 1.2	Innovation in Design	N	
Prereq 3	Fundamental Refrigerant Management	Required		Credit 1.3	Innovation in Design	N	
Credit 1	Optimize Energy Performance (Ave of 40 projects = .675) (10 projects earned credit -> ave 2.7)	0		Credit 1.4	Innovation in Design	N	
Credit 2	On Site Renewable Energy (Yes 3% Projects)	3%	N		LEED™ Accredited Professional	1	
Credit 3	Enhanced Commissioning (	53%	1				
Credit 4	Enhanced Refrigerant Management	100%	1				
Credit 5	Measurement & Verification	50%	1				
Credit 6	Green Power	8%	N				
KEY							
Likely Credits							
Very Unlikely - Credits earned by <33% of projects							
Credits reqd by Federal, DOD or Army Policy							
Percentage of Sample Projects Achieving Credit ##%							
				Project Total Likely			
				31 Pts			

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure 10. Credits that can be considered "Likely."

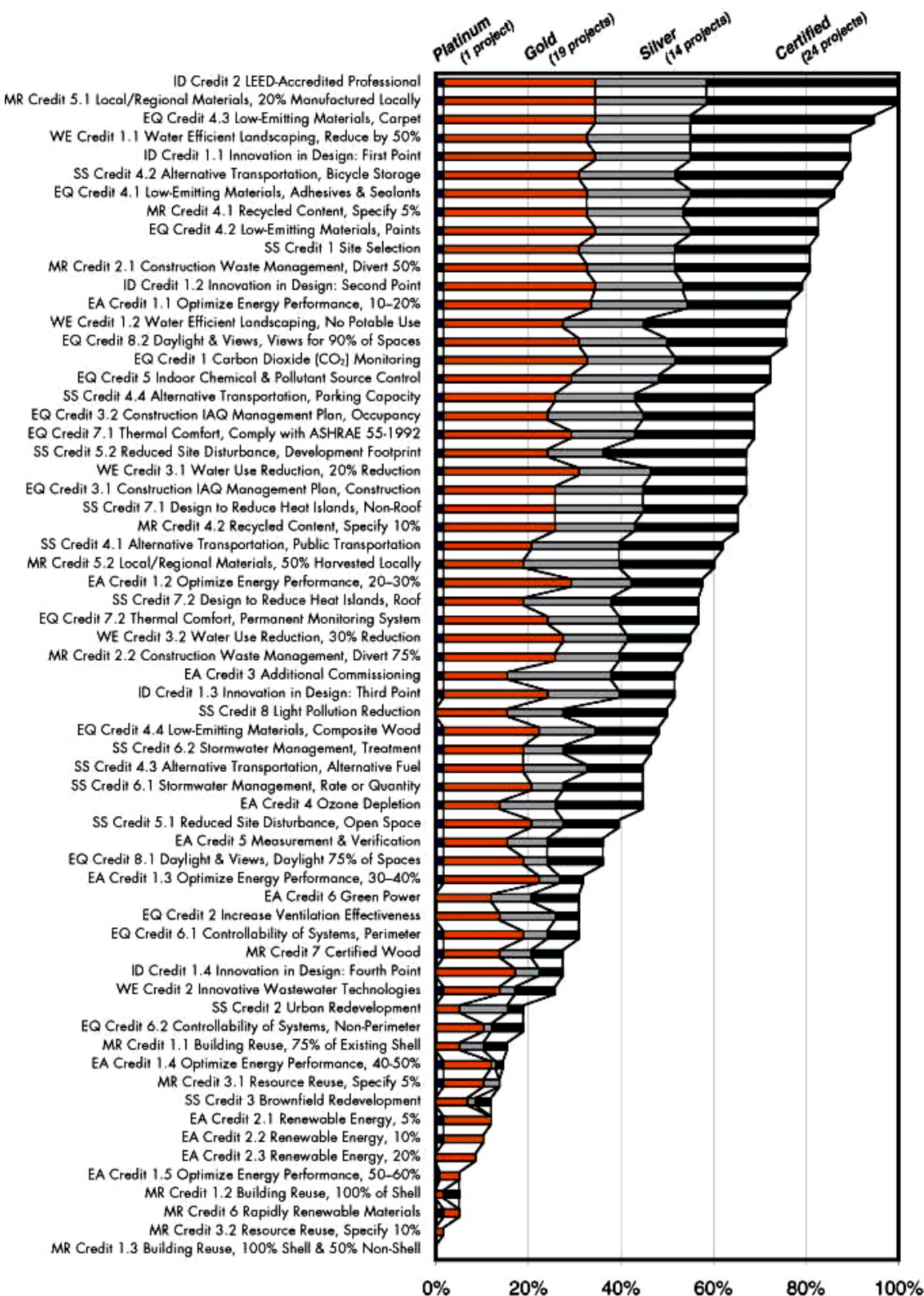


Figure 11. LEED credit history.

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)

**Army LEED NC 2.2 Army Required & Target Credits****Sustainable Sites**

9 Pts

Prereq 1	Construction Activity Pollution Prevention	Required		
Credit 1	Site Selection	95%	1	
Credit 2	Development Density & Community Connectivity	93%	1	
Credit 3	Brownfield Redevelopment	33%	N	
Credit 4.1	Alternative Transportation, Public Transportation Access	43%	?	
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	90%	1	
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	23%	N	
Credit 4.4	Alternative Transportation, Parking Capacity	65%	1	
Credit 5.1	Site Development, Protect or Restore Habitat	63%	1	
Credit 5.2	Site Development, Maximize Open Space	60%	1	
Credit 6.1	Stormwater Design, Quantity Control	75%	1	
Credit 6.2	Stormwater Design, Quality Control	43%	?	
Credit 7.1	Heat Island Effect, Non-Roof	48%	1	
Credit 7.2	Heat Island Effect, Roof	30%	?	
Credit 8	Light Pollution Reduction	90%	1	

Water Efficiency

3 Pts

Credit 1.1	Water Efficient Landscaping, Reduce by 50%	50%	1	
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	35%	1	
Credit 2	Innovative Wastewater Technologies	10%	N	
Credit 3.1	Water Use Reduction, 20% Reduction	20%	1	
Credit 3.2	Water Use Reduction, 30% Reduction	30%	?	

Energy & Atmosphere

9 Pts

Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required		
Prereq 2	Minimum Energy Performance	Required		
Prereq 3	Fundamental Refrigerant Management	Required		
Credit 1	Optimize Energy Performance (Target 30% energy reduction over ASHRAE 90.1 -2004)	25%	6	
Credit 2	On Site Renewable Energy		N	
Credit 3	Enhanced Commissioning	53%	1	
Credit 4	Enhanced Refrigerant Management	100%	1	
Credit 5	Measurement & Verification	50%	1	
Credit 6	Green Power	8%	N	

KEY

Target Credits

Credits reqd by Federal, DOD or Army Policy

Percentage of Sample Projects Achieving Credit ###

Materials & Resources

4 Pts

Prereq 1	Storage & Collection of Recyclables	Required		
Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	0%	N	
Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	0%	N	
Credit 1.3	Building Reuse, 50% of Interior Non-Structural Elements	0%	N	
Credit 2.1	Construction Waste Management, Divert 50% from Disposal	70%	1	
Credit 2.2	Construction Waste Management, Divert 75% from Disposal	30%	?	
Credit 3.1	Materials Reuse, 5%	13%	N	
Credit 3.2	Materials Reuse, 10%	5%	N	
Credit 4.1	Recycled Content, 10% (post-consumer + ½ pre-consumer)	85%	1	
Credit 4.2	Recycled Content, 20% (post-consumer + ½ pre-consumer)	23%	?	
Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	93%	1	
Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	43%	?	
Credit 6	Rapidly Renewable Materials	10%	N	
Credit 7	Certified Wood	50%	1	

Indoor Environmental Quality

12 Pts

Prereq 1	Minimum IAQ Performance	Required		
Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required		
Credit 1	Outdoor Air Delivery Monitoring	43%	?	
Credit 2	Increased Ventilation	58%	1	
Credit 3.1	Construction IAQ Management Plan, During Construction	58%	1	
Credit 3.2	Construction IAQ Management Plan, Before Occupancy	55%	1	
Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	83%	1	
Credit 4.2	Low-Emitting Materials, Paints & Coatings	93%	1	
Credit 4.3	Low-Emitting Materials, Carpet Systems	85%	1	
Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	50%	1	
Credit 5	Indoor Chemical & Pollutant Source Control	83%	1	
Credit 6.1	Controllability of Systems, Lighting	60%	1	
Credit 6.2	Controllability of Systems, Thermal Comfort	35%	1	
Credit 7.1	Thermal Comfort, Compliance	60%	1	
Credit 7.2	Thermal Comfort, Validation	25%	?	
Credit 8.1	Daylight & Views, Daylight 75% of Spaces	65%	1	
Credit 8.2	Daylight & Views, Views for 90% of Spaces	40%	?	

Innovation & Design Process

2 Pts

Credit 1.1	Innovation in Design (Charrette Process)	1		
Credit 1.2	Innovation in Design	N		
Credit 1.3	Innovation in Design	N		
Credit 1.4	Innovation in Design	N		
	LEED™ Accredited Professional	1		

Project Total Army Req'd & Target Credits

39 Pts

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Figure 12. Summary of required LEED-NC 2.2 credits.

4 SPiRiT-LEED Implementation Issues

This report is intended to help decisionmakers assess Army progress towards achieving energy efficient, green buildings (using SPiRiT and the current facility delivery process, which is mostly design/bid/build) so they can reach consensus on an appropriate LEED-NC 2.2 target performance level, AND incorporate energy efficient green building requirements into the MILCON transformation program (using Design/Build).

The transition from SPiRiT to LEED-NC 2.2 will be accompanied by two other major changes:

- Desire for improved energy efficiency in all our new construction and major renovation projects (to meet new 2005 Federal Energy Policy Act signed by President George Bush on 8 August 2005.)
- Change in the facility delivery process to expedite construction and reduce costs (MILCON Transformation begins FY06). It is possible that the MILCON transformation will be accompanied by a reduction in the Programmed Amount (PA) or \$/SF allowed for each facility.

A short synopsis of the MILCON Transformation is available through URL:

https://secureapp2.hqda.pentagon.mil/acsimnews/article/ns_art21.cfm#Trans

Several open-ended questions must be considered to decide what an appropriate LEED-NC 2.2 performance level should be for future Army MILCON projects:

- How “sustainable” are the buildings we can purchase with the allowable PA?
- Does Project Sustainability (Probable LEED Rating) Vary by facility type?
- Does Project Sustainability (Probable LEED Rating) Vary by region or site conditions?
- How energy efficient are the Sample Army Building Projects?
- How much would it cost (\$/SF) to improve the energy efficiency of our new construction to meet the new Energy Policy Act and Army Energy Policy standards (30% more efficient than ASHRAE 90.1 -2004)?
- What is the payback period for building more energy efficient buildings (additional cost to improve the energy efficiency to meet standards / energy \$ saved per year) ?

Army Project Case History Summary

In order to determine the appropriate target LEED-NC 2.2 rating level that could be recommended for Army projects, CERL assessed the credits earned by Army projects using SPiRiT 1.4.1, then predicted the credits that should have been earned using LEED®-NC 2.2. Chapters 2 and 3 detail the results of this evaluation.

How “Sustainable” Are the Buildings We Can Purchase with the Allowable PA?

Based on our best predictions, the Army projects we evaluated would qualify to earn LEED ratings ranging from less than “Certified” to “Gold.” This large range of LEED®-NC 2.2 ratings reflects varied site conditions, customer expectations, project scopes and delivery methods, regional availability of materials, and project delivery team experience in sustainability. One constant was that most of the projects were delivered via the design/bid/build method. Only five of the 40 projects were delivered using the design/build delivery method that will soon become standard.

Further analysis of Army projects and comparison with results in the public and commercial sector, and LEED cost studies enabled us to predict the LEED credits that would be Typical, Situational, Unlikely, or Cost Driven for Army projects. Figure 11 represents the Target Army LEED®-NC 2.2 Credits – those that could be considered “required” based on current or pending policy, in addition to those that a majority of projects were able to earn within budget. Even though Figure 11 shows the target LEED®-NC 2.2 Rating as Gold, it is not recommended that the Army set the initial performance level as LEED®-NC 2.2 Gold, because a majority of our sample projects did not attain that level. LEED®-NC Silver would be a “stretch goal” for some project teams, but would be a good performance level to start with.

Does Project Sustainability (Probable LEED Rating) Vary by Facility Type?

Tables 1–7 show the actual SPiRiT, and predicted LEED ratings, by Facility Type, for the 40 Sample projects. For most facility types, the probable LEED ratings were distributed between Gold, Silver, and Certified.

There were two exceptions however: the sample Tactical Equipment Maintenance Facilities and Childcare Centers performed poorly. Not enough site data or design analysis were available on the projects that performed poorly to know the precise reasons for their low LEED ratings. Perhaps project teams did not focus on sus-

tainability during the design, or site conditions made many of the no-cost or low-cost credits unachievable. In the case of TEMF facilities, it is possible that LEED Sustainable Site credits were difficult to achieve because of the pavement required, and the buildings were not energy efficient due to the air changes required to service vehicles. But why did the two child care centers in this sample score below LEED certified? The project teams were unavailable to shed any insight into this issue.

Does Project Sustainability (Probable LEED Rating) Vary by Region or Site Conditions?

CERL researchers did not know enough about the sample projects to effectively judge how site or regional conditions impacted the final SPiRiT or LEED rating, but there is no discernable pattern to the project outcome. The one highlight to note are the LEED NC 2.1 projects at Fort Lewis that are being designed/managed by the Seattle District. Due to customer expectations, they have already made the transition to LEED and, at the time of this writing, project teams predict that they may be able to achieve a LEED Gold rating within their current budgets. The Seattle region is very progressive in requiring construction of sustainable facilities and low impact development, and local designers and builders are more familiar with these techniques than are project teams in other parts of the country. Seattle was the first municipality in the nation to adopt a LEED® Silver standard for construction projects over 5000 SF of occupied space. According to Kats (2003) Pennsylvania, Portland, and Seattle have all experienced a trend of declining costs for green buildings as the local project teams gain expertise.

Studies (e.g., Matthiessen and Morris 2004) discuss how demographic location (urban or rural) affects the ease of earning site credits. The Section, “Costing Green: A Comprehensive Cost Database and Budgeting Methodology” (p 45) further discusses this issue (Matthiessen and Morris 2004)

How Energy Efficient Are the Sample Army Building Projects?

Only 10 of 40 projects claimed any points on the Energy & Atmosphere – Optimize Energy Performance credit. The highest scoring SPiRiT and LEED projects tended to earn many of the Energy & Atmosphere and Indoor Environmental Quality credits that would impact building energy consumption. From the little data we have, without knowing actual building envelope or mechanical system details, it appears that many of these projects are not very energy efficient. This statement is based solely on the SPiRiT or LEED rating sheet provided, not on actual, in-depth knowledge of the projects.

Effective whole building design means the project team works together to optimize decisions that affect the building configuration, orientation, layout, window placement, envelope performance, and HVAC system design. Energy analysis using approved energy analysis software is a key part of this procedure, yet not all projects can afford the time and effort needed to optimize these decisions. Additional analysis time during this phase of the project can pay off many times over when considering the energy that can be saved over the life cycle of the building. Building systems and components are purchased and installed by the contractor, so the end product depends on project specifications and how well the systems are commissioned.

Army Required Mandates & Energy Conservation Target Goals

The Energy Policy Act and pending revisions to the Army Energy Policy and other policy documents indicate that Federal and Army decisionmakers desire to improve the energy efficiency of new and existing Army facilities. Energy costs continue to rise, and the long-term supply of energy resources from other nations is uncertain. There is also a need to improve water conservation and recycling of construction and demolition debris.

Figure 1 shows LEED®-NC 2.2 credits which, based on Federal or Army policy, should be considered “Army Standard.” Project Delivery Teams should consider the credits highlighted in blue as mandatory. Figure 2 (p 19) shows requirements and additional references to help Project Delivery Teams identify specific policy documents that support this standardization. If Project Delivery Teams comply with the LEED credit requirements for those credits considered “Army Standard,” they will be eligible to earn the appropriate credits.

The Sample Army Projects have not consistently earned the “Required” LEED credits – especially the “Energy & Atmosphere– Optimize Energy Performance” Credit (Target Goal 30% efficiency above the baseline established in ASHRAE 90.1-2004). Therefore we cannot assume that all projects can achieve the “required” credits within current budgets. (Note that a few of the best sample projects came very close to meeting these expectations within budget).

How Much Would It Cost (\$/SF) To Improve the Energy Efficiency of Our New Construction To Meet the New Energy Policy Act and Army Energy Policy Standards (30% More Efficient than ASHRAE 90.1 -2004)?

This is a difficult question considering that actual Army project cost data or energy consumption data for the 40 sample projects were not available for analysis.

To answer this question, CERL researchers surveyed knowledgeable mechanical engineers, LEED cost studies, High Performance Building studies, Low Energy Building studies, current literature, and other useful resources such as the Whole Building Design Guide.

The bottom line, based on all available data, is that a First Cost increase of 2-8% should enable Army Military Construction Projects to reach the desired 30% energy conservation goals. High Performance buildings, which are considered to be 50% more energy efficient than typical buildings, are predicted to have a First Cost increase of 10%. Experienced engineers estimate minimal additional \$/SF First Cost to obtain the 30% efficiency improvement.

(For details, please see the explanation and references in the next section).

What Is the Payback Period for Building More Energy Efficient Buildings? (Additional Cost To Improve the Energy Efficiency To Meet Standards / Energy \$ Saved per Year)

This is another difficult question to answer considering that we do not have actual Army project cost data or energy consumption data to analyze for the sample projects. Energy costs appear to be rising each year and probably will continue to do so in the future. The Army spent \$892M (FY04), \$994M (FY05), and \$1123M (FY06) on energy according to the FY04 Army Energy Report to Congress.

The bottom line is a very conservative payback period (less than 10 years) for improving the energy efficiency in new construction to meet the Energy Campaign Plan target of 30% above the ASHRAE 90.1 – 2004 baseline. The example calculation in the section below shows a Life Cycle Cost payback period of 8.6 years when HVAC First Cost increased by 10% and energy cost decreased by 30%. (For details, please see the explanation and references in the next section).

One detailed LEED Cost analysis concluded that *“Despite gaps in data and analysis, the findings of this report lead to a clear conclusion: building green up to the LEED Gold level makes financial sense today.”* (Kats 2003)

Life Cycle Cost Analysis of Improving Building Energy Efficiency

Figure 12 shows a base case (HVAC System Cost) using the chart found in the Whole Building Design Guide, available through URL:

http://www.wbdg.org/design/lcca.php?r=cost_effective

Assuming \$100 in Life Cycle Cost is spent on HVAC system over 30 years for base case building, then:

- Energy cost = 50% or \$50
- Maintenance = 4.7% or \$4.70
- Replacement cost = 2.3% or \$2.30
- HVAC first cost = 43% or \$43.

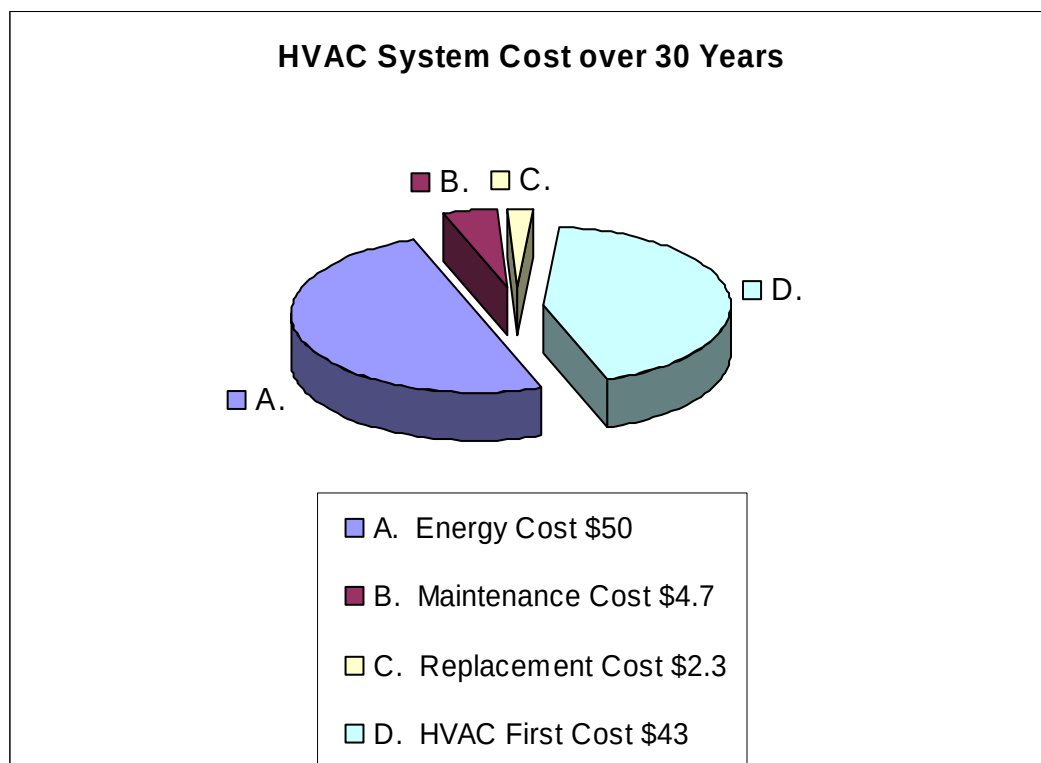


Figure 13. Base case (HVAC System Cost) using the chart found in the *Whole Building Design Guide* (Chart used courtesy of Washington State Department of General Administration).

Using the scenario in Figure 12 as a base case, assume it costs 10% more to improve the energy efficiency of the HVAC system by 30% to exceed ASHRAE 90.1 2004 Standard. Figure 13 shows the cost implications of the improved system.

Assuming that the building is 30% more energy efficient than ASHRAE Standard 90.1 2004

and

Assuming that the HVAC first cost increased 10% = $43 + 4.3\% = 47.3\%$ or \$47.3, then:

- Maintenance = 4.7% or \$4.70 (same)
- Replacement cost = 2.3% or \$2.30 (same)
- Energy cost = 35% or \$35 (30% savings = $50/30 = 15\%$ or \$15 saved).

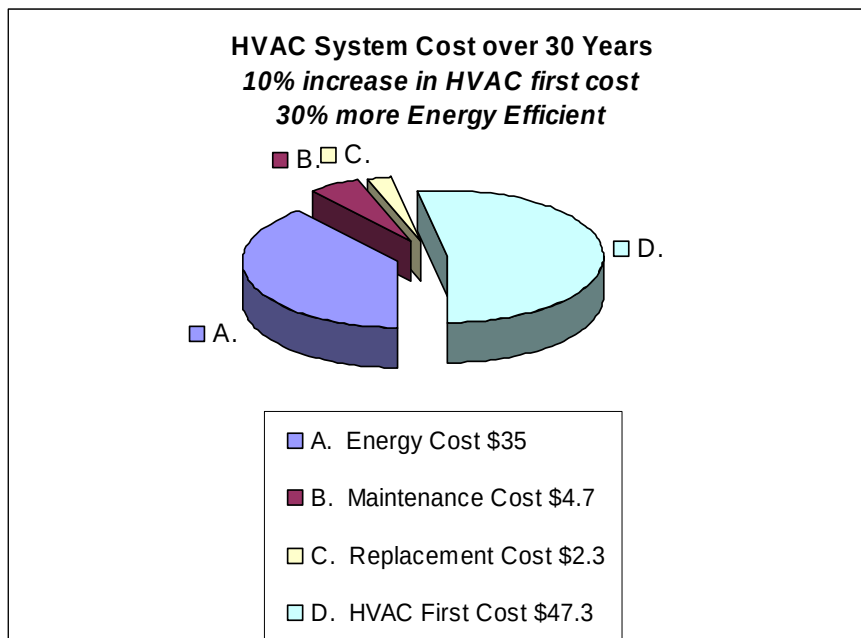


Figure 14. Cost implications of the improved system.

What is the Life Cycle Payback?

The Life Cycle Cost payback for improving the HVAC system described above is 8.6 years:

- $\$15/30 \text{ yrs} = 50\text{¢}$ (Energy Costs $50 - 35$) divided by 30-year life
- $4.3/50 = 8.6 \text{ years}$ (HVAC improvement cost divided by savings).

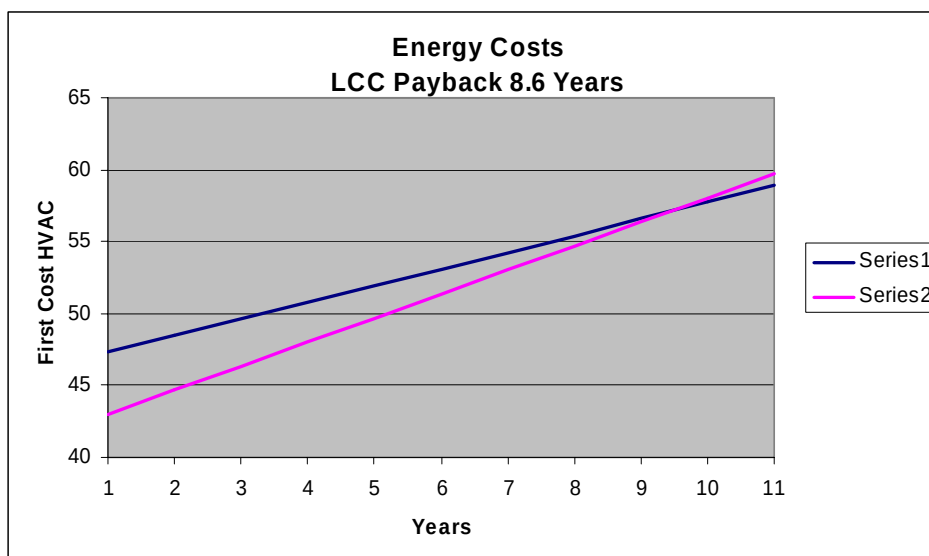


Figure 15. First cost of the two HVAC systems, plus the energy cost over time.

Figure 14 shows the first cost of the two HVAC systems, plus the energy cost over time. The cross-over point should be at 8.6 years according to the calculations above. This example shows relative costs and payback, but there are shortcomings to this analysis. The original data only represents the life cycle costs relative to the HVAC system. To truly optimize the building design, a whole building approach would be needed. The building design, configuration, orientation, exterior envelope insulation, window type and placement, use of natural ventilation, selection of high efficiency components, etc. could result in the need for a smaller HVAC system, which would not necessarily cost more. Obviously it is hard to predict actual LCC savings without having an actual building design to analyze, but the 10% HVAC system cost increase was conservative. Actual LCC payback for improving the energy efficiency of any Army building should be less than 10 years.

How Much Will it Cost To Build MILCON Transformation Buildings to LEED Gold Standard?

No MILCON Transformation case studies are available, so this analysis considers how well we are able to deliver green buildings using the current facility delivery process and current facility PA (\$/SF). Case studies were selected to represent the major facility types that will be built during transformation. It is impossible to predict actual cost implications for new MILCON transformation projects after the procurement process changes. Therefore we can only predict relative cost implications based on current practices and anticipated changes due to the use of LEED instead of SPiRiT.

However, available LEED cost studies show encouraging results. In particular, the Costing Green study (Matthiessen and Morris 2004) showed that it does not cost much more to build “Green” buildings if the owner intent is clearly established at the beginning of the project, and the project team focuses on “how to meet expectations” instead of “how much will it cost.” Still, the study does not show a breakdown of projects by project contractual arrangements, and it states that the factor that affects total project cost the most is the “bidding climate.”

A Candidate Army Energy and Water Management Strategy, by Donald F. Fournier and Eileen T. Westervelt, ERDC/CERL TR-04-10, August 2004. The full report is available at URL:

<http://www.cecer.army.mil/td/tips/pub/details.cfm?PUBID=4716&TOP=1>

Table 9 (Westervelt and Fournier, August 2004) lists unit costs for energy savings, demand savings, and water savings. Energy efficiency projects cost \$54-134M/(TBtu/yr) saved, load shifting projects cost \$1-2M/MW saved, cogeneration costs \$33-82M/(TBtu/yr) saved, and water efficiency projects cost \$7-18M/(Bgal/yr). Of striking contrast is the cost of constructing new facilities, where approximately \$23M in construction cost will result in equivalent SF that uses approximately 1 TBtu/yr less than existing construction, making new construction a very viable alternative for increasing energy efficiency.

Table 8. Unit costs for energy, demand, and water savings.

	Unit Costs for Energy Svgs		Unit Costs for Demand Svgs		Unit Costs for Water Svgs	
	Government Financed \$M*/TBtu Saved	Third Party Finc. \$M*/TBtu Saved	Govt. Finc. \$M*/MW Saved	Third Party Finc. \$M*/MW Saved	Govt. Finc. \$M*/Bgal Saved	Third Party Finc. \$M*/Bgal Saved
Energy Efficiency Projects	53.7	134.3				
Electrical Load Shifting Projects			1.0	2.4		
Distributed Generation/ Cogeneration**	32.7	81.9	1.6	3.2		
Renewable Energy Projects	73.7	184.2	8.9	22.2		
Water Efficiency Projects					7.1	17.8
New Construction	23.0					

*includes maintenance costs

**source energy savings w/ thermal recovery credit

Army Energy Campaign Plan:

The full document is available at URL:

<http://hqda-energypolicy.pnl.gov/programs/plan.asp>

http://armyenergy.pnl.gov/docs/2005emf/14_campaignupdate_juhasz.pdf

Key to the Army Energy Campaign Plan is the desire to improve the energy efficiency and minimize water use in both existing and new facilities. Energy Policy

documents are currently being updated to establish requirements for new and existing facilities. The Army Required LEED credits shown in Figure 1 and 2 reflect these pending changes.

The Secretary of the Army and the Army Chief of Staff signed the Army Energy Strategy for Installations on 8 July 2005. A copy is available through URL:

http://hqda-energygypolicy.pnl.gov/docs/draft_strategy.pdf

The Strategy sets forth the Army's energy goals for 25 years and the Campaign Plan defines the intermediate actions, approaches, initiatives and funding over the 25 years to ensure the Army successfully achieves long-range energy and water management goals. The Strategy sets the general direction for the Army in five major initiatives:

1. *Eliminate energy waste in existing facilities.* Eliminate and reduce energy inefficiencies that waste natural and financial resources, and do so in a manner that does not adversely impact comfort and quality of the facilities in which Soldiers, families, civilians, and contractors work and live.
2. *Increase energy efficiency in new construction and renovations.* Increase the use of energy technologies that provide the greatest cost-effectiveness, energy efficiency and support environmental considerations.
3. *Reduce dependence on fossil fuels.* Increase the use of clean, renewable energy to reduce dependency on fossil fuels and to optimize environmental benefits and sustainability.
4. *Conserve water resources.* Reduce water use to conserve water resources for drinking and domestic purposes.
5. *Improve energy security.* Provide for the security and reliability of energy and water systems in order to provide dependable utility services.

Lessons Learned From Available LEED & Life Cycle Cost Studies

Costing Green: A Comprehensive Cost Database and Budgeting Methodology (Matthiessen and Morris 2004)

The full report is available through URL:

https://www.usgbc.org/Docs/Resources/Cost_of_Green_Full.pdf#search='Costing%20Green:%20Davis%20Langdon

Study summary from the USGBC website:

Davis Langdon has conducted an in-depth study of current projects to analyze the cost of sustainable buildings. Using detailed cost estimates, the report compares 45 LEED to 93 non-LEED projects, breaking them down into three primary program types—libraries, laboratories, and academic buildings. The report concludes that there is no significant difference in the construction costs for LEED-seeking versus non-LEED buildings in any of the categories.

Davis Langdon is a cost consulting company that analyzes detailed costs for hundreds of projects each year. Their research department built a database containing detailed cost information about nearly 600 distinct projects in 19 different states, encompassing a wide variety of facility types, locations, sizes and building programs. The database contains construction costs and design parameters for all the projects, plus sustainability measures and LEED points targeted, or achieved, by the building. For those projects targeting a LEED rating, the database contains point-by-point information about the credit sought, cost for the credit (where applicable), level of point achievement, and notes explaining the points attempted or achieved. (Note there was no clarification in this report on whether these projects were private sector, public sector, design/build, or design/bid/build.)

This study utilized the database to identify the LEED credits projects that are earning or not seeking. It also compared construction cost/SF for similar facility types that were NOT seeking LEED ratings and those that were seeking LEED ratings to see if there was a statistical cost difference for the more sustainable buildings. This study considers previous versions of LEED, NOT the current version of LEED-NC 2.2. The report looks only at construction costs.

Part 1 of the Study: Feasibility and Cost

First, data for 61 LEED-seeking projects was analyzed to determine the LEED credits that were earned for those projects aiming for LEED Certified, LEED Silver, and LEED Gold ratings. Eight pages of colored bar charts indicate the percentage of projects that earned each of the 69 possible LEED credits. The charts are color coded: Green represents LEED Certified projects, Silver represents LEED Silver projects, and Gold represents LEED Gold projects. A credit-by-credit discussion explains strategies used to earn each credit, along with difficulties or cost barriers. This discussion might be useful for Army project teams to consider during planning and design. (At the current time we do not have enough design rationale for the Army Sample projects results to create a similar analysis.)

Factors that Influence Feasibility and Cost:

The following factors affect the cost or ability of a project to achieve certain LEED points:

- demographic location (urban or rural)
- bidding climate and culture
- local and regional design standards, including codes and initiatives
- intent and values of the project
- climate
- timing of implementation
- size of building
- point synergies.

Demographic Location (Urban or Rural)

The discussion of demographic location (urban vs. rural, and how that impacts the ability of a project to achieve certain site credits) is interesting to consider with respect to Army projects. Army projects are typically built on an installation, which gives the opportunity to determine site boundaries during the master planning process. The site boundary, and whether it has characteristics of an open “rural” site or constrained “urban” site affects the ease of earning the first five credits listed below.

Projects in the cantonment areas of Army installations also have characteristics of “urban” sites – so with careful planning, most should be able to earn many of the credits shown in the second list. The installation master planner decides whether the project will earn SS 1, SS 2, and SS 4. Alternative transportation credits can be earned if the installation transportation plan indicates transit stops or bus stops within the specified distance. Army installations typically have strong pollution prevention efforts that encourage/mandate recycling, so the construction waste management credits should be feasible once installation/contractor cooperation has been established (even though the installation may not be in an “urban” area).

Five LEED credits were easier to earn on “rural” sites:

- SS 5.1 Reduced Site Disturbance (protect or restore open space)
- SS 5.2 Reduced Site Disturbance (development footprint)
- SS 6.1 Stormwater Management (rate and quantity)
- SS 6.2 Stormwater management (treatment)
- WE 1.1 Water Efficient Landscaping (reduce by 50%).

Six to eight LEED credits were more commonly earned on “urban sites”:

- SS 1 Site Selection

- SS 2 Urban Redevelopment
- SS 4.1 Alternative Transportation (public transportation access)
- SS 6.1 Stormwater Management (rate and quantity) \$\$\$
- SS 6.2 Stormwater management (treatment) \$\$\$
- WE 1.1 Water Efficient Landscaping (no potable use or no irrigation)
- MR 2.1 Construction Waste Management (divert 50%)
- MR 2.2 Construction Waste Management (divert 75%).

Note: LEED accredited professionals reviewing Army projects during the SPiRiT to LEED comparison had a difficult time interpreting Sustainable Sites Credit 1, “Site Selection.” The credit encourages people NOT to build on prime farmland, lower than 5 ft above the 100-year-floodplain, on land that is habitat for Federal or State listed threatened or endangered species, etc. The LEED reviewers tended NOT to give Army Sample projects credit for SS 1 when they were built in the cantonment area, according to the master plan. Adding a sentence to the design analysis and project folder stating that the project was NOT built on prime farmland and in accordance to the other requirements of SS 1 might help Army projects earn the credit when it is appropriate.

Bidding Climate and Culture

*“The most significant factor affecting the cost of sustainable design was the **bidding climate**, or the response of bidders to the green requirements in the contract.”*

Some costs are directly borne by the contractor:

- Cost of documentation of material credits
- Application of construction IAQ credits
- Schedule impacts of the post-construction building flush-out

A far greater impact to the overall construction cost is whether the contractor perceives the sustainable requirements as being onerous or risky. Those contractors perceiving LEED requirements to be risky to their bottom line are more inclined to add contingencies or risk premiums to cover their risk. If other work is available, contractors may avoid bidding, or submit high bids, which can significantly impact the cost of the project.

Contractors with previous sustainable design experience are less likely to be wary. Sustainable design is becoming quite common in certain regions in the country, but if there is a lot of other work available, bids for LEED Gold or Platinum projects may still come in high. Other regions have experienced slower economic recovery, so hungry contractors may be willing to try a “sustainable” project just to get the

work. Over time, more and more contractors will have sustainable design experience, competition will increase, and hopefully prices will be more reasonable, but right now it is hard to predict how the bidding climate will affect project costs in any one location.

Page 15 (Matthiessen and Morris 2004) shows two clauses from actual construction contracts that either transfer the liability of achieving LEED certification to the contractor, or engage the contractor more collaboratively. These phrases might be useful to consider in the context of RFPs for Army projects.

Intent/Values

This study states that one of the key factors determining the feasibility of accomplishing a green building project is the “established intent and values of the building owner and project team.” They need to invest the time and cooperation to reach the desired LEED rating level.

Climate

“Since the LEED energy credits are based on the cost of energy saved, the relative cost of heating and cooling energy in each market can have an impact on the effectiveness of energy economy measures.” Humidity and yearly temperature fluctuations will greatly affect the cost of mechanical systems, and the potential to use passive heating or cooling measures instead of mechanical conditioning.

Feasibility and Cost – Conclusion

When considering LEED certification for a building, it is important to understand the feasibility of each LEED credit, and the factors that affect cost and feasibility. By considering both factors together, the project team can more accurately determine potential costs and identify appropriate LEED credits to pursue.

Part 2 (Matthiessen and Morris 2004): Analyzing the Data – Cost Analysis of Similar Buildings

In this study, Davis Langdon compared construction costs for 93 non-LEED and 45 LEED-seeking buildings. They compared the three most common program types in their database: libraries, laboratories, and academic classroom buildings. All costs were normalized for time and location to ensure consistency for the comparison.

Graphs depict the distribution of \$/GSF for all buildings, and by building type.

The overall assessment (138 buildings) shows *no apparent pattern* to the distribution of buildings (\$/SF), whether they were non-LEED, Certified, Silver, or Gold.

The same comparison for the 15 LEED-seeking and 37 non-LEED academic classroom buildings was *statistically insignificant*. (The only LEED levels in this comparison were Certified and Silver).

15 LEED-seeking and 34 non-LEED laboratory buildings were compared. While there was a large standard deviation in the price (\$/SF), there was still *no significant difference* in the average (\$/SF) for LEED-seeking versus the non-LEED laboratories.

To reduce the variation in (\$/SF) for the laboratory sample, only the 22 Wet Laboratories were compared. There was *no statistical significance* between the average costs per SF for the seven LEED-seeking versus 15 non-LEED wet laboratories.

Next, 15 LEED-seeking libraries were compared with 22 non-LEED libraries. (Note: a majority of these libraries were built by one owner, who insisted on LEED for all libraries, and controlled construction budgets more tightly.) The comparison of all libraries again showed *no statistical difference* between the \$/SF for LEED-seeking and non-LEED libraries.

Finally, only branch libraries were compared (less than 40,000 SF). 11 LEED-seeking and 11 non-LEED branch library buildings were analyzed. This narrow study showed a statistically significant difference between the costs of LEED-seeking and non-LEED branch libraries. *Significantly, the difference suggests that "LEED-seeking libraries were cheaper to build than the non-LEED."* (This was due to a single owner, who was committed to achieving LEED and tightly controlled project costs and budgets.)

LEED-Seeking vs. Non-LEED

A LEED checklist was created for 10 non-LEED seeking buildings chosen at random from the 93 used in the study. The analysis concluded that between 15 – 25 points would be earned from their existing design. One project would have earned 29. Closer analysis showed that about 12 points can typically be earned without any changes in the design, simply due to the projects location, program, owner requirements, or local codes. Up to 18 additional credits could be earned with a minimum of effort and no or little additional cost.

Cost Analysis of Similar Buildings – Conclusion

The Costing Green report notes that:

We can draw four key conclusions from our analysis of construction costs for LEED-seeking versus non-LEED seeking projects:

- There is a very large variation in costs of buildings, even within the same building program category.
- Cost differences between buildings are due primarily to program type.
- There are low cost and high cost green buildings.
- There are low cost and high cost non-green buildings.

There is such a wide variation in cost per square foot between buildings on a regular basis, even without taking sustainable design into account, that this certainly contributed to the lack of statistically significant difference between the LEED-seeking and non-LEED buildings. Additionally, comparisons of this type cannot be considered reliably meaningful because budgets can never be compiled based on an average. Any number of factors can distort the results obtained, as we saw with the comparison of library buildings, such that the same comparisons done with a completely different sampling of buildings might yield completely different and conflicting results. While we saw no significant differences in cost per square foot in the sampling of buildings studied, this could easily not be the case for another data configuration. Averages will always be highly dependent of the data pool being sampled.

What does this mean in regard to the cost of green? The conclusion is that comparing the average cost per square foot for one set of buildings to another does not provide any meaningful data for any individual project to assess what – if any – cost impact there might be for incorporating LEED and sustainable design. The normal variations between buildings are sufficiently large that analysis of averages is not helpful. Remember that, “Buildings can never be budgeted on averages.”

Analyzing the Data – Initial Budget

For the 61 LEED-seeking buildings, the initial budget was compared to the final construction budget to see if the budgets were increased to accomplish the green project goals. It was found that initial budgets for over half the projects were set without regards to sustainable design, yet they had no supplemental funding to support those goals. Projects receiving additional funding (typically 0-3% of the ini-

tial budget) targeted specific enhancements or requirements, such as photovoltaic systems.

Projects with clear goals from the start tended to be the most successful in staying within their original budgets. Projects that viewed LEED elements as additional scope had the most problems with their budget.

Initial budget performance cannot be used solely as a benchmark, because there was wide variation of building \$/SF for different LEED levels across the country (cf. school example, p 27).

This analysis concludes with the thought that many projects can achieve sustainable design within their initial budget, or with small supplemental funding. (Note that the study does not clarify if a particular target LEED rating level was established for these projects.)

Budgeting Methodology for Green

This study concludes with advice on how to establish a design and budget for a LEED building, and activities that should be accomplished during the planning /budgeting /design /construction process to ensure a successful outcome. The main budgeting question is not “How much more will it cost?” but “How will we do this?”

REED Construction Data Special Report – Hurricane Katrina Implications for Construction

The full report is available at URL: <http://csemag.com/contents/pdfs/Katrina.pdf>

This report by Reed Construction Data’s chief economist Jim Haughey explains the impact of Hurricane Katrina on the U.S. economy and the construction industry. Three major impacts are predicted: “first, the change in construction activity in the hurricane-impacted areas; second, the national market supply availability and price effects that stem from this; and third, the feedback on construction form changes in overall economic demand and prices.”

The study predicts that construction costs will go up as the demand for materials increases due to reconstruction, and construction wages go up due to demand for workers, especially in the south.

“Katrina to Affect Construction Costs Via Cement, Fuel Prices,” *Consulting-Specifying Engineer* (26 September 2005). The full report is available at URL:
<http://csemaq.com/article/CA6260682.html>

In this short article, Ken Simonson, chief economist for the Associated General Contractors of America predicts that construction material prices will rise at least 10% next year, as compared to the 6-8% increase he predicted before the storm. This impact is primarily due to Diesel fuel price increases that affect shipping costs, and cement shortages. New Orleans led the nation in cement imports, and the flow of cement has been disrupted. Bringing in additional cement from Mexico is problematic due to the current 55% anti-dumping duty.

U.S. General Services Administration (GSA) Cost Study – Final Report (October 2004)

The full report is available at URL:

<http://www.wbdg.org/references/ccbdoc.php?i=280>

A GSA briefing by Don Horn, “*The Cost of Sustainable Design. How Green Should we be?*” is available at URL:

<http://www.energy2005.ee.doe.gov/presentations.cfm>

GSA LEED Study Description

This extensive report looks at two facility types: a new mid-rise Federal Courthouse (five stories, 262,000 GSF), and a mid-rise Federal Office Building modernization (nine stories, 306,600 GSF). The GSA LEED Cost Study provided two key evaluations for those two facility types – predicted cost of individual LEED®-NC 2.1 prerequisites and credits, and the predicted costs to achieve LEED®-NC 2.1 Certified, Silver, and Gold ratings. These building types reflect a significant percentage of GSA’s planned capital projects over the next 5 to 10 years

The basic assumptions, site conditions and facility types differ from Army projects so the results cannot be directly applied. Interestingly, GSA developed two models: low cost and high cost that varied by site constraints. Low cost projects were able to earn many of the no-cost and low-cost site credits, while the high cost projects were forced to select other LEED credits to attain the target rating. (See the previous discussion on [Matthiessen and Morris 2004] for a similar assessment of no-cost and low-cost site credits.)

The GSA cost study developed LEED figures, which were then used in the GSA LEED Application Guide: No cost/low cost LEED credits, moderate cost/high cost LEED credits, “GSA Standard Credits,” Non-applicable credits, High Design Impact credits, and Synergistic credits.

\$/SF Cost Increase To Get to LEED Gold

As quoted in February 2005 issue of *Architecture*, “The U.S. General Service Administration released a study in January that estimates the cost of developing green facilities using U.S. Green Building Council’s LEED Standards. The report prepared by Steven Winter Associates with contracting giant Skanska, suggests that a Federal building pursuing a LEED “Gold” Rating costs between 1.4 and 8.1 percent more than a building that merely conforms to GSA Standards.”

GSA LEED Application Guide (February 2005)

The full report is available at URL:

<http://www.wbdg.org/references/ccbdoc.php?i=298>

The intent of the GSA LEED Applications Guide is to help project teams earn the highest LEED rating that is reasonable from their project. It can quickly guide projects to consider appropriate credits within the GSA project context. The Application Guide uses the “low-cost” LEED 2.1 Courthouse model studied in the GSA LEED Cost Study to show project teams how to evaluate LEED credits and apply them to their GSA project. This guide has a clear process, and it might be good if a similar application guide was developed for Army projects.

GSA LEED Policy

Since fiscal year 2000, GSA has mandated that all new construction and major renovation projects attain a minimum of LEED Certified rating, while striving for a LEED Silver rating. Certain projects have attained a LEED Gold rating.

Implementing the High Performance Building Guidelines (City of New York – Department of Design and Construction) November 2002

The full report is available at URL:

<http://www.nyc.gov/html/ddc/html/ddcgreen/documents/implement.pdf>

The study discusses application of New York City's High Performance Building Guidelines to case study projects. See the two paragraphs below for predicted savings based on a slightly increased First Cost to achieve the high performance building standards.

Program Trends and Implementation Findings

Projects that have been designed for integrated, system-wide energy efficiencies can realize 30% or greater operating savings and associated benefits at low additional first cost, in the range of 1 to 5%. This is especially the case when the project has high internal loads (e.g., a courthouse), or is run on a 24-hour basis (New Children's Center). These factors contribute to a shorter payback on efficiency investments and likelihood of obtaining full premium cost financing and long-term operating energy savings.

The Guidelines also said:

Specific recommendations came out of discussions concerning project costs and related design fees. While most agreed that their projects have experienced, or will experience, cost increases related to high performance features, there was no agreement on the increment. Some are documenting increases in the range from 1% to 2%, however, the smaller projects are experiencing a 5% premium. As one architect pointed out, "it very much depends on how green you wish to go." These architects further recommended that design services for green buildings separately assign allowances to cover the costs of energy modeling, green materials research and documentation required for a LEED™ rating system.

Managing the Cost of Green Buildings (K-12 Public Schools, Research Laboratories, Public Libraries, Multi-family Affordable Housing by KEMA Green Building Consulting) October 2003. The full report is available at URL:

<http://www.kemagreen.com/Managing%20the%20Cost%20of%20Green%20Building.pdf>

Kema Green Building Consulting of California developed a report for the State of California on how to manage the cost of green buildings. They looked at four building types: libraries, schools, laboratories, and multi-family affordable housing. The report also shows average costs for obtaining LEED rating in all commercial building types (based on percentage of total base project cost). Typical incremental percentage capital cost of meeting LEED were:

Certified:	0 – 2.5%
Silver:	0 – 3.3%
Gold:	0.3 – 5.0%
Platinum:	4.5 – 8.5%

The Costs and Financial Benefits of Green Buildings (A Report to California's Sustainable Building Task Force by Greg Kats, Capital E) October 2003

The full report is available at URL:

https://www.usgbc.org/Docs/Resources/CA_report_GBbenefits.pdf and <http://www.cap-e.com/spotlight/index.cfm?Page=1&NewsID=25770> (overview slideshow is available [here.](#))

Articles describing this study can be found at URLs:

<http://www.usgbc.org/Docs/News/News477.pdf>

and

<http://www.greencampus.harvard.edu/hpbs/building.php>

Assumptions used in the study:

- 20-year term
- 5% real interest rate
- \$150 – \$250/SF building costs
- LEED as basis
- consistently conservative assumptions
- conclusions generally applicable nationally.

To summarize the findings on this significant study, “LEED Gold may be the most cost effective design objective for green buildings.”

Nonetheless, the data indicates that it is possible to build Gold level buildings for little additional cost. The higher performance levels associated with Gold buildings (described below in Health and Productivity and other sections), combined with their potentially low cost premiums – as indicated in this small data set – suggest that, based on available data, LEED gold may be the most cost effective design objective for green buildings. (Kats October 2003, p 18).

Table 9. Average green cost premiums for 33 green buildings, by LEED level (\$/SF).

Level of Green Standard	Green Cost Range (%)	Average Green Cost Premium
Certified (8)	0.00% – 1.60%	0.66%
Silver (18)	0.00% – 7.50%	2.11%
Gold (6)	0.10% – 6.41%	1.82%
Platinum (1)	6.50%	6.50%
Average of 33 Buildings		1.84%

LEED gold design can be expected to provide a significant level of protection against potentially toxic chemicals and against a rising incidence of asthma and allergies. Gold level green buildings typically achieve much higher levels of compliance with LEED IEQ enhancement measures than Certified or Silver buildings. This could include the use of low emitting materials for adhesives and sealants, paints, carpets and composite woods as well as establishing indoor chemical and pollution source control.” The Katz study goes on to recommend that higher education systems “target the LEED Gold level as it will likely be cost-effective to do so. Savings could be expected in energy, waste, and water, and – critically – substantial gains can be expected in student health and productivity. (Page 69)

The Katz study found that for six recent LEED office buildings and schools, the average cost for meeting the LEED prerequisite “Fundamental Building Systems Commissioning” was equal to 0.3 to 0.6% of construction costs. Kats found that the total financial benefits for green buildings (LEED Certified and Silver almost \$50/SF) (LEED Gold and Platinum level buildings is over \$75/SF).

The figure on page 85 shows a percentage Breakdown of Green Building Financial Benefits (for LEED Certified and Silver Buildings).

- Productivity & Health – 70%
- Energy – 11%
- Emissions – 2%
- Water – 1%
- Waste – 0%
- Reduced O&M – 16%

To quote Kats on page 86 (Kats October 2003):

Constructing green buildings cost-effectively requires integrated green building design and a careful commissioning process. The commonly higher initial cost of green design and construction can be expected to drop as de-

signers and builders gain experience in building green. The benefits of green buildings are greatest for public entities that have explicit responsibility to be concerned about broader societal benefits such as health. ... Despite gaps in data and analysis, the findings of this report to a clear conclusion: building green up to the LEED Gold level makes financial sense today.

The cost premiums (\$/SF) to build green buildings (LEED Certified, Silver, Gold and Platinum) ranged from 0% to a high of 7.5%. (See chart on page 98).

High Performance Building Design

High performance energy efficient buildings cost no more than 10% more, yet save energy (total energy costs are on average about 50% less than those for conventionally designed buildings).

U.S. Department of Energy, Energy Efficiency and Renewable Energy, accessible through URL:

<http://www.eere.energy.gov/buildings/info/design/wholebuilding/costanalysis.html>

According to the U.S. Department of Energy, Energy Efficiency and Renewable Energy website, “Depending on the aggressiveness of the design, experience has shown that it costs no more than 10% more to build high-performance buildings. Some high-performance buildings cost less to construct. Sometimes additional upfront costs can be justified because the investment will reduce operating costs through the life of the building. The added cost, if any, of system investment each year is compared to the cost of fuel saved each year. Total energy costs are, on average, about 50% less than those for conventionally designed buildings. In many cases, the right-sizing of mechanical systems through passive solar design offsets the costs for additional windows or controls.”

National Renewable Energy Laboratory, accessible through URL:

<http://www.nrel.gov/buildings/highperformance/about.html>

According to the National Renewable Energy Laboratory website, “A high-performance commercial building is a building that uses whole-building design to achieve energy, economic, and environmental performance that is substantially better than standard practice. Whole-building design creates energy-efficient commercial buildings that save money for their owners. This process also produces build-

ings that are healthy places to live and work. It helps to preserve our natural resources and can significantly reduce a building's impact on the environment."

"How Much Does It Cost?"

Depending on the aggressiveness of the design, experience has shown that it costs no more than 10% more to build high-performance buildings. Some high-performance buildings cost less to construct because high-performance design reduces building loads and enables down-sizing of equipment. Sometimes additional costs can be procured using cost-benefits ratios and life-cycle costing. The added cost, if any, of system investment each year is compared to the cost of fuel saved each year. Total energy costs are, on average, about 50% less than those for conventionally designed buildings. In many cases, the downsizing of mechanical systems through passive solar design offsets the costs for additional windows or controls.

The Harvard Green Campus Initiative, accessible through URL:

<http://www.greencampus.harvard.edu/hpbs/building.php>

The Harvard Green Campus Initiative website mentions: "A recent paper released by the California Energy Commission (Kats 2003) found that high performance buildings are built at an average 2% premium above standard costs. However, because they use high performance building systems, and are designed using the whole-building approach, these buildings achieve an average 20% reduction in energy and operating costs over a 20-year period. The table below demonstrates the reports results in dollars spent per SF. High performance buildings cost in the range of \$3.00 to \$5.00/SF above standard costs to build, yet save between \$49.90 to \$66.30/SF over 20 years. Note that the most substantial savings result from increased productivity and health."

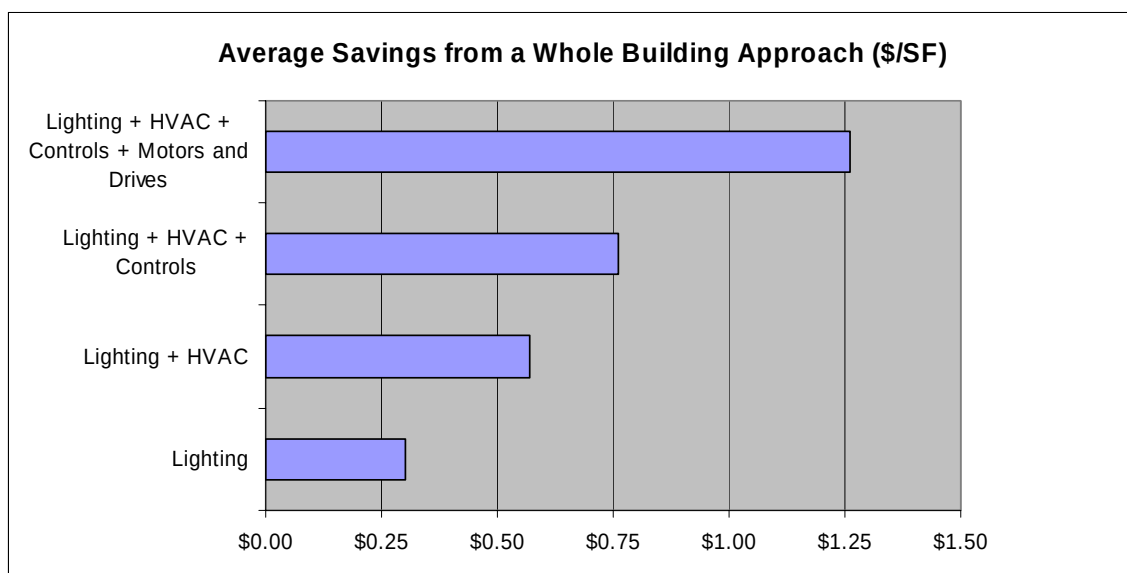


Figure 16. Average savings from a whole building approach (dollars per SF). Source: Energy Cost Savings Council.

Rationale for Energy Life Cycle Cost Economics

When examining actual life cycle savings achievable by healthy, sustainable, energy-efficient buildings, the money spent on design and construction of the facility, plus operations & maintenance expenditures, and energy costs is much less than the cumulative salaries of building occupants during the life of the building (Grumman, 2003; Kats 2003). Figure 16 shows that Office Worker's Salaries cost \$130/SF vs. a Total Energy Use of \$1.81/SF. Traditional life cycle costing methodologies are not effective at considering factors such as occupant health and productivity.

ASHRAE Green Guide

Grumman, David L., ed. (American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. [ASHRAE], 2003), accessible through URL: www.ashrae.org

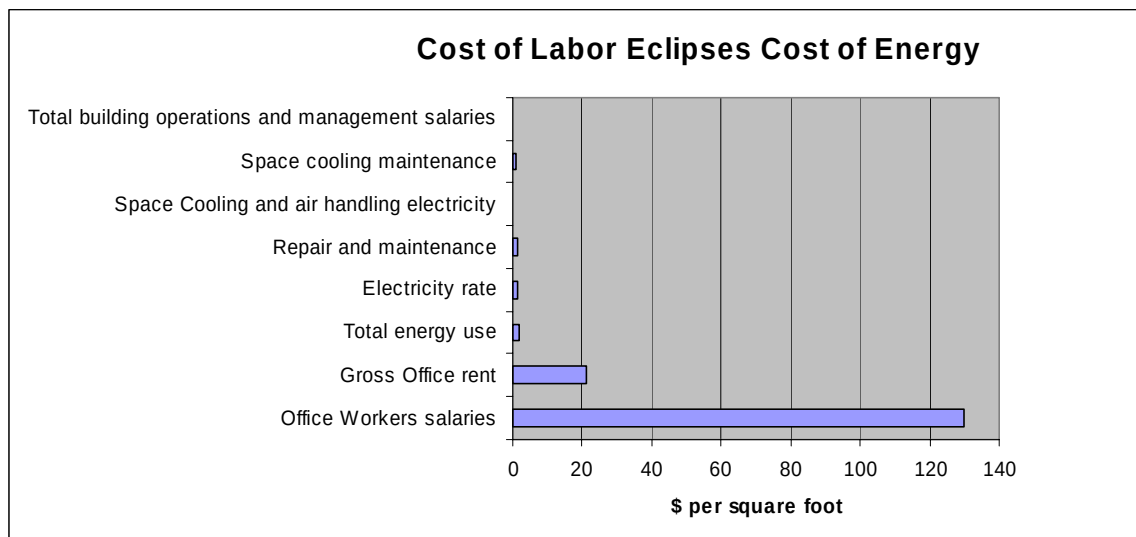


Figure 17. Cost of labor eclipses cost of energy (from ASHRAE Green Guide, p 132).

Building Momentum – National Trends for High-Performance Green Buildings

(Based on the April 2002 Green Building Roundtable, and Prepared for the U.S. Senate Committee on Environmental and Public Works by the U.S. Green Building Council)

The full report is available at URL:

http://epsru.tamu.edu/pdf/lddev671/building_momentum.pdf

Lack of Life-Cycle Cost Analysis and Use

Of the total expenditures an owner will make over the span of a building's service lifetime, design and construction expenditures, the so-called "first costs" of a facility, account for just 5-10 percent. In contrast, operations and maintenance costs account for 60-80 percent of the total life-cycle costs. Unfortunately, decisionmakers rarely use life cycle cost analysis to link capital and operating expenses. Therefore, energy savings, decreased worker absenteeism, and higher productivity are not universally accounted for in the cost equation. Only when savings from operations and maintenance and improved worker health are accounted for up front will decisionmakers readily select high-performance design. (Page 15, USGBC April 2002)

Real and Perceived Higher First Costs

While many green buildings are designed and constructed at comparable or even lower costs than conventional buildings, environmental performance features can add costs to design and construction expenditures. According to green building professionals, such initial cost increases generally range from an average of 2 to 7 percent, depending on the design and extent of added features. Typical bidding accounting often takes a short-term perspective, overlooking the interrelationships between a building and its components, occupants, and surroundings. Without an accepted “whole building” approach, decisionmakers will remain biased toward lower first costs.

5 LEED Implementation

LEED Application for the Army

Study results and project case histories support the conclusion that LEED®-NC be adopted as the Army green building rating tool without modification or supplement. The tools are substantially similar, and share the same objective of creating a “sustainable culture” in the planning, programming, design, construction and operation of facilities. Further, MILCON program stakeholders (design and construction “agents” at U.S. Army Corps of Engineers Districts; Installation Departments of Public Works personnel; and even facilities “owners” representatives) are ready to make the transition. There are a growing number of Army LEED Accredited Professionals at U.S. Army Corps of Engineers Districts and Army Installations. USACE personnel are applying LEED for Air Force and other customer projects, and in some cases, Army projects. Anecdotal evidence indicates that they are now familiar with SPiRiT and therefore indirectly, with LEED. SPiRiT has succeeded in informing the facilities community on matters of sustainable design and the community is ready to adopt LEED.

LEED in a MILCON Process

The U.S. Green Building Council promotes sustainable design and development of the built environment through their project certification process. A project seeking certification registers with the USGBC, and documents results to substantiate achievement of credits. Projects are then reviewed by the USGBC to verify achievement and certification or a rating established. The Army approach will be one of “self certification” using LEED in lieu of SPiRiT as the rating tool; processes would be the same. Project Delivery Teams would “self certify” using LEED, ensuring that appropriate documentation is contained in specifications, plans, and design analyses, and that a “SDD Documentation Notebook Evaluation Narrative / Spreadsheet” was prepared. (A LEED Letter Template from the USGBC may be used.) LEED scores will be reported in P2 instead of SPiRiT scores. Projects would be evaluated at the same points as for SPiRiT: Project 1391/Planning, Concept/Parametric Design, 100% Design Complete, and Construction Com-

plete/Beneficial Occupancy. At this time, there is no consideration being given to seeking project certification with the USGBC. As such, there is no requirement for documentation in accordance with USGBC requirements. Neither is consideration being given to validation of Project Delivery Team LEED self certification scores by an external third party entity. While there are no current plans for Army or independent verification of self-rated LEED scores at this time, OACSIM remains interested in score validation. If this occurs, the LEED templates will be used to validate scores.

LEED in a Design Build Process

At first glance, the use of LEED in a Design Build process for Army MILCON projects should only differ in the fact that the bidder will be required to meet LEED requirements in the request for proposal and in preparing the “SDD Documentation Notebook Evaluation Narrative/Spreadsheet.” (A LEED Letter Template from the USGBC may be used.) While that is true, the design build process places responsibility for achievement of LEED credits with the bidder. The competitive bid process, therefore governs the outcome. The success of the project in terms of a LEED rating is totally dependant the ability to adequately specify LEED requirements in the Request for Proposal (RFP), establish clear evaluation criteria and to evaluate the proposals against those requirements. There are other nuances such as the composition of the Project Delivery Team and the timing of and participants in the LEED scoring charrettes.

The Project Delivery Team, whether in a design-bid-build or a design-build process, must include all facility stakeholders including the users, installation staff, design /engineering team members, project managers, contracting staff, and construction representatives. In a MILCON design-bid-build process, LEED (SPiRiT) scoring is normally lead by the project manager or the design /engineering team. For a design-build process, responsibility will be with the bidders /contractors project manager or the design /engineering team. Scoring, whether in a design-bid-build or a design-build process, however, remains a consensus conclusion of the Project Delivery Team, and not the sole determination of the bidder /contractor.

As is the case in a design-bid-build process, target scores should be established at the project 1391 planning charrette (Project 1391/Planning). In a design build process; however, the bidder is responsible for all subsequent rating points: Concept/Parametric Design, 100% Design Complete, and Construction Complete/Beneficial Occupancy what would be the concept/parametric design rating. A

Concept/Parametric Design rating should be required in the RFP, should be part of the bid proposal, and should be evaluated. Subsequent ratings should be reviewed during the contract period.

LEED Innovation in Design Credit Points

The “Innovation in Design” credit enables LEED to “recognize” projects for innovative building features, accommodating the fact that sustainable design strategies and measures constantly evolve and improve. LEED Innovation in Design rewards projects in two fashions. The first addresses those strategies that greatly exceed the requirements of existing LEED credits. An example would be a project that incorporates energy or water efficiency measures providing savings greatly exceeding existing LEED credits. The second type includes innovation strategies not addressed by existing LEED credits that have a significant environmental and/or occupant benefit. Each has to be independently justified and evaluated. In a “self-certifying” approach, the Project Delivery Team would decide on the worthiness of the credit.

LEED “Innovation in Design” Credit points are critical in obtaining a high LEED rating. In the most part, innovative design solutions must be determined on a project by project basis. SPiRiT credits not contained in LEED, are good prospective candidates: “Holistic Delivery of Facility,” “Acoustic Environment / Noise Control,” and “Distributed Generation.” Others may be identified through a search of Credit Interpretation Rulings (CIRs) on the USGBC website, accessible through URL:

<http://www.usgbc.org/>

Once identified by project teams and considered applicable, these best-practice approaches may be shared or instituted across the MILCON program.

6 LEED®-NC 2.2

USGBC LEED®-NC Overview

LEED®-NC 2.2 will be the latest version of the U.S. Green Building Council's Green Building Rating System. LEED®-NC or "New Construction," the USGBC's rating tool for commercial construction and major renovation projects, is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. LEED®-NC is now widely recognized as one of the most successful market transformation initiatives in the United States. LEED®-NC 2.1, the current version of LEED®-NC, is currently under revision. Its successor, LEED®-NC 2.2, is expected to be released in November of 2005 at the USGBC's annual conference, GreenBuild. This will be the second update of the -NC tool since the initial publication of LEED 1.0 in January 1999.

Even though LEED®-NC 2.2 has not yet been released, the USGBC is moving forward on what it now calls "LEED V3." The USGBC Board has initiated a LEED Task Force, which has developed a plan for the rejuvenation of LEED from both a process and a technical standpoint. The vision for LEED V3 is to be better targeted to deliver more environmental benefit with each LEED credit. According to the USGBC, LEED V3 will be underpinned with detailed research, based more on Life Cycle Environmental Impacts, and include both performance-based credits and bio-regional weighting. The USGBC plans to launch the LEED Task Force Implementation and V3 Implementation Retreat Plans at GreenBuild, November 2005. Additional information on LEED®-NC and the LEED "suite" or rating tools is available through URL:

<http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>

USGBC LEED®-NC Timeline

Jan 1999	LEED-NC v1.0 Release.
Mar 2000	LEED-NC v2.0 Release.
Nov 2002	LEED-NC v2.1 Release.
Mar 2003	LEED-NC Committee charged to develop LEED-NC v2.2

Feb–Oct 2004	LEED-NC Committee developed the 1st Public Comment Version of LEED-NC v2.2.
Oct–Nov 2004	USGBC Board and the LEED Steering Committee approved the LEED-NC v2.2 draft for public comment period
Dec 2004–Feb 2005	First public comment period for LEED-NC v2.2
04–05 Mar 2005	USGBC LEED-NC Committee reviewed and incorporated comments in revised draft.
01–30 Jul 2005	Second public comment period for LEED-NC v2.2
Sep–Oct 2005	Final Ballot Version Posting / Balloting
Oct 2005	LEED®-NC 2.2 Released at Green Build, Atlanta, GA, November 2005.

Potential Army Adoption of LEED®-NC

The Army is interested in adopting LEED®-NC 2.2 as the MILCON project green rating tool, as a replacement for the Sustainable Project Rating Tool or SPiRiT. SPiRiT was developed based on LEED®-NC 2.0 and fielded to meet what were considered to be Army unique requirements. SPiRiT supplemented LEED: adding language facilitating the application of a “commercial” green building rating tool to Army facilities and installations; replacing commercial standards with Army standards; and adding credits to emphasize Army environmental initiatives and interests. SPiRiT and LEED, however, remain substantially similar, and share the same goal of promoting a sustainable “culture” for the planning, programming, design, construction and operation of facilities. While, SPiRiT has performed a critical role in changing the Army facilities culture to a culture supporting sustainability, it has been difficult at best for the Army to create and maintain a separate rating tool. Where a commercial tool meets Army needs, adoption is appropriate.

SPiRiT Evaluation and Potential SPiRiT 2.1 Release

SPiRiT was updated in FY04 to parallel LEED®-NC 2.1. This draft update of SPiRiT, titled SPiRiT 2.1 was edited to include the updated content of LEED®-NC 2.1, include updated Army and USACE references and standards, and provide recommendations on how project delivery teams were to document the achievement of SPiRiT credits in standard project documentation sets. Release required renewal of the current agreement with the USGBC on the use of LEED. Plans for the release of SPiRiT 2.1 were dropped, however, when the period of time between the scheduled release of SPiRiT 2.1 became too close to the anticipated release of LEED®-NC 2.2 and the potential Army adoption of LEED®-NC 2.2. To minimize MILCON pro-

gram disruption, it was decided that SPiRiT 1.4.1 should remain in effect for all MILCON and RCI projects until the transition LEED®-NC could be made. Plans to develop and release SPiRiT 2.1 to parallel LEED®-NC 2.1 (current version) were canceled. “Suggested Documentation” developed for SPiRiT 2.1 (draft) were updated to reflect the use of Uniform Facility Guide Specifications (in lieu of Master Spec, specifications) and included in Appendix C, “SPiRiT LEED Comparison” below, as a suggested means to document LEED credit accomplishment.

Prototype DA LEED® NC 2.2 Rating Tool and Supplement

The initial strategy for implementation of LEED was to develop a separate Department of the Army (DA) LEED Checklist, which would in essence duplicate the LEED checklist, but add Army “prerequisites” and suggested “Innovation in Design” credits. Various SPiRiT credits not present in LEED were either identified as “prerequisites,” suggested for “Innovation in Design” credits, or deleted as no longer applicable. This DA LEED Checklist was to be supplemented with guidance, presented on a credit by credit basis, to aid project delivery teams in the interpretation and/or application of LEED credits. This approach was dropped. A DA LEED Checklist and Supplement approach may have eased a SPiRiT-to-LEED transition; however, it would also have required regular separate publication (and update) of guidance materials whenever the USGBC published new or updated rating tools. Preference was given to adoption of LEED without modification or supplement.

USGBC LEED®-NC 2.2 Evaluation

For the Army to adopt LEED®-NC as the green building rating tool for the Army, a complete comparison of SPiRiT to LEED and an evaluation of LEED®-NC needed to be accomplished. This task was complicated by the fact that SPiRiT was based on LEED®-NC-2.0, LEED®-NC-2.1 is the current LEED standard, and LEED®-NC-2.2 is in development. During the evaluation, two different versions of LEED®-NC-2.2 were distributed, the 1st and 2nd Public Comment Drafts. The evaluation was initiated using the 1st Public Comment Draft, and completed using the 2nd Public Comment Draft.

SPiRiT LEED Comparison

SPiRiT 1.4.1 was compared to LEED®-NC-2.2 (draft) on a credit by credit basis to determine: if SPiRiT credit requirements were Army unique or addressed in the USGBC commercial standard; whether or not credit requirements were already

regulated or required under other separate Federal, DOD, or DA requirements; and whether or not SPiRiT credits should be retained as a supplement to LEED or through other Army guidance (ex. Army Installation Design Standard, Army master planning components, Army Standard Designs, or specific project requirements). For each credit, the following information was prepared (for the complete evaluation on a credit by credit basis, see Appendix C, “SPiRiT LEED Comparison”):

- *Recommendation.* Recommendation relative to the disposition of each credit; adopt, reject or supplement. A recommendation was prepared for each credit.
- *Special Implementation Language.* Suggested language needed as guidance for the implementation of a specific credit. Only prepared as required.
- *Applications Guidance.* Draft applications guidance was prepared as required for each credit and identified as “Recommended” or “Optional.” The guidance is suggested language for the applications guidance and includes a recommendation of the resource to be supplemented.
- *Standard MILCON Project Documentation Requirements* Recommendation for the preparation of Standard MILCON Project Documentation to support achievement of a particular credit. Many LEED credits have standard documentation that describes how to prepare the particular project to meet the credit requirements in accordance with Federal, DOD or DA Regulations. Preparation of these “standard responses” would assist Project Delivery Teams to document results in a “self-rated” approach using LEED documentation Templates or standard MILCON project documentation.
- *Suggested Project Documentation.* Content and location for suggested documentation supporting credit achievement in standard MILCON construction projects. Includes recommendations for: Specifications; Drawings; Design Analyses; and an SDD Documentation Notebook Evaluation Narrative / Spreadsheet. (A LEED Letter Template from the USGBC may be used.)
- *Discussion.* Verbal evaluation of a specific credit.
- *References.* Federal, DOD, Army, UASCE, and/or Commercial Standards and Regulations pertinent to a specific credit, defined as “Regulated under,” “Supplementary Guidance under” or “LEED 2.2.”

LEED Application Guide for Multiple and Campus Building Projects

One major difference between SPiRiT and LEED is the manner in which an assessment is accomplished. SPiRiT has been applied in a multiple-building versus single project site context since implementation. SPiRiT takes advantage of the fact that the Army as owner can optimize across an installation versus on a project by project basis. An example might be that an ecosystem impacted on a specific project

site may be remediated by action away from the project site; that eventuality is not allowed in LEED. To apply LEED in a campus or multi-building setting such as corporate campuses, college campuses, or government installations, a “LEED Application Guide for Multiple and Campus Building Projects” is being developed. The application guide is intended for projects where several buildings are constructed at once, in phases, or a single building is constructed in a setting of existing buildings with common ownership or planning with the ability to share amenities or common design features. The current review draft (version 2.X, dated 13 April 2005) is designed to be applicable to 2.2, is currently under review by the USGBC for adoption. Multiple buildings issues addressed in the relative to the Campus Application Guide have been discussed in the SPiRiT LEED Comparison. The *LEED-NC Guide for Multiple Buildings and On-Campus Building Projects* (October 2005) is available through URL:

https://www.usgbc.org/FileHandling/Show_General_file.asp?DocumentID=1097

7 LEED®-H

Overview

The LEED for Homes (LEED®-H) Rating System is currently under development by the USGBC. It will be another tool within a suite of LEED assessment instruments developed by the USGBC to promote market transformation to sustainable building and operating practices in buildings nationwide; its focus will be to promote the transformation of the mainstream home building industry towards more sustainable practices. It will provide a much-needed tool for homebuilders, homeowners, and local governments for building environmentally sound, healthy, and resource-efficient places to live. It is being developed under a voluntary initiative with input from local and national groups representative of the housing industry and Local and Regional Green Homebuilding Programs (GBPs) in the United States. The DOD is also represented. The Naval Facilities Engineering Command (NAVFAC) has a representative on the LEED®-H Committee. In the manner of other USGBC rating tools, when available, LEED®-H is to be evaluated through a pilot program. More information on LEED®-H is available through URL:

<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=147>

Progress

The USGBC has been working sporadically on development of a rating tool for housing since 2001, but began again in earnest in 2004, publishing their first draft LEED®-H rating tool, on 17 March 2005. While the USGBC was actively reengaged in development of their housing rating tool, so was the Department of Defense; a Tri-Service Uniform Facility Criteria (UFC) Working Group effort lead by the Navy developed a draft UFC for family housing containing a housing sustainability assessment tool (Draft UFC 4-711-01 Sustainable Housing Development Principles, Appendix D, “Sustainable Development Workbook”). These draft USGBC and DOD UFC rating tools were evaluated and compared during this project. Comparisons were provided to OACSIM and the Sustainable Housing Development UFC Working Group.

All progress of the LEED®-H committee was monitored, and information distributed to the LEED®-H Transition Functional Review Group, members of the Sustainable Housing Development UFC Working Group, and U.S. Air Force and Navy family housing representatives. Information on the LEED®-H Pilot program was similarly disseminated and a recommendation made by ERDC that the OACSIM Housing and RCI Offices participate in the LEED-H Pilot program.

During the development of LEED®-H, the USGBC Committee determined that the nature of the U.S. housing industry would require the USGBC to take a different approach in “certifying” housing projects. LEED®-NC projects are “certified” by submission of “LEED Templates” to the USGBC for evaluation. They recognized early on that if the housing tool was adopted, that the USGBC would not be able to handle the volume of certifications. They proposed an alternative approach using regionally located “LEED for Homes Providers” to service the country’s leading housing markets. These Providers are to be local and regional organizations chosen to provide technical, marketing, and verification support to builders.

The U.S. Army Corps of Engineers maintains a Center for Standardization for Army Family Housing at the U.S. Army Engineer District, Norfolk, which is essentially the center of technical expertise for Army Family housing. ERDC recommended that the Army participate in the LEED®-H Pilot, that Norfolk District lead the Pilot effort, and that they be tested as a “LEED for Homes Providers” for Army application of LEED®-H for Army Family Housing.

A teleconference with representatives of the LEED®-H Committee, OACSIM Housing, the Army RCI Office, HQ USACE, Norfolk District, and ERDC, was conducted and a tentative agreement for Army Pilot program participation reached. The Army plans to enter MILCON Family Housing projects at Fort Lee, VA and Fort Huachuca, AZ into the USGBC LEED®-H Pilot program to evaluate the effectiveness of LEED®-H for Army Family Housing. OACSIM requested 30 August 2005 that the U.S. Army Corps of Engineers, Norfolk District (CENAO), as the Center of Standardization for Family Housing, lead the Army participation in the LEED-H Pilot Program. The proposal prepared by Norfolk District has been accepted and funding provided 29 November 2005. Through Army participation in the Pilot, the capabilities and utility of LEED®-H for use by the Army, will be evaluated.

Plan

The Army is interested in applying LEED®-H to their MILCON Family Housing projects and their Residential Communities Initiative (RCI) projects; however, the current draft 02 August 2005, was unavailable for evaluation during the study period. The Army will participate in the USGBC Pilot of LEED®-H and evaluate LEED®-H program capabilities and utility for Army use. A transition strategy will be developed for the transition from SPiRiT to LEED®-H during the pilot. Army Family Housing and RCI projects will use SPiRiT until use of LEED®-H is approved. The RCI program plans to work with commercial providers to ensure that RCI projects comply with LEED®-H standards.

USGBC LEED®-H Timeline

Nov 2004	Draft LEED®-H Released to LEED-H Committee.
02 Aug 2005	Final Draft for LEED®-H Pilot released to public.
Aug 2005	Pilot Housing project selections.
Aug 05 – May 2006	Pilot Housing Project Execution
3rd Qtr CY 2006	Draft LEED-H Revision / Comment Period.
Late CY 2006	Final Ballot Version LEED®-H Posting / Balloting;; and
Early 2007	Final Version LEED®-H and public roll-out of fully chartered LEED®-H program.

8 LEED®-EB

Overview

The LEED for Existing Buildings (LEED®-EB) Rating System addresses operations, maintenance and systems retrofits. LEED®-EB is one tool within a suite of LEED assessment instruments developed by the USGBC to promote market transformation to sustainable building and operating practices. LEED®-EB helps building owners and managers solve building problems and improve building performance throughout a building's life cycle. It focuses on the sustainable operation and upgrade of existing buildings, improving building operation and performance while reducing overall operating costs, and providing a structure for maintaining performance over the long term. LEED®-EB performance standards cover entire existing buildings including: (1) building core/shell/roof systems; (2) major (central) mechanical /electrical/plumbing (MEP) systems; and (3) building operations (occupant and management). LEED®-EB addresses: whole-building cleaning and maintenance issues including chemical use; ongoing indoor air quality; energy efficiency; water efficiency; building and occupant recycling programs and supporting facilities; exterior maintenance programs; green maintenance programs; and maintenance and repair upgrades projects to meet green building energy, water, IAQ, and lighting performance standards.

More information on LEED®-EB is available through URL:

<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=221&>

Progress

Priority was given to the evaluation of LEED®-NC for potential implementation over evaluation of LEED®-EB. It was decided early on in the project that the Army must successfully adoption and implement LEED®-NC before proceeding with LEED®-EB. Progress was limited to:

- Review of LEED® EB and preparation of a “prototype” DA LEED®-EB Project Checklist and Supplement Based on LEED®-EB 2 Final Draft (October 2004)

- Collection of use case information from Army participation in the LEED®-EB Pilot (Pentagon Renovation and Fort Lewis Barracks Renovation)
- Monitoring of LEED®-EB Committee progress and activities
- Distribution of LEED®-EB materials and information to the LEED®-EB Transition Functional Review Group.

Plan

The application of a “green” rating tool to existing Army facilities is a high priority. Army installation sustainability goals will not be achieved without a significant effort focused on the sustainable operation and upgrade of existing buildings to improve their operation. The application of LEED®-EB to existing Army facilities will require a significant departure from the manner in which SPiRiT was implemented for MILCON projects. A special LEED®-EB review and implementation team consisting of representatives from the Office of the Assistant Chief of Staff, Installation Management (OACSIM), Installation Directorates of Public Works (DPW), the Engineer Research and Development Center (ERDC), and the USGBC LEED®-EB committee should be established. This team would further explore the efficacy of adopting the USGBC LEED®-EB as the green building rating tool for Army existing buildings, and for minor construction and renovation projects. The team’s primary objective would be to recommend the manner in which LEED®-EB would be implemented.

If adopted, LEED®-EB would be used almost exclusively by installation Directorate of Public Works (DPW) staff, either to assess the sustainability of existing facilities, or as a tool to guide the planning, design, and execution of minor construction and renovation projects. While application of LEED®-EB in planning and design of minor construction projects may simply replace DPW use of SPiRiT, strategies for conducting facilities operational sustainability assessments need to be developed. LEED®-EB requires the collection and compilation of 3 months of operational data before an initial evaluation may be prepared. Who collects that information, and then who compiles that information and other elements of a LEED®-EB sustainability assessment must be determined. The current opinion is that LEED®-EB assessments of existing facilities might be accomplished in conjunction with Installation Status Report (ISR) assessments.

USGBC LEED®-EB Timeline

Apr 2000	LEED for Existing Buildings Committee established.
Dec 2000–Mar 2001	Developed First Working Draft of LEED-EB.
Aug 2001	LEED-EB Version 2.0 Unballoted Limited Distribution Working Draft
Oct 2001–Dec 2002	LEED-EB pilot program.
Sep 2004	Final LEED-EB Ballot Draft.
Oct 2004	Final LEED-EB Ballot Draft.
Jul 2005	Current version LEED-EB v.2 released.

9 LEED®-ND

Overview

LEED for Neighborhood Development (LEED®-ND) is being developed to emphasize the elements that bring the buildings together into a neighborhood, and to relate the neighborhood to its larger region and landscape (unlike SPiRiT and LEED, the primary focus of which is on green building practice for individual buildings). Three leading urban sustainable design and urban planning organizations, the U.S. Green Building Council (USGBC), the Congress for the New Urbanism (CNU), and the Natural Resources Defense Council (NRDC), are collaborating to develop a national set of standards for neighborhood location and design based on the combined principles of smart growth, urbanism, and green building within the LEED® Green Building Rating System framework.

The goal of this collaboration is to create guidelines for design and decisionmaking, to serve as an incentive for better location, design, and construction of new residential, commercial, and mixed developments. These guidelines will apply equally to effective sustainable planning and operation on Army installations. Common goals include: to revitalize existing installation cantonment areas, to reduce land consumption, to reduce automobile dependence, to promote pedestrian activity, to improve air quality, to decrease polluted stormwater runoff, and to build more livable, sustainable, enduring communities for soldiers, dependants, and civilians on Army Installations. More information on LEED®-ND is available through URL:

<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148&>

Progress

The first draft version of LEED®-ND was not distributed for comment until 13 September 2005; as a result, evaluation of LEED®-ND and/or development of a DA version, was impossible. LEED®-ND Committee progress was monitored, and information distributed to the LEED®-H Transition Functional Review Group, including the 13 September 2005 draft.

Plan

LEED®-ND has the potential to be used to rate Army Installations as a whole, at the master planning level opposed to project by project or facility by facility basis as is the case with current LEED or SPiRiT tools. In this fashion, it would be beneficial in both guiding installation master planning, and assessing the sustainability of Army installations. Further study on the efficacy of adopting the USGBC LEED®-ND (Neighborhood Development) as the green neighborhood (installation) rating tool for the Army is recommended. An additional Transition Functional Review Group should be established to include OACSIM, IMA, HQ USACE and Installation master planners to guide further evaluation.

USGBC LEED®-ND Timeline

May 2004	LEED-ND Core and Corresponding Committees established.
May 2004 – Aug 2005	LEED-ND preliminary pilot draft developed.
13 Sep 2005	LEED-ND preliminary pilot draft released for comment; comment period through 27 Oct 2005.
Fall 2005	LEED-ND Core Committee examines comments received and revises draft into pilot draft.
2006	LEED-ND pilot program established, lessons from pilot incorporated into rating system
2007	LEED-ND Rating System released for public comment; Final balloted.
2007	LEED-ND certification program is launched.

10 Conclusions and Recommendations

Adopt LEED®-NC for MILCON Projects

This study recommends the adoption of LEED®-NC (New Construction) *without modification or supplement*. LEED®-NC is a tool to help in the assessment of the sustainability of building projects, as such, it is not regulatory in nature. If the Army requires standards not referenced in LEED®-NC, or standards higher than those set by LEED®-NC references, they should be separately established. If establishment of a minimum LEED score for “Optimize Energy Performance” will not suffice, there is nothing to preclude Army prescription of specific energy technologies by separate guidance. Energy technologies requirement could be prescribed through an update to UFC 3-400-01 Design: Energy Conservation.

SPiRiT and LEED are substantially similar and share the primary goal of creating a “sustainable culture” in the planning, programming, design, construction, and operation of facilities. SPiRiT was initially developed and fielded to meet Army requirements and has performed a critical role in changing the Army environmental design culture. SPiRiT supplemented LEED®-NC 2.0: adding language facilitating the application of a “commercial” green building rating tool to Army facilities and installations; replacing commercial standards with Army standards; and adding credits to emphasize Army environmental initiatives and interests. Most MILCON program stakeholders (design and construction “agents” at U.S. Army Corps of Engineers Districts; Installation Departments of Public Works personnel; and even facilities “owners” representatives) are now familiar with SPiRiT and LEED, and with the application of these tools for MILCON projects. “Language” differences between the two tools are easily translated; commercial standards are rapidly being adopted replacing separate Army, DOD, and Federal standards. Most Army environmental initiatives and interests added in SPiRiT are either covered under separate programs or are addressable as LEED “Innovation in Design” credits. A more complete evaluation of SPiRiT versus LEED elements is given in Chapter 3, “LEED®-NC 2.2, Project Credit Evaluations” (p 17). Appendix C, “SPiRiT LEED Comparison” (p 94) includes a comparison on a credit by credit basis.

Establish Initial LEED Rating of “Silver”

This study recommend the establishment of an initial target LEED rating of LEED “Silver” for the a probationary period of no less than 1 year based on evaluated project case history scores and credits achieved, and a projection of probable scoring results.

A sampling of 40 MILCON projects were evaluated to estimate the scores that they might expect to achieve had they been rated using LEED®-NC, the LEED version SPiRiT was based on. Results varied widely. Of the sample projects, 55% achieved a SPiRiT rating of “Gold,” 37.5% a SPiRiT rating of “Silver,” and 7.5% a SPiRiT rating of “Bronze.” For the estimated LEED ratings, 7.5% received LEED “Gold,” 10% LEED “Silver,” and 27.5% LEED “Certified” (Equivalent of SPiRiT “Bronze”) ratings. However, a full 55% were estimated unable to achieve the minimum points to achieve a LEED “Certified” rating. (Complete project information and estimated LEED scores is listed in Appendix A to this report.)

While a full 82.5% of the sample projects were estimated unable to achieve LEED Silver, it is clear that, with the exception of Tactical Equipment Maintenance Facilities (TEMF), projects are capable of achieving much higher LEED ratings. Thirty five percent of the sample projects were estimated to be capable (“Probable,” Table 10 below) of achieving LEED “Silver” or LEED “Gold” within the Program Amount (PA). Adjusting scores to include points for credits identified as “required” under Federal, Department of Defense (DOD) or Army regulations (“Adjusted,” Table 10 below), to include points for “Energy Optimization” meeting 2005 Energy Policy Act requirements, 57.5% of the sample projects were estimated to be capable of achieving LEED “Silver” or “Gold” scores. Fort Lewis requires that their MILCON projects be “self rated” using LEED®-NC 2.1 and, at the time of this writing, has projected LEED “Gold” for their projects in this sample. (See Barracks project numbers 044794 and 044795, or Chapel Center with Religious Education project 044772, Appendix A). Chapter 2, “SPiRiT-LEED Sample Project Evaluations” and Appendix A, “Sample Project Evaluations Project Data” include details of this assessment.

Table 10. All sample projects (40 projects).

	SPiRiT Ratings		LEED Ratings							
			Estimated		Potential		Probable		Adjusted	
Platinum	0	0%	0	0%	0	0%	0	0%	0	0%
Gold	22	55%	3	7.5%	9	22.5%	7	17.5%	12	30%
Silver	15	37.5%	4	10%	15	37.5%	7	17.5%	11	27.5%
Bronze/Certified	3	7.5%	11	27.5%	15	37.5%	9	22.5%	15	37.5%

No Rating	0	0%	22	55%	1	2.5%	17	42.5%	2	5%

Credits achieved by the sample projects were evaluated to determine the points that were consistently achieved, which were not achieved, and patterns of achievement which could guide Project Delivery Teams. The most telling case histories were those of projects estimated as capable of achieving LEED ratings of “Silver” and “Gold.” While there is little discernable pattern by facility type, location, etc., it is fairly clear from the higher performing projects, which credits have to be consistently achieved to achieve higher LEED ratings.

Chapter 2, “SPiRiT-LEED Sample Project Evaluations,” and Chapter 4, “SPiRiT LEED Implementation Issues,” section “Army Project Case History Summary” (p 37) include an evaluation of credits achieved by sample projects. Appendix A to this report contains a complete assessment of credits, and project LEED Score Sheets.

Consider Raising LEED Rating to “Gold” Following Probationary Period

This study recommends that consideration be given to raising the target LEED performance level to “Gold” after a probationary period, allowing a gradual transition to use LEED as the Army green building rating tool, and to implement design strategies essential to achieving higher LEED performance levels. Based on project case histories and MILCON experience to date, the key to achieving LEED “Gold” is:

1. Consistent achievement of “most likely” and “required” credits
2. Implementation of “best practice” approaches to achievement of previously unattained credits
3. Implementation of “best practice” approaches to achievement of design innovation credits
4. Achievement of key credits under LEED Energy and Atmosphere, primarily LEED EA Credit 1, “Optimize Energy Performance,” and optimally, LEED EA Credit 2 “Renewable Energy.”

While differences due to site location and project facility type affect the ability of capability of a project to achieve each credit, evaluation of the sample project scores reveals credits likely to be achieved. In addition, several credits are considered to be “required” under Federal, DOD, and/or Army regulation. These credits must be consistently achieved.

Beyond the “typical” credit points that Army projects achieve, there are a limited number of LEED credits that may be achieved through implementation of “best practice” approaches. These credits have been determined through comparison of probable LEED “Silver” and LEED “Gold” scoring projects. (See Chapter 4 “SPiRiT / LEED Implementation Issues”).

LEED “Innovation in Design” credits are essential to achieving LEED “Gold.” Innovative design solutions add value to the project, and must be determined on a project by project basis; however, “best practice” approaches may be instituted across the MILCON program. Further, Army initiatives, promoted through SPiRiT, may be considered for “Innovation in Design” credits.

The Federal Energy Policy Act of 2005 requires that Federal buildings be designed to achieve energy consumption levels that are at least 30 percent below levels established in ASHRAE/IESNA Standard 90.1-2004. There are 10 points possible under LEED EA Credit 1, “Optimize Energy Performance;” or 6 points for a 30% reduction matching the Federal Energy Policy Act targets. Of the 40 sample projects evaluated, 7 had a probable LEED rating of “Gold.” Only 25% the sample projects attained points under EA 1; however, if the sample projects had achieved a 30% energy use reduction in-line with Federal Energy Policy Act targets, 20% more would have attained a probable LEED rating of “Gold” solely for “Optimize Energy Performance.”

The Federal Energy Policy Act of 2005 requires that a percentage of the Federal Government’s energy consumption during any fiscal year come from renewable energy sources (3% FY 07 thru 09, 5% FY 10 thru 12, and 7.5% FY 13 and beyond). There are 3 points possible under LEED EA Credit 2, “Renewable Energy,” for up to 20% of a building’s energy consumption from renewable resources. If Federal Energy Policy Act targets are to be achieved, MILCON projects must be designed to incorporate renewable energy technologies to the maximum extent economically feasible. Of the 40 sample projects evaluated, 1 achieved points for LEED EA Credit 2, “Renewable Energy;” however, if the sample projects had achieved up to 10% use of “Renewable Energy,” an additional 10% would have attained a probable LEED rating of “Gold.”

Adoption of LEED®-EB Requires Further Study

This study recommends establishment of an Office of the Assistant Chief of Engineers, Installation Management (OACSIM), Installation Directorate of Public

Works (DPW) and Engineer Research and Development Center (ERDC) working group, to further explore the efficacy of adopting the USGBC LEED®-EB as the green building rating tool for Army existing buildings, and for minor construction and renovation projects. If adopted, LEED®-EB would be almost exclusively used by installation DPW staff, either to assess the sustainability of existing facilities, or as a tool to guide the planning, design and execution of minor construction and renovation projects. This project focused on MILCON process participants and issues associated with potential adoption of LEED®-NC for MILCON projects.

Adoption of LEED®-H Requires Further Study

The Army plans to enter MILCON Family Housing projects at Fort Lee, VA and Fort Huachuca, AZ into the USGBC LEED®-H Pilot program to evaluate the effectiveness of LEED®-H for rating Army Family Housing and Residential Communities Initiative (RCI) housing. OACSIM requested on 30 August 2005 that the U.S. Army Corps of Engineers, Norfolk District (CENAO), as the Center of Standardization for Family Housing, lead the Army participation in the LEED-H Pilot Program. Norfolk District is currently preparing a proposal for OACSIM.

Adoption of LEED®-ND Requires Further Study

This study recommends further study on the efficacy of adopting the USGBC LEED®-ND (Neighborhood Development) as the green neighborhood (installation) rating tool for the Army. LEED®-ND has the potential to be used to rate Army Installations as a whole at the master planning level, as opposed to project-by-project or facility-by-facility ratings, as is the case with current LEED or SPiRiT tools. The draft rating tool was unavailable for evaluation at the time of this study. LEED®-ND was released in preliminary pilot draft form 13 September 2005 for comment; however, it needs careful evaluation and scrutiny for potential Army use.

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Appendix A: SPiRiT-LEED Project Evaluations Project Data

Projects Evaluated

1391 No.	Project Title	Page
002298	Education Center, Fort Polk, LA	96
015091	Child Development Center, Fort McPherson, GA	100
018696	Command & Control Center, Fort Campbell, KY	103
019636	Physical Fitness Training Center, Fort Benning, GA	106
023654	Barracks Complex--1CD, Fort Hood, TX	109
030629	Communications Facility, Fort Gordon, GA	112
033406	Fort Drum—Barracks Complex—Wheeler Sack AAF Ph 2 (PN033409), Fort Drum, NY	116
035311	Barracks Complex—Battalion Headquarters, Fort Benning, GA	119
035311	Barracks Complex—Brigade Headquarters, Fort Benning, GACE	119
035311	Barracks Complex—Company Operations Facility, Fort Benning, GA	119
035311	Barracks Complex—Kelly Hill Barracks, Fort Benning, GA	119
035311	Barracks Complex—Main Post Barracks , Fort Benning, GA	119
042039	Command & Control Center, Fort Stewart, GA	131
044772	Chapel Center with Religious Education, Fort Lewis, WA	134
044794	WBR Barracks Buildings—RFP Proposal FY04, Fort Lewis, WA	137
044795	Barracks Complex—41st Division Drive/B Street Phase 4, Fort Lewis, WA	140
047125	Barracks Complex—Neely Rd, Fort Wainwright, AK	143
047348	Barracks Complex—Bastogne Dr Ph 2 Barracks, Fort Bragg, NC	146
047348	Barracks Complex—Bastogne Dr Ph 2 Company Operations Facility (Large), Fort Bragg, NC	146
047348	Barracks Complex—Bastogne Dr Ph 2, Battalion Headquarters, Fort Bragg, NC	146
047348	Barracks Complex—Bastogne Dr Ph 2, Company Operations Facility (Quad), Fort Bragg, NC	146
048441	Barracks Complex—Donovan Street, Fort Bragg, NC	156
048575	Vehicle Maintenance Shop, Fort Riley, KS	159
048785	Barracks Complex Renewal—Phase 2E SB, Schofield Barracks, HI	162
053321	Recruiting Brigade Operations Building, Fort Gillem, GA	165
053608	Barracks Complex—Hospital Area, Fort Carson, CO	168
055977	Barracks Complex, Grafenwohr, Germany	171
055979	Barracks Complex—Brigade, Grafenwohr, Germany	174
056223	Tactical Equipment Complex, Fort Stewart, GA	177
056486	Myer Barracks Complex-Sheridan Ave—Company Operations Facility, Fort Myer,	180

1391 No.	Project Title	Page
	PA	
056486	Myer Barracks Complex-Sheridan Avenue Barracks, Fort Myer, PA	180
057225	General Instruction Facility, Fort Sam Houston, TX	185
057320	Child Development Center, Fort Shafter, HI	188
057421	Vehicle Maintenance Facility—Increment 1, Schofield Barracks, HI	191
057708	General Instruction Building, Fort Drum, NY	194
057803	Chapel, Fort Stewart, GA	197
058047	FTR166 Barracks Phase 5, Fort Richardson, AK	200
058604	Family Housing, Fort Huachuca, AZ	203
058677	Family Housing, Fort Knox, KY	206
059447	Barracks—Mobilization & Training, Fort Riley, KS	210

Project Number: 002298

Project Description:	Education Center
Installation:	Fort Polk
Project Manager:	Rawlings, Jimmy E.
Project Status:	Approved
District SSD POC:	Baggett, Jimmy D.

SPiRiT (Actual):	50 (Gold)
LEED (Estimated):	27 (Certified)
LEED (Potential):	35 (Silver)
LEED (Probable):	35 (Silver)
LEED (Adjusted):	42 (Gold)

General Project Information

1391 Processor Number:	002298
MACOM/MAJCOM:	US Army FORSCOM
Program Amount:	\$10,800,000.00
Authorized Year:	2002
Program Year:	2002
Tier:	1
Congressional District LA04	
Scope/UOM:	63750 SF
Design % Comp:	0%
CEFMS WI Code:	JF061D
SPiRiT Rating:	
CEFMS Funded Amt:	\$240,857.50
Customer:	Fort Polk
Status Code:	R—Construction Contractor Performing Design Services
Design Agent:	Fort Worth District
Construction Agent:	Fort Worth District
IMA Region:	Southwest
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10—Military Construction, Army
Design By:	HL—Hired Labor
Delay D0—No Current Problems—All Phases	
CWE (District):	\$10,870,027.14
CWE (HQ):	Not Found

LEED Evaluation Comments

SS PR 1—LEED requires that a project follow local erosion and sedimentation control standards or the referenced EPA standard. Army projects must describe how they meet or exceed the referenced EPA standard by adherence to Army Regulation (AR) 200-1 Environmental Protection and Enhancement, Department of the Army Pamphlet (DA Pam) 200-1 Environmental Protection and Enhancement, Installation Storm Water Pollution Prevention Plans (SWPPP) which regulate erosion and sedimentation Control for construction projects.

SS 1 – By definition, no “prime farmland” in Army cantonment area.

SS 3 – LEED requires that a project remediate sites contaminated according to “EPA Brown-field’s” definitions to qualify for this point. Remediation of contaminated sites on Army installations is accomplished independently and often years in advance of a military construction project.

For an Army project to qualify for this credit, project documentation will have to present proof of the site's previous contamination and describing the remediation performed.

SS 4.2 – LEED 2.2 (draft) will credit this point as long as secure bicycle storage and convenient changing/shower facilities are provided within 200 yards of the building.

SS 4.3 – A modification to LEED-NC requirements under the LEED Application Guide for Multiple and Campus Building Projects (draft) takes fleet alternative fuel vehicles, central motor pool facilities, and access to nearby alternative fueling station into consideration for this point.

EA PR1 – Commissioning of Army facilities is mandatory, Army facilities are commissioned according to guidance contained in ER 1110-345-723, Systems Commissioning Procedures, and specified in part under Unified Facilities Guide Specifications (UFGS) 15995A Commissioning of HVAC Systems.

EA PR2 – These Army facilities were designed to TI 800-01 which in turn references requirements of ASHRAE 90.1-1999.

Current guidance for Army facilities is to design to current ASHRAE Standards, 90.1 2004."

Project Checklist

LEED-NC® 2.0

Ft. Polk

Consolidated Library/General Education Center (PN 002298)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
0	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	1	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

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Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO ₂) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	1	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

1	?	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
1	?	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

27	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 015091

Project Description:	Child Development Center
Installation:	Fort McPherson
Project Manager:	Morris, Timothy C.
Project Status:	Approved
District SSD POC:	Milton, Judith F.

SPiRiT (Actual):	32 (bronze)
LEED (Estimated):	14 (None)
LEED (Potential):	27 (Certified)
LEED (Probable):	17 (None)
LEED (Adjusted):	25 (None)

General Project Information

1391 Processor Number:	015091
MACOM/MAJCOM:	US Army Forces Command
	16 Construction Agent Savannah District
Program Amount:	\$4,900,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	GA05
Scope/UOM:	15400 SF
Design % Comp:	100%
CEFMS WI Code:	9350HB
SPiRiT Rating:	Bronze – 25-34 Points
CEFMS Funded Amt:	\$5,061,884.89
Customer:	Army Forces Command (FORSCOM)
Status Code:	8 – Construction Deferred or Suspended

Design Agent:	Agent Savannah District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	AE – Architect-Engineer
Delay:	CM – Temporary Suspension of Work for Convenience of Government
CWE (District):	\$5,018,029.00
CWE (HQ):	\$5,164,937.00
Constr % Complete:	0.7%

Project Checklist

LEED-NC® 2.0

Fort McPherson

Child Development Center (PN 015091)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
0	1	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort McPherson

Child Development Center (PN 015091)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
1	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
0	1	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
0	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

~~14~~	13	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 018696

Project Description: Command & Control Facility – Division
Installation: Fort Campbell
Project Manager: Lotz, Jr., Lloyd R.
Project Status: Approved

District SSD POC: Pohl, Doug
SPiRiT (Actual): 54 (Gold)
LEED (Estimated): 27 (Certified)
LEED (Potential): 33 (Silver)
LEED (Probable): 30 (Certified)
LEED (Adjusted): 37 (Silver)

General Project Information

1391 Processor Number: 018696
MACOM/MAJCOM: US Army Forces Command
16 Construction Agent Louisville District
Program Amount: \$33,000,000.00
Authorized Year: 2005
Program Year: 2005
Tier: 1
Congressional District: KY01,TN07,TN08
Scope/UOM: 271214 SF
Design % Comp: 100%
CEFMS WI Code: KF60HC
SPiRiT Rating: Gold – 50-74 Points
Customer: Army Forces Command (FORSCOM)
Status Code: U – Construction Underway – On or Ahead
of Schedule

Design Agent: Louisville District
IMA Region: Region Southeast
Congressional Add: N
Supplemental Appropriations No:
Type funds: 10 – Military Construction, Army
Authorized Phase: Construction Contract Award Authorized
Design By: AE – Architect-Engineer
Delay: D0 – No Current Problems – All Phases
CWE (District): \$32,129,237.02
CWE (HQ): \$33,576,852.00
Constr % Complete: 6.9%
CEFMS Funded Amt: \$32,274,588.03

Project Checklist

LEED-NC® 2.0

Fort Campbell

Command & Control Facility-Division (PN 018696)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation , Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1
1	?	N	Credit 4.3	Alternative Transportation , Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation , Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance , Protect or Restore Open Space	1
0	?	N	Credit 5.2	Reduced Site Disturbance , Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management , Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management , Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands , Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands , Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction , 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction , 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Campbell

Command & Control Facility-Division (PN 018696)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO ₂) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

27	6	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 019636

Project Description:	Physical Fitness Training Center
Installation:	Fort Benning
Project Manager:	Hixson, Gregory D.
Project Status:	Approved

District SSD POC:	Milton, Judith F.
SPiRiT (Actual):	37 (Silver)
LEED (Estimated):	20 (None)
LEED (Potential):	33 (Silver)
LEED (Probable):	33 (Silver)
LEED (Adjusted):	40 (Gold)

General Project Information

1391 Processor:	Number 019636
MACOM/MAJCOM:	US Army Training and Doctrine Command 16 Construction Agent Savannah District

Program Amount \$18,362,000.00	

Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	GA02,GA11
Scope/UOM:	87300 SF
Design % Comp:	100%
CEFMS WI Code:	KG0K5D
SPiRiT Rating:	Silver – 35-49 Points
CEFMS Funded Amt:	\$19,103,501.98
Customer:	Army Training & Doctrine Command (TRADOC)
Status Code:	R – Construction Contractor Performing Design Services

Design Agent:	Savannah District

IMA Region Southeast	

Congressional Add:	N

Supplemental Appropriations No:	

Authorized Phase:	Construction Contract Award Authorized

Type funds:	10 – Military Construction, Army

Design By:	DC – Design-Construct or Turnkey

Delay:	ZZ – Other Causes Not Covered by Any

	Other Code

CWE (District):	\$19,810,953.00

CWE (HQ):	\$19,810,953.00

Constr % Complete:	0%

Project Checklist

LEED-NC® 2.0

Fort Benning

Physical Fitness Training Center (PN 019636)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	1	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Benning

Physical Fitness Training Center (PN 019636)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	1	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
1	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	1	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	1	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	1	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

20	13	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 023654**Project Description:**

Installation:	Barracks Complex—1CD
Project Manager:	Fort Hood
Project Status:	Oblak, Jr., John S.
District SSD POC:	Approved
SPiRiT (Actual):	Baggett, Jimmy D.
LEED (Estimated):	53 (Gold)
LEED (Potential):	25 (None)
LEED (Probable):	34 (Silver)
LEED (Adjusted):	28 (Certified)
	35 (Silver)

General Project Information

1391 Processor Number:	023654
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$49,888,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	2
Congressional District:	TX11
Scope/UOM:	1192 PN
Design % Comp:	100%
CEFMS WI Code:	1KJGDG
SPiRiT Rating	
CEFMS Funded Amt:	\$1,851,064.01
Customer:	HQ III & Fort Hood
Status Code	

Design Agent:	Fort Worth District
Construction Agent:	Fort Worth District
IMA Region:	Southwest
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Final Design
Type funds:	10—Military Construction, Army
Design By:	HL—Hired Labor
Delay:	D0—No Current Problems—All Phases
CWE (District):	\$48,999,994.01
CWE (HQ):	\$48,999,994.00
Constr % Complete:	0%

Comments

Project also includes a Company Operations Facility and a Central Energy Plant with a chilled water storage tank; however, only a single SPiRiT rating was done for the complex. The project was designed as a complex and buildings are interconnected as far as design materials, landscaping and energy.

Project Checklist

LEED-NC® 2.0

Fort Hood

Barracks complex-1CD (PN 023654)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	1	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
2	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Hood

Barracks complex-1CD (PN 023654)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

25	9	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 030629

Project Description:	Communications Facility
Installation:	Fort Gordon
Project Manager:	Rosario, Efrain
Project Status:	Approved

District SSD POC:	Milton, Judith F.
SPiRiT (Actual):	68 (Gold)
LEED (Estimated):	29 (Certified)
LEED (Potential):	35 (Silver)
LEED (Probable):	35 (Silver)
LEED (Adjusted):	40 (Gold)

General Project Information

1391 Processor Number:	030629
MACOM/MAJCOM:	US Army TRADOC
Program Amount:	\$11,000,000.00
Authorized Year:	2002
Program Year:	2002
Tier:	1
Congressional District:	GA01
Scope/UOM:	3809 SM
Design % Comp:	0%
CEFMS WI Code:	3J5LGH
SPiRiT Rating	
CEFMS Funded Amt:	\$279,261.29
Customer:	Army Training & Doctrine Command (TRADOC)
Status Code:	U – Construction Underway – On or Ahead of Schedule
Design Agent:	Savannah District
Construction Agent:	Savannah District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$370,000.00
CWE (HQ):	Not Found

LEED Evaluation

SS PR 1 – LEED requires that a project follow local erosion and sedimentation control standards or the referenced EPA standard. Army projects must describe how they meet or exceed the referenced EPA standard by adherence to Army Regulation (AR) 200-1 Environmental Protection and Enhancement, Department of the Army Pamphlet (DA Pam) 200-1 Environmental Protection and Enhancement, Installation Storm Water Pollution Prevention Plans (SWPPP) which regulate erosion and sedimentation Control for construction projects.

SS 1 – By definition, no “prime farmland” in Army cantonment area.

SS 3 – LEED requires that a project remediate sites contaminated according to “EPA Brown-fields” definitions to qualify for this point. Remediation of contaminated sites on Army installations is accomplished independently and often years in advance of a military construction project. For

an Army project to qualify for this credit, project documentation will have to present proof of the site's previous contamination and describing the remediation performed.

SS 4.2 – LEED 2.2 (draft) will credit this point as long as secure bicycle storage and convenient changing/shower facilities are provided within 200 yards of the building.

SS 4.3 – “A modification to LEED-NC requirements under the LEED Application Guide for Multiple and Campus Building Projects (draft) takes fleet alternative fuel vehicles, central motor pool facilities, and access to nearby alternative fueling station into consideration for this point”

WE 1.1 – Project cost analysis determined that the “temporary” installation of a “permanent” high efficiency irrigation system for the purpose of irrigation until plantings are established was more cost effective than “installation” and operation of a “temporary” system (e.g., hoses, sprinklers, manual watering of trees/shrubs, etc.) regardless of the water conservation issues.

EA PR1 – Commissioning of Army facilities is mandatory, Army facilities are commissioned according to guidance contained in ER 1110-345-723, Systems Commissioning Procedures, and specified in part under Unified Facilities Guide Specifications (UFGS) 15995A Commissioning of HVAC Systems.

EA PR2 – These Army facilities designed to TI 800-01 which references requirements of ASHRAE 90.1-1999.

Current guidance for Army facilities is to design to current ASHRAE Standards, 90.1 2004.”

Project Checklist

LEED-NC® 2.0

Ft. Gordon

Installation Communications Facility (PN 030629)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
0	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	1	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
2	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Ft. Gordon

Installation Communications Facility (PN 030629)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	0	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
0	1	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

1	?	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
1	?	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

29	6	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 033406

Project Description:	Ft Drum – Barracks Complex-Wheeler Sack AAF Phase 2 (PN033409)
Installation:	Fort Drum
Project Manager:	Sim, Edward R.
Project Status:	Approved
District SSD POC:	Dannemann, Thomas R.
SPiRiT (Actual):	56 (Gold)
LEED (Estimated):	28 (Certified)
LEED (Potential):	36 (Silver)
LEED (Probable):	31 (Certified)
LEED (Adjusted):	38 (Silver)

General Project Information

1391 Processor Number:	033409
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$48,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	NY24
Scope/UOM:	1 PN
Design % Comp:	100%
CEFMS WI Code:	2J50HC
SPiRiT Rating:	Gold – 50-74 Points
CEFMS Funded Amt:	\$40,773,428.00
Customer:	Fort Drum
Status Code:	U – Construction Underway – On or Ahead of Schedule
Design Agent:	New York District
Construction Agent:	New York District
IMA Region:	Northeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	AE – Architect-Engineer
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$49,029,348.19
CWE (HQ):	\$42,602,757.00
Constr % Complete:	13.7%

Project Checklist

LEED-NC® 2.0

Fort Drum

Barracks Complex-Wheeler Sack AAF Ph 2 (PN 033406)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation , Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation , Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation , Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance , Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance , Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management , Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management , Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands , Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands , Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction , 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction , 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
Y	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Drum

Barracks Complex-Wheeler Sack AAF Ph 2 (PN 033406)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse , Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse , Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse , Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management , Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management , Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse , Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse , Specify 10%	1
1	?	N	Credit 4.1	Recycled Content , Specify 25%	1
0	?	N	Credit 4.2	Recycled Content , Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials , 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials , of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan , During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials , Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials , Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials , Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems , Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems , Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort , Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort , Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views , Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

28	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 035311

Project Description:	Barracks Complex – Kelley Hill/Main Post
Installation:	Fort Benning
Project Manager:	Hixson, Gregory D.
Project Status:	Approved
District SSD POC:	Milton, Judith F.
Main Post Barracks	
SPiRiT (Actual):	39 (Silver)
LEED (Estimated):	18 (None)
LEED (Potential):	30 (Certified)
LEED (Probable):	21 (None)
LEED (Adjusted):	30 (Certified)
Kelly Hill Barracks	
SPiRiT (Actual):	39 (Silver)
LEED (Estimated):	18 (None)
LEED (Potential):	30 (Certified)
LEED (Probable):	21 (None)
LEED (Adjusted):	30 (Certified)
Brigade Headquarters	
SPiRiT (Actual):	37 (Silver)
LEED (Estimated):	16 (None)
LEED (Potential):	27 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	28 (Certified)
Battalion Headquarters	
SPiRiT (Actual):	37 (Silver)
LEED (Estimated):	16 (None)
LEED (Potential):	27 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	28 (Certified)
Company Operations Facility	
SPiRiT (Actual):	37 (Silver)
LEED (Estimated):	16 (None)
LEED (Potential):	27 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	28 (Certified)

General Project Information

1391 Processor Number:	035311
MACOM/MAJCOM:	US Army Training and Doctrine Command16 Construction Agent Savannah District
Program Amount:	\$49,565,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	2
Congressional District:	GA01,GA12
Scope/UOM:	472 LS
Design % Comp:	100%
CEFMS WI Code:	HC83J1
SPiRiT Rating:	Silver – 35-49 Points
CEFMS Funded Amt:	\$46,187,076.32
Customer:	Army Training & Doctrine Command (TRADOC)
Status Code:	T – Contract Awarded – Construction Not Started
Design Agent:	Savannah District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay:	DB – Redesign Required
CWE (District):	\$47,032,215.00
CWE (HQ):	\$47,032,215.00
Constr % Complete:	0%

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Battalion HQ



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Battalion HQ



Materials & Resources

13 Possible Points

Y		Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1 Building Reuse , Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2 Building Reuse , Maintain 100% of Shell	1
0	?	N	Credit 1.3 Building Reuse , Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1 Construction Waste Management , Divert 50%	1
0	?	N	Credit 2.2 Construction Waste Management , Divert 75%	1
0	?	N	Credit 3.1 Resource Reuse , Specify 5%	1
0	?	N	Credit 3.2 Resource Reuse , Specify 10%	1
1	?	N	Credit 4.1 Recycled Content , Specify 25%	1
0	?	N	Credit 4.2 Recycled Content , Specify 50%	1
1	?	N	Credit 5.1 Local/Regional Materials , 20% Manufactured Locally	1
0	?	N	Credit 5.2 Local/Regional Materials , of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6 Rapidly Renewable Materials	1
0	?	N	Credit 7 Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y		Prereq 1	Minimum IAQ Performance	Required
Y		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1 Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2 Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1 Construction IAQ Management Plan , During Construction	1
0	?	N	Credit 3.2 Construction IAQ Management Plan , Before Occupancy	1
1	?	N	Credit 4.1 Low-Emitting Materials , Adhesives & Sealants	1
1	?	N	Credit 4.2 Low-Emitting Materials , Paints	1
1	?	N	Credit 4.3 Low-Emitting Materials , Carpet	1
0	?	N	Credit 4.4 Low-Emitting Materials , Composite Wood	1
1	?	N	Credit 5 Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1 Controllability of Systems , Perimeter	1
0	1	N	Credit 6.2 Controllability of Systems , Non-Perimeter	1
0	1	N	Credit 7.1 Thermal Comfort , Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2 Thermal Comfort , Permanent Monitoring System	1
0	?	N	Credit 8.1 Daylight & Views , Daylight 75% of Spaces	1
0	?	N	Credit 8.2 Daylight & Views , Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1 Innovation in Design	1
0	?	N	Credit 1.2 Innovation in Design	1
0	?	N	Credit 1.3 Innovation in Design	1
0	?	N	Credit 1.4 Innovation in Design	1
0	1	N	Credit 2 LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	11	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Brigade HQ



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Brigade HQ



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse , Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse , Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse , Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management , Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management , Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse , Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse , Specify 10%	1
1	?	N	Credit 4.1	Recycled Content , Specify 25%	1
0	?	N	Credit 4.2	Recycled Content , Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials , 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials , of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan , During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials , Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials , Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials , Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems , Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems , Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort , Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort , Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views , Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	11	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Company Operations Facility



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Company Operations Facility



Materials & Resources

13 Possible Points

Y		Prereq 1	Storage & Collection of Recyclables	Required
0	2	N	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell	1
0	2	N	Credit 1.2 Building Reuse, Maintain 100% of Shell	1
0	2	N	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	2	N	Credit 2.1 Construction Waste Management, Divert 50%	1
0	2	N	Credit 2.2 Construction Waste Management, Divert 75%	1
0	2	N	Credit 3.1 Resource Reuse, Specify 5%	1
0	2	N	Credit 3.2 Resource Reuse, Specify 10%	1
1	2	N	Credit 4.1 Recycled Content, Specify 25%	1
0	2	N	Credit 4.2 Recycled Content, Specify 50%	1
1	2	N	Credit 5.1 Local/Regional Materials, 20% Manufactured Locally	1
0	2	N	Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	2	N	Credit 6 Rapidly Renewable Materials	1
0	2	N	Credit 7 Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y		Prereq 1	Minimum IAQ Performance	Required
Y		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1 Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2 Increase Ventilation Effectiveness	1
0	2	N	Credit 3.1 Construction IAQ Management Plan, During Construction	1
0	2	N	Credit 3.2 Construction IAQ Management Plan, Before Occupancy	1
1	2	N	Credit 4.1 Low-Emitting Materials, Adhesives & Sealants	1
1	2	N	Credit 4.2 Low-Emitting Materials, Paints	1
1	2	N	Credit 4.3 Low-Emitting Materials, Carpet	1
0	2	N	Credit 4.4 Low-Emitting Materials, Composite Wood	1
1	2	N	Credit 5 Indoor Chemical & Pollutant Source Control	1
1	2	N	Credit 6.1 Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2 Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992	1
0	2	N	Credit 7.2 Thermal Comfort, Permanent Monitoring System	1
0	2	N	Credit 8.1 Daylight & Views, Daylight 75% of Spaces	1
0	2	N	Credit 8.2 Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1 Innovation in Design	1
0	2	N	Credit 1.2 Innovation in Design	1
0	2	N	Credit 1.3 Innovation in Design	1
0	2	N	Credit 1.4 Innovation in Design	1
0	1	N	Credit 2 LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	11	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Kelly Hill Barracks



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Kelly Hill Barracks



Materials & Resources

13 Possible Points

Y		Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2 Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1 Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2 Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1 Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2 Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1 Recycled Content, Specify 25%	1
0	?	N	Credit 4.2 Recycled Content, Specify 50%	1
1	?	N	Credit 5.1 Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6 Rapidly Renewable Materials	1
0	?	N	Credit 7 Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y		Prereq 1	Minimum IAQ Performance	Required
Y		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1 Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2 Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1 Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2 Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1 Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2 Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3 Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4 Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5 Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1 Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2 Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2 Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1 Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2 Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1 Innovation in Design	1
0	?	N	Credit 1.2 Innovation in Design	1
0	?	N	Credit 1.3 Innovation in Design	1
0	?	N	Credit 1.4 Innovation in Design	1
0	1	N	Credit 2 LEED™ Accredited Professional	1

Project Totals

69 Possible Points

18	12	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Main Post Barracks



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Benning

Barracks Complex - Kelley Hill/Main Post (PN 035311)

Main Post Barracks



Materials & Resources

13 Possible Points

Y		Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2 Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1 Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2 Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1 Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2 Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1 Recycled Content, Specify 25%	1
0	?	N	Credit 4.2 Recycled Content, Specify 50%	1
1	?	N	Credit 5.1 Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6 Rapidly Renewable Materials	1
0	?	N	Credit 7 Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y		Prereq 1	Minimum IAQ Performance	Required
Y		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1 Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2 Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1 Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2 Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1 Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2 Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3 Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4 Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5 Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1 Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2 Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2 Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1 Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2 Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1 Innovation in Design	1
0	?	N	Credit 1.2 Innovation in Design	1
0	?	N	Credit 1.3 Innovation in Design	1
0	?	N	Credit 1.4 Innovation in Design	1
0	1	N	Credit 2 LEED™ Accredited Professional	1

Project Totals

69 Possible Points

18	12	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 042039

Project Description:	Command & Control Center
Installation:	Fort Stewart
Project Manager:	Cudd, Derek S.
Project Status:	Approved

District SSD POC:	Milton, Judith F.
SPiRiT (Actual):	53 (Gold)
LEED (Estimated):	28 (Certified)
LEED (Potential):	36 (Silver)
LEED (Probable):	31 (Certified)
LEED (Adjusted):	37 (Silver)

General Project Information

1391 Processor Number:	042039
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$24,695,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	2
Congressional District:	GA01,GA12
Scope/UOM:	52105 SF
Design % Comp:	100%
CEFMS WI Code:	350HB7
SPiRiT Rating:	25 CWE (HQ) \$24,346,552.00
CEFMS Funded Amt:	\$605,038.09
Customer:	Army Forces Command (FORSCOM)
Status Code:	O – Bids Opened/RFP Received – Contract Not Awarded

Design Agent:	Agent Savannah District
Construction Agent:	Savannah District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Final Design
funds:	10 – Military Construction, Army
Design By:	AE – Architect-Engineer
Delay:	E3 – CWE Issues
CWE (District):	\$31,777,007.03
Constr % Complete:	0%

Project Checklist

LEED-NC® 2.0

Fort Stewart

Command & Control Center (PN 042039)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
1	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Stewart

Command & Control Center (PN 042039)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO ₂) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

28	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 044772

Project Description:	Chapel Center Facility with Religious Education
Installation:	Fort Lewis
Project Manager:	Detrixhe, Tammy J.
Project Status:	Approved
District SSD POC:	Olinger, Michael J.
SPiRiT (Estimated*):	64 (Gold)
LEED (Actual*):	40 (Gold)
LEED (Potential):	48 (Gold)
LEED (Probable):	48 (Gold)
LEED (Adjusted):	51 (Gold)

General Project Information

1391 Processor Number:	044772
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$8,200,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District	
Scope/UOM:	33650 SF
Design % Comp:	90%
CEFMS WI Code:	GDK104
SPiRiT Rating	
CEFMS Funded Amt:	\$1,177,408.73
Customer	
Status Code	
Design Agent:	Seattle District
Construction Agent:	Seattle District
IMA Region:	Northwest
Congressional Add:	Y
Supplemental Appropriations No:	
Authorized Phase:	Final Design
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay	
CWE (District):	\$8,197,229.91
CWE (HQ):	Not Found
Constr % Complete:	0%

Comments

Fort Lewis requires projects scored in LEED®-NC 2.1; SPiRiT Scores are estimated

Current score “best estimate” at current project phase; final performance on many credits dependant on contractor performance.

Best value RFP acquisition currently advertised; an in-house design; score represents evaluation at conclusion of design.

Project Checklist

LEED-NC® 2.0

Fort Lewis

Chapel Center with Religious Education (PN 044772)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
0	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	1	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
1	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
1	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
4	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
0	1	N	Credit 3	Additional Commissioning	1
1	?	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
1	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Lewis

Chapel Center with Religious Education (PN 044772)



Materials & Resources

13 Possible Points

Y	Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell 1
0	?	N	Credit 1.2 Building Reuse, Maintain 100% of Shell 1
0	?	N	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell 1
1	?	N	Credit 2.1 Construction Waste Management, Divert 50% 1
1	?	N	Credit 2.2 Construction Waste Management, Divert 75% 1
0	?	N	Credit 3.1 Resource Reuse, Specify 5% 1
0	?	N	Credit 3.2 Resource Reuse, Specify 10% 1
1	?	N	Credit 4.1 Recycled Content, Specify 25% 1
1	?	N	Credit 4.2 Recycled Content, Specify 50% 1
1	?	N	Credit 5.1 Local/Regional Materials, 20% Manufactured Locally 1
1	?	N	Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally 1
0	?	N	Credit 6 Rapidly Renewable Materials 1
0	1	N	Credit 7 Certified Wood 1

Indoor Environmental Quality

15 Possible Points

Y	Prereq 1	Minimum IAQ Performance	Required
Y	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1 Carbon Dioxide (CO2) Monitoring 1
1	?	N	Credit 2 Increase Ventilation Effectiveness 1
1	?	N	Credit 3.1 Construction IAQ Management Plan, During Construction 1
1	?	N	Credit 3.2 Construction IAQ Management Plan, Before Occupancy 1
1	?	N	Credit 4.1 Low-Emitting Materials, Adhesives & Sealants 1
1	?	N	Credit 4.2 Low-Emitting Materials, Paints 1
1	?	N	Credit 4.3 Low-Emitting Materials, Carpet 1
1	?	N	Credit 4.4 Low-Emitting Materials, Composite Wood 1
1	?	N	Credit 5 Indoor Chemical & Pollutant Source Control 1
0	1	N	Credit 6.1 Controllability of Systems, Perimeter 1
0	?	N	Credit 6.2 Controllability of Systems, Non-Perimeter 1
1	?	N	Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992 1
0	1	N	Credit 7.2 Thermal Comfort, Permanent Monitoring System 1
0	1	N	Credit 8.1 Daylight & Views, Daylight 75% of Spaces 1
0	1	N	Credit 8.2 Daylight & Views, Views for 90% of Spaces 1

Innovation & Design Process

5 Possible Points

1	?	N	Credit 1.1 Innovation in Design: Educational Signage 1
0	1	N	Credit 1.2 Innovation in Design: Topsoil Management 1
1	?	N	Credit 1.3 Innovation in Design: 100% Building Power provided by Green Power 1
0	?	N	Credit 1.4 Innovation in Design 1
1	?	N	Credit 2 LEED™ Accredited Professional 1

Project Totals

69 Possible Points

40	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 044794

Project Description:	Barracks 1/25TH SBCT Phase 3
Installation:	Fort Lewis
Project Manager:	Kelley, Steven K.
Project Status:	Approved
District SSD POC:	Olinger, Michael J.
SPiRiT (Estimated*):	59 (Gold)
LEED (Actual*):	39 (Gold)
LEED (Potential):	34 (Gold)
LEED (Probable):	39 (Gold)
LEED (Adjusted):	44 (Gold)

General Project Information

1391 Processor Number:	044794
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$48,000,000.00
Authorized Year:	2004
Program Year:	2004
Tier:	
Congressional District:	21
Type funds:	10 – Military Construction, Army
Scope/UOM:	0 PN
Design % Comp:	0%
CEFMS WI Code:	1DKF44
SPiRiT Rating	
CEFMS Funded Amt:	\$383,354.33
Customer:	
Status Code	
Design Agent:	Seattle District
Construction Agent:	Seattle District
IMA Region:	Northwest
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Design By:	
Delay:	
CWE (District):	\$0.00
CWE (HQ):	Not Found
Constr % Complete:	41.9%

Comments

Fort Lewis requires projects scored in LEED®-NC 2.1; SPiRiT Scores are estimated

Current score “best estimate” at current project phase; final performance on many credits dependant on contractor performance.

Design/build; score represent evaluation of Barracks buildings only as provided in Contractor’s proposal. Project is currently under construction.

Project Checklist

LEED-NC® 2.0

Fort Lewis

WBR Barracks Bldgs - RFP Proposal FY04 (PN 044794)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
1	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
1	?	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
1	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Lewis

WBR Barracks Bldgs - RFP Proposal FY04 (PN 044794)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

1	?	N	Credit 1.1	Innovation in Design: Educational Signage	1
1	?	N	Credit 1.2	Innovation in Design: Double LEED Reqmt for MR4	1
1	?	N	Credit 1.3	Innovation in Design: Double LEED Reqmt for MR5	1
0	?	N	Credit 1.4	Innovation in Design	1
1	?	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

39		

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 044795

Project Description:	Barracks Complex – 41st Division Drive/B Street Phase 4
Installation:	Fort Lewis
Project Manager:	Ramos, Victor M.
Project Status:	Approved
District SSD POC:	Olinger, Michael J.
SPiRiT (Estimated*):	62 (Gold)
LEED (Actual*):	42 (Gold)
LEED (Potential):	43 (Gold)
LEED (Probable):	43 (Gold)
LEED (Adjusted):	47 (Gold)

General Project Information

1391 Processor Number:	044795
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$48,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District	
Scope/UOM:	0 PN
Design % Comp:	65%
CEFMS WI Code:	L4GJ83
SPiRiT Rating	
CEFMS Funded Amt:	\$47,536,841.11
Customer	
Status Code:	U – Construction Underway – On or Ahead of Schedule
Design Agent:	Seattle District
Construction Agent:	Seattle District
IMA Region:	Northwest
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay	
CWE (District):	\$53,156,999.74
CWE (HQ):	Not Found
Constr % Complete:	2.8%

Comments

Fort Lewis requires projects scored in LEED®-NC 2.1; SPiRiT Scores are estimated

Current score “best estimate” at current project phase; final performance on many credits dependant on contractor performance.

Design/build project; score represent evaluation for Barracks buildings only as provided with 65% Design submittal.

Project Checklist

LEED-NC® 2.0

Fort Lewis

Barracks Complex-41st Div Dr/B St Ph 4 (PN 044795)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
0	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	1	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
1	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
2	?	N	Credit 1.1	Optimize Energy Performance	2
Y	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
1	?	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
1	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Lewis

Barracks Complex-41st Div Dr/B St Ph 4 (PN 044795)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

1	?	N	Credit 1.1	Innovation in Design	1
1	?	N	Credit 1.2	Innovation in Design	1
1	?	N	Credit 1.3	Innovation in Design	1
1	?	N	Credit 1.4	Innovation in Design	1
1	?	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

42	1	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 047125

Project Description:	Barracks Complex – Neely Road
Installation:	Fort Wainwright
Project Manager:	Rigoni, Janet D.
Project Status:	Approved

District SSD POC:	Shaffer, Rebecca J.
SPiRiT (Actual):	51 (Gold)
LEED (Estimated):	26 (Certified)
LEED (Potential):	34 (Silver)
LEED (Probable):	29 (Certified)
LEED (Adjusted):	37 (Silver)

General Project Information

1391 Processor Number:	047125
MACOM/MAJCOM:	US Army Pacific
Program Amount:	\$39,815,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	AK00
Scope/UOM:	144 PN
Design % Comp:	100%
CEFMS WI Code:	83KF74
SPiRiT Rating:	Bronze – 25-34 Points
CEFMS Funded Amt:	\$39,914,575.96
Customer:	Fort Wainwright
Status Code:	S – Advertised – Contract Not Awarded

Design Agent:	Alaska District
Construction Agent:	Alaska District
IMA Region:	Pacific
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	AE – Architect-Engineer
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$54,172,529.43
CWE (HQ):	\$39,815,000.00
Constr % Complete:	0.6%

Comments

Barracks only

Project Checklist

LEED-NC® 2.0

Fort Wainwright
Barracks Complex - Neely Rd (PN 047125)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
1	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Wainwright
Barracks Complex - Neely Rd (PN 047125)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
0	1	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

26	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 047348

Project Description:	Barracks Complex-Bastogne Drive Phase 2
Installation:	Fort Bragg
Project Manager:	Martinez, Diego A.
District SSD POC:	Milton, Judith F.
Project Status:	Approved

Barracks

SPiRiT (Actual):	39 (Silver)
LEED (Estimated):	16 (None)
LEED (Potential):	26 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	28 (Certified)

Battalion Headquarters

SPiRiT (Actual):	37 (Silver)
LEED (Estimated):	16 (None)
LEED (Potential):	27 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	29 (Certified)

Company Operations Facility (Quad COF)

SPiRiT (Actual):	38 (Silver)
LEED (Estimated):	16 (None)
LEED (Potential):	26 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	28 (Certified)

Company Operations Facility (Large COF)

SPiRiT (Actual):	38 (Silver)
LEED (Estimated):	15 (None)
LEED (Potential):	25 (Certified)
LEED (Probable):	19 (None)
LEED (Adjusted):	28 (Certified)

General Project Information

1391 Processor Number:	047348
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$48,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	NC02,NC08
Scope/UOM:	0 PN
Design % Comp:	100%
CEFMS WI Code:	9H1685
SPiRiT Rating:	Gold – 50-74 Points
CEFMS Funded Amt:	\$48,274,466.34
Customer	
Status Code:	U – Construction Underway – On or Ahead of Schedule
Design Agent:	Savannah District
Construction Agent:	Savannah District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$49,240,501.04
CWE (HQ):	\$47,897,134.00
Constr % Complete:	28.3%

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Barracks



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
Y	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Barracks



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO ₂) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	10	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Company Operations Facility (Large COF)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
Y	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Company Operations Facility (Large COF)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	10	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Battalion Headquarters



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
Y	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Battalion Headquarters



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	10	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Company Operations Facility (Quad COF)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
Y	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Bastogne Dr Ph 2 (PN 047348)

Company Operations Facility (Quad COF)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

16	10	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 048441

Project Description: Barracks Complex – Donovan Street
 Installation: Fort Bragg
 Project Manager: Savage, Joseph M.
 Project Status: Approved

District SSD POC: Milton, Judith F.
 SPiRiT (Actual): 39 (Silver)
 LEED (Estimated): 22 (None)
 LEED (Potential): 34 (Silver)
 LEED (Probable): 25 (None)
 LEED (Adjusted): 32 (Certified)

General Project Information

1391 Processor Number: 048441
 MACOM/MAJCOM: US Army Forces Command
 Program Amount: \$15,500,000.00
 Authorized Year: 2005
 Program Year: 2005
 Tier: 1
 Congressional District: NC02,NC08
 Scope/UOM: 240 PN
 Design % Comp: 100%
 CEFMS WI Code: C94J24
 SPiRiT Rating
 CEFMS Funded Amt: \$16,223,207.33
 Customer
 Status Code: U – Construction Underway – On or Ahead of Schedule

Design Agent: Savannah District
 Construction Agent: Savannah District
 IMA Region: Southeast
 Congressional Add: N
 Supplemental Appropriations No:
 Authorized Phase: Construction Contract Award Authorized
 Type funds: 10 – Military Construction, Army
 Design By: AE – Architect-Engineer
 Delay: D0 – No Current Problems – All Phases
 CWE (District): \$16,802,053.92
 CWE (HQ): \$16,876,332.00
 Constr % Complete: 8.5%

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Donovan Street (PN 048441)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
0	1	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
3	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Bragg

Barracks Complex-Donovan Street (PN 048441)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 048575

Project Description: Vehicle Maintenance Shop
Installation: Fort Riley
Project Manager: Smith, Bryan A.
Project Status: Approved

District SSD POC: Hunt, John R
SPiRiT (Actual): 37 (Silver)
LEED (Estimated): 19 (None)
LEED (Potential): 31 (Certified)
LEED (Probable): 22 (None)
LEED (Adjusted): 29 (Certified)

General Project Information

1391 Processor Number: 048575
MACOM/MAJCOM: US Army Forces Command
Program Amount: \$15,500,000.00
Authorized Year: 2005
Program Year: 2005
Tier: 1
Congressional District: KS01
Scope/UOM: 68032 LS
Design % Comp: 0%
CEFMS WI Code: D3KF6C
SPiRiT Rating
CEFMS Funded Amt: \$15,492,858.70
Customer: Fort Riley
Status Code

Design Agent: Kansas City District
Construction Agent: Kansas City District
IMA Region: Northwest
Congressional Add: Y
Supplemental Appropriations No:
Authorized Phase: Construction Contract Award Authorized
Type funds: 10 – Military Construction, Army
Design By: AE – Architect-Engineer
Delay
CWE (District): \$14,616,447.25
CWE (HQ): Not Found
Constr % Complete: 0%

Project Checklist

LEED-NC® 2.0

Fort Riley

Vehicle Maintenance Shop PN 048575)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Riley

Vehicle Maintenance Shop PN 048575)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
0	1	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

19	12	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 048785

Project Description:	Barracks Complex Renewal – Phase 2E, SB
Installation:	Schofield Barracks
Project Manager:	Hirano, Ronald N.
Project Status:	Approved

District SSD POC:	Muraoka, Wayne Y.
SPiRiT (Actual):	51 (Gold)
LEED (Estimated):	25 (None)
LEED (Potential):	35 (Silver)
LEED (Probable):	28 (Certified)
LEED (Adjusted):	36 (Silver)

General Project Information

1391 Processor Number:	048785
MACOM/MAJCOM:	US Army Pacific
Program Amount:	\$48,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	2
Congressional District:	HI02
Scope/UOM 0:	PN
Design % Comp:	100%
CEFMS WI Code:	LGB836
SPiRiT Rating:	Gold – 50-74 Points
CEFMS Funded Amt:	\$48,717,600.55
Customer:	US Army Pacific
Status Code:	K – Final Design Complete – Construction Not Authorized
Design Agent:	Honolulu District
Construction Agent:	Honolulu District
IMA Region:	Pacific
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$48,000,000.00
CWE (HQ):	\$49,411,765.00
Constr % Complete:	0%

Comments

One SPiRiT checklist was created for the entire Barracks Complex Renewal project.

Project Checklist

LEED-NC® 2.0

Schofield Barracks

Barracks Complex Renewal - Phase 2E SB (PN 048785)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Schofield Barracks

Barracks Complex Renewal - Phase 2E SB (PN 048785)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

25	10	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 053321

Project Description:	Recruiting Brigade Operations Building
Installation:	Fort Gillem
Project Manager:	Morris, Timothy C.
Project Status:	Approved
District SSD POC:	Milton, Judith F.
SPiRiT (Actual):	57 (Gold)
LEED (Estimated):	31 (Certified)
LEED (Potential):	37 (Silver)
LEED (Probable):	35 (Silver)
LEED (Adjusted):	41 (Gold)
 General Project Information	
1391 Processor Number:	053321
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$5,800,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	GA03
Scope/UOM:	21186 SF
Design % Comp:	100%
CEFMS WI Code:	C825KF
SPiRiT Rating:	Gold – 50-74 Points
CEFMS Funded Amt:	\$6,306,865.82
Customer	
Status:	Code 8 – Construction Deferred or Suspended
Design Agent:	Savannah District
Construction Agent:	Savannah District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	DC – Design-Construct or Turnkey
Delay:	CM – Temporary Suspension of Work for Convenience of Government
CWE (District):	\$6,224,576.03
CWE (HQ):	\$6,468,823.00
Constr % Complete:	13.3%

Project Checklist

LEED-NC® 2.0

Fort Gillem

Recruiting Brigade Operations Building (PN 053321)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	1	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Gillem

Recruiting Brigade Operations Building (PN 053321)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

32	5	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 053608

Project Description: Barracks Complex – Hospital Area
 Installation: Fort Carson
 Project Manager: Wong, Stephen W.
 Project Status: Approved

District SSD POC: Gorup, Bernard R.
 SPiRiT (Actual): 55 (Gold)
 LEED (Estimated): 29 (Certified)
 LEED (Potential): 47 (Gold)
 LEED (Probable): 47 (Gold)
 LEED (Adjusted): 50 (Gold)

General Project Information

1391 Processor Number: 053608
 MACOM/MAJCOM: US Army Forces Command
 Program Amount: \$14,108,000.00
 Authorized Year: 2005
 Program Year: 2005
 Tier: 1
 Congressional District: CO05
 Scope/UOM: 128 PN
 Design % Comp: 0%
 CEFMS WI Code: GB83KK
 SPiRiT Rating
 CEFMS Funded Amt: \$13,866,229.01
 Customer: Army Forces Command (FORSCOM); Fort Carson

Status Code

Design Agent: Omaha District
 Construction Agent: Omaha District
 IMA Region: Northwest
 Congressional Add: N
 Supplemental Appropriations No:
 Authorized Phase: Construction Contract Award Authorized
 Type funds: 10 – Military Construction, Army
 Design By: HL – Hired Labor
 Delay
 CWE (District): \$14,359,600.00
 CWE (HQ): Not Found
 Constr % Complete: 22.8%

Comments

Barracks and Company Operations Facility.

SPiRiT assessment completed with an SDD consultant prior to the start of design for both buildings.

Project Checklist

LEED-NC® 2.0

Fort Carson

Barracks Complex - Hospital Area (PN 053608)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	1	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	1	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	1	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	1	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
3	?	N	Credit 1.1	Optimize Energy Performance	2
1	?	N	Credit 2.1	Renewable Energy	1
0	1	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Carson

Barracks Complex - Hospital Area (PN 053608)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	1	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	1	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	1	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	1	N	Credit 6	Rapidly Renewable Materials	1
0	1	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	1	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

29	18	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 055977

Project Description:	Barracks Complex
Installation:	Grafenwohr Post Germany
Project Manager:	Martinez, Stephen B.
Project Status:	Approved

District SSD POC:	Raney, Jeff P.
SPiRiT (Actual):	61 (Gold)
LEED (Estimated):	31 (Silver)
LEED (Potential):	39 (Gold)
LEED (Probable):	34 (Silver)
LEED (Adjusted):	37 (Silver)

General Project Information

1391 Processor Number:	055977
MACOM/MAJCOM:	US Army Europe and Seventh Army 16 Construction Agent Corps Europe Dist
Program Amount:	\$28,500,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	N/A
Scope/UOM:	0 PN
Design % Comp:	100%
CEFMS WI Code:	HC9361
SPiRiT Rating	
CEFMS Funded Amt:	\$19,151,556.42
Customer:	Army European Command (EUCOM)
Status Code	

Design Agent:	Corps Europe Dist
IMA Region:	Europe
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	ID – Indirect Design
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$25,315,125.00
CWE (HQ):	\$24,273,518.99
Constr %:	Complete

Comments

Barracks only

Project Checklist

LEED-NC® 2.0

Grafenwohr Post Germany
Barracks Complex (PN 055977)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
1	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
5	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Grafenwohr Post Germany
Barracks Complex (PN 055977)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

31	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 055979

Project Description:	Barracks Complex-Brigade
Installation:	Grafenwohr Post Germany
Project Manager:	Martinez, Stephen B.
Project Status:	Approved

District SSD POC:	Raney, Jeff P.
SPiRiT (Actual):	61 (Gold)
LEED (Estimated):	31 (Silver)
LEED (Potential):	39 (Gold)
LEED (Probable):	34 (Silver)
LEED (Adjusted):	37 (Silver)

General Project Information

1391 Processor Number:	055979
MACOM/MAJCOM:	US Army Europe and Seventh Army 16 Construction Agent Corps Europe Dist
Program Amount:	\$34,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	N/A
Scope/UOM:	10800 M2
Design % Comp:	100%
CEFMS WI Code:	9472D5
SPiRiT Rating	
CEFMS Funded Amt:	\$18,932,474.96
Customer:	Army European Command (EUCOM)
Status Code	

Design Agent:	Corps Europe Dist
IMA Region:	Europe
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	ID – Indirect Design
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$28,721,320.02
CWE (HQ):	\$24,258,090.72
Constr % Complete:	4.6%

Comments

Barracks only

Project Checklist

LEED-NC® 2.0

Grafenwohr Post Germany
Barracks Complex (PN 055979)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
1	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
5	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Grafenwohr Post Germany
Barracks Complex (PN 055979)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

31	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 056223

Project Description: Tactical Equipment Complex
Installation: Fort Stewart
Project Manager: Sauntry, Robert J.
Project Status: Approved

District SSD POC: Milton, Judith F.
SPiRiT (Actual): 40 (Silver)
LEED (Estimated): 17 (None)
LEED (Potential): 22 (None)
LEED (Probable): 20 (None)
LEED (Adjusted): 27 (Certified)

General Project Information

1391 Processor Number: 056223
MACOM/MAJCOM: US Army Forces Command
Program Amount: \$10,200,000.00
Authorized Year: 2005
Program Year: 2005
Tier: 2
Congressional District: GA01,GA12
Scope/UOM: 41000 SF
Design % Comp: 100%
CEFMS WI Code: 1HC834
SPiRiT Rating: Bronze – 25-34 Points
Funded Amt: \$11,565,471.02
Customer: Army Forces Command (FORSCOM)
Status Code: U – Construction Underway – On or Ahead
of Schedule
Design Agent: Savannah District
Construction Agent: Savannah District
IMA Region: Southeast
Congressional Add: N
Supplemental Appropriations No:
Authorized Phase: Construction Contract Award Authorized
Type funds: 10 – Military Construction, Army
Design By: HL – Hired Labor
Delay: D0 – No Current Problems – All Phases
CWE (District): \$11,577,521.00
CWE (HQ): \$11,577,521.00
Constr % Complete: 0.5%

Project Checklist

LEED-NC® 2.0

Fort Stewart

Tactical Equipment Complex (PN 056223)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Stewart

Tactical Equipment Complex (PN 056223)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
0	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points



Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 056486

Installation:	Fort Myer
Project Manager:	Renovalesalvarez, Norma I.
Project Status:	Approved
District SSD POC:	DeLaPena, Andrea
Project Description:	Myer, Barracks Complex – Sheridan Avenue
SPiRiT (Actual):	54 (Gold)
LEED (Estimated):	37 (Silver)
LEED (Potential):	43 (Gold)
LEED (Probable):	40 (Gold)
LEED (Adjusted):	47 (Gold)

Project Description:	Myer, Company Operations Facility
Project Status:	Approved
SPiRiT (Actual):	54 (Gold)
LEED (Estimated):	37 (Silver)
LEED (Potential):	43 (Gold)
LEED (Probable):	40 (Gold)
LEED (Adjusted):	47 (Gold)

General Project Information

1391 Processor Number:	056486
MACOM/MAJCOM:	US Army Military District of Wash
Program Amount:	\$49,526,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	2
Congressional District:	VA08
Scope/UOM:	480 PN
Design % Comp:	100%
CEFMS WI Code:	4LGB88
SPiRiT Rating	
CEFMS Funded Amt:	\$1,884,603.83
Customer:	Military District of Washington (MDW)
Status Code:	D – Concept and Final Design Authorized
Design Agent:	Baltimore District
Construction Agent:	Baltimore District
IMA Region:	Northeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Final Design
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$0.00
CWE (HQ):	\$51,962,700.00
Constr % Complete:	0%

Comments

Barracks only

Project Checklist

LEED-NC® 2.0

Fort Myer

MYER Barracks Complex-Sheridan Ave (PN 056486)
Barracks

Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Myer

MYER Barracks Complex-Sheridan Ave (PN 056486)

Barracks



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
1	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
1	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
1	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

37	6	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Checklist

LEED-NC® 2.0

Fort Myer

MYER Barracks Complex (PN 056486)

Company Operations Facility



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation , Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation , Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation , Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance , Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance , Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management , Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management , Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands , Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands , Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction , 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction , 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Myer

MYER Barracks Complex (PN 056486)

Company Operations Facility



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
1	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
1	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
1	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

37	6	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 057225

Project Description:	General Instruction Facility
Installation:	Fort Sam Houston
Project Manager:	Oblak, Jr., John S.
Project Status:	Approved

District SSD POC: Baggett, Jimmy D.	
SPiRiT (Actual):	50 (Gold)
LEED (Estimated):	24 (None)
LEED (Potential):	36 (Silver)
LEED (Probable):	27 (Certified)
LEED (Adjusted):	34 (Silver)

General Project Information

1391 Processor Number:	057225
MACOM/MAJCOM:	US Army Health Services Command 16 Construction Agent Fort Worth District
Program Amount:	\$11,400,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	1
Congressional District:	TX20
Scope/UOM:	47750 SF
Design % Comp:	100%
CEFMS WI Code:	50661D
SPiRiT Rating	
CEFMS Funded Amt:	\$1,163,998.75
Customer:	Fort Sam Houston
Status Code	

Design Agent:	Fort Worth District
IMA Region:	Southwest
Congressional Add:	Y
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10—Military Construction, Army
Design By:	HL—Hired Labor
Delay	
CWE (District):	\$11,278,886.00
CWE (HQ):	\$11,400,000.00
Constr % Complete:	0%

Project Checklist

LEED-NC® 2.0

Fort Sam Houston
General Instruction Facility (PN 057225)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Sam Houston

General Instruction Facility (PN 057225)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

24	12	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 057320

Project Description: Child Development Center, FS
 Installation: Fort Shafter
 Project Manager: Luke, Tammy R.
 Project Status: Approved

District SSD POC: Muraoka, Wayne Y.
 SPiRiT (Actual): 31 (Bronze)
 LEED (Estimated): 11 (None)
 LEED (Potential): 26 (Certified)
 LEED (Probable): 14 (None)
 LEED (Adjusted): 24 (None)

General Project Information

1391 Processor Number: 057320
 MACOM/MAJCOM: US Army Pacific
 Program Amount: \$940,000.00
 Authorized Year: 2005
 Program Year: 2004
 Tier: N/A
 Congressional District: HI01
 Scope/UOM: 0 SF
 Design % Comp: 100%
 CEFMS WI Code: 50HC99
 SPiRiT Rating
 CEFMS Funded Amt: \$1,094,203.00
 Customer: US Army Pacific
 Status Code: U – Construction Underway – On or Ahead of Schedule

Design Agent: Honolulu District
 Construction Agent: Honolulu District
 IMA Region: Region Pacific
 Congressional Add: N
 Supplemental Appropriations No:
 Authorized Phase: Construction Contract Award Authorized
 Type funds: 11 – Military Construction, Army – Minor Construction
 Design By: HL – Hired Labor
 Delay: D0 – No Current Problems – All Phases
 CWE (District): \$1,089,203.06
 CWE (HQ): \$1,132,142.00
 Constr % Complete: 32.9%

Project Checklist

LEED-NC® 2.0

Fort Shafter
Child Development Center (PN 057320)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
0	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Shafter

Child Development Center (PN 057320)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
0	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
0	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
1	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

11	15	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 057421

Project Description:	Vehicle Maintenance Facility – Increment 1, SB
Installation:	Schofield Barracks
Project Manager:	Oh, Lynette O.
Project Status:	Approved
District SSD POC:	Muraoka, Wayne Y.
SPiRiT (Actual):	30 (Bronze)
LEED (Estimated):	15 (None)
LEED (Potential):	30 (Certified)
LEED (Probable):	18 (None)
LEED (Adjusted):	27 (Certified)

General Project Information

1391 Processor Number:	057421
MACOM/MAJCOM:	US Army Pacific
Program Amount:	\$49,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	3
Congressional District:	HI02
Scope/UOM:	0 SF
Design % Comp:	100%
CEFMS WI Code:	2J6194
SPiRiT Rating:	Gold – 50-74 Points
CEFMS Funded Amt:	\$47,544,693.76
Customer:	US Army Pacific
Status Code:	S – Advertised – Contract Not Awarded
Design Agent:	Honolulu District
Construction Agent:	Honolulu District
IMA:	Region Pacific
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	10 – Military Construction, Army
Design By:	HL – Hired Labor
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$52,800,000.00
CWE (HQ):	\$54,352,942.00
Constr % Complete:	0%

Project Checklist

LEED-NC® 2.0

Schofield Barracks

Vehicle Maintenance Facility - Incr 1 SB (PN 057421)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	1	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
1	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
0	1	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

0	1	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Schofield Barracks

Vehicle Maintenance Facility - Incr 1 SB (PN 057421)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
0	1	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

15	15	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 057708

Project Description:	General Instruction Building
Installation:	Fort Drum
Project Manager:	Jimenez, Armando G.
Project Status:	Approved

District SSD POC:	Dannemann, Thomas R.
SPiRiT (Actual):	41 (Silver)
LEED (Estimated):	22 (None)
LEED (Potential):	30 (Certified)
LEED (Probable):	25 (None)
LEED (Adjusted):	31 (Certified)

General Project Information

1391 Processor Number:	057708
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$5,700,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	3
Congressional District:	NY24
Scope/UOM:	11264 SF
Design % Comp:	10%
CEFMS WI Code:	824LGF
SPiRiT Rating	
CEFMS Funded Amt:	\$1,269,139.50
Customer:	Fort Drum
Status Code:	A – No Phase Authorized/Functional Requirements Not Received

Design Agent:	New York District
Construction Agent:	New York District
IMA Region:	Northeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Final Design
Type funds:	10 – Military Construction, Army
Design By -	
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$7,600,000.00
CWE (HQ):	\$5,700,000.00
Constr % Complete:	0%

Project Checklist

LEED-NC® 2.0

Fort Drum

General Instruction Building (PN 057708)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
1	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
1	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Drum

General Instruction Building (PN 057708)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

22	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 057803

Project Description: Chapel
 Installation: Fort Stewart
 Project Manager: Hill, Steven A.
 Project Status: Approved

District SSD POC: Milton, Judith F.
 SPiRiT (Actual): 57 (Gold)
 LEED (Estimated): 31 (Certified)
 LEED (Potential): 34 (Silver)
 LEED (Probable): 34 (Silver)
 LEED (Adjusted): 38 (Silver)

General Project Information

1391 Processor Number: 057803
 MACOM/MAJCOM: US Army Forces Command
 Program Amount: \$9,500,000.00
 Authorized Year: 2005
 Program Year: 2005
 Tier: 1
 Congressional District: GA01
 Scope/UOM: 0 SF
 Design % Comp: 100%
 CEFMS WI Code: J4LF67
 SPiRiT Rating: Bronze – 25-34 Points
 CEFMS Funded Amt: \$10,501,816.20
 Customer: U.S. Army Forces Command
 Status Code: T – Contract Awarded – Construction Not Started

Design Agent: Savannah District
 Construction Agent: Savannah District
 IMA Region: Southeast
 Congressional Add: N
 Supplemental Appropriations No:
 Authorized Phase: Construction Contract Award Authorized
 Type funds: 10 – Military Construction, Army
 Design By: AE – Architect-Engineer
 Delay: D0 – No Current Problems – All Phases
 CWE (District): \$10,415,280.00
 CWE (HQ): \$10,825,553.00
 Constr % Complete: 0%

Project Checklist

LEED-NC® 2.0

Fort Stewart
Chapel (PN 057803)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	?	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
0	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
3	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Stewart

Chapel (PN 057803)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
1	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

31	3	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 058047

Project Description: FTR166 Barracks, Phase 5
 Installation: Fort Richardson
 Project Manager: Burg, Barbara M.
 Project Status: Approved

District SSD POC: Shaffer, Rebecca J.
 SPiRiT (Actual): 53 (Gold)
 LEED (Estimated): 28 (Certified)
 LEED (Potential): 34 (Silver)
 LEED (Probable): 31 (Certified)
 LEED (Adjusted): 40 (Gold)

General Project Information

1391 Processor Number: 058047
 MACOM/MAJCOM: US Army Pacific
 Program Amount: \$7,600,000.00
 Authorized Year: 2005
 Program Year: 2005
 Tier: 1
 Congressional District: AK00
 Scope/UOM: 60 PN
 Design % Comp: 100%
 CEFMS WI Code: 1D5083
 SPiRiT Rating: Silver – 35-49 Points
 CEFMS Funded Amt: \$7,921,855.65
 Customer: Fort Richardson
 Status Code: U – Construction Underway – On or Ahead of Schedule

Design Agent: Alaska District
 Construction Agent: Alaska District
 IMA Region: Pacific
 Congressional Add: N
 Supplemental Appropriations No:
 Authorized Phase: Construction Contract Award Authorized
 Type funds: 10 – Military Construction, Army
 Design By: HL – Hired Labor
 Delay: D0 – No Current Problems – All Phases
 CWE (District): \$8,074,303.05
 CWE (HQ): \$8,133,453.00
 Constr % Complete

Comments

Barracks only

Project Checklist

LEED-NC® 2.0

Fort Richardson

FTR166 Barracks PHASE 5 (PN 058047)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
0	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
1	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
1	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Richardson

FTR166 Barracks PHASE 5 (PN 058047)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
0	1	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
1	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

28	6	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 058604

Project Description:	Replace Army Family Housing – Miles Manor
Installation:	Fort Huachuca
Project Manager:	Mehaffie, Nancy S.
Project Status:	Approved
District SSD POC:	None
SPiRiT (Actual):	40 (Silver)
LEED (Estimated):	15 (None)
LEED (Potential):	26 (Certified)
LEED (Probable):	18 (None)
LEED (Adjusted):	26 (Certified)

General Project Information

1391 Processor Number:	058604
MACOM/MAJCOM:	US Army TRADOC
Program Amount:	\$27,000,000.00
Authorized Year:	2004
Program Year:	2004
Congressional District:	AZ08
Scope/UOM:	160 FA
Design % Comp:	0%
CEFMS WI Code:	LGF72J
SPiRiT Rating	
CEFMS Funded Amt:	\$125,700.44
Customer:	Army Training & Doctrine Command (TRADOC)
Status Code:	A – No Phase Authorized/Functional Requirements Not Received
Design Agent:	Los Angeles District
Construction Agent:	Los Angeles District
IMA Region:	Southwest
Congressional Add:	N
Supplemental Appropriations No:	06 Tier
Authorized Phase:	Construction Contract Award Authorized
Type funds:	40 – Family Housing, New Construction
Design By:	DC – Design-Construct or Turnkey
Delay	
CWE (District):	\$28,086,359.00
CWE (HQ):	Not Found

Project Checklist

LEED-NC® 2.0

Fort Huachuca

Army Family Housing - Miles Manor (PN 058604)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
0	1	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
0	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	?	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
1	?	N	Credit 6.2	Stormwater Management, Treatment	1
0	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
0	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
0	1	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
0	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Huachuca

Army Family Housing - Miles Manor (PN 058604)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
0	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
0	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	1	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
0	1	N	Credit 2	Increase Ventilation Effectiveness	1
0	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
0	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	?	N	Credit 4.3	Low-Emitting Materials, Carpet	1
0	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
0	1	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
0	1	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
0	1	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

15	11	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 058677

Project Description:	Whole Neighborhood Renewal
Installation:	Fort Knox
Project Manager:	Boyd, Russell E.
Project Status:	Approved
District SSD POC:	Pohl, Doug
SPiRiT (Actual):	54 (Gold)
LEED (Estimated):	31 (Certified)
LEED (Potential):	39 (Gold)
LEED (Probable):	39 (Gold)
LEED (Adjusted):	45 (Gold)

General Project Information

1391 Processor Number:	058677
MACOM/MAJCOM:	US Army TRADOC
Program Amount:	\$41,000,000.00
Authorized Year:	2004
Program Year:	2004
Tier:	2
Congressional District:	KY02,KY03
Scope/UOM:	178 FA
Design % Comp:	100%
CEFMS WI Code:	72JD4L
SPiRiT Rating 25 CWE (HQ):	Not Found
CEFMS Funded Amt:	\$0.00
Customer:	Army Training & Doctrine Command (TRADOC)
Status Code:	R – Construction Contractor Performing Design Services
Design Agent:	Louisville District
Construction Agent:	Louisville District
IMA Region:	Southeast
Congressional Add:	N
Supplemental Appropriations No:	
Authorized Phase:	Construction Contract Award Authorized
Type funds:	40 – Family Housing, New Construction
Design By:	DC – Design-Construct or Turnkey
Delay:	D0 – No Current Problems – All Phases
CWE (District):	\$1,627,134.00

Comments**LEED Evaluation:**

SS PR 1 – LEED requires that a project follow local erosion and sedimentation control standards or the referenced EPA standard. Army projects must describe how they meet or exceed the referenced EPA standard by adherence to Army Regulation (AR) 200-1 Environmental Protection and Enhancement, Department of the Army Pamphlet (DA Pam) 200-1 Environmental Protection and Enhancement, Installation Storm Water Pollution Prevention Plans (SWPPP) which regulate erosion and sedimentation Control for construction projects.

SS 1 – By definition, no “prime farmland” in Army cantonment area. Plan must indicate mitigation of wetland and T&E species impacts. “Golf Course” is a recreational facility under Army Land Use policy, and is not defined as “park land.”

SS 3 – LEED requires that a project remediate sites contaminated according to “EPA Brown-fields” definitions to qualify for this point. Remediation of contaminated sites on Army installations is accomplished independently and often years in advance of a military construction project. For an Army project to qualify for this credit, project documentation will have to present proof of the site’s previous contamination and describing the remediation performed.

SS 4.2 – Bicycle racks and showers are no longer a requirement for housing under the draft LEED-H, and will not be a factor.

SS 4.3 – Accommodation of / and access to alternative fuel vehicles is no longer a requirement for housing under the draft LEED-H, and will not be a factor.

EA PR1 – Commissioning of Army facilities is mandatory, Army facilities are commissioned according to guidance contained in ER 1110-345-723, Systems Commissioning Procedures, and specified in part under Unified Facilities Guide Specifications (UFGS) 15995A Commissioning of HVAC Systems.

EA PR2 – These Army facilities were designed to TI 800-01 which in turn references requirements of ASHRAE 90.1-1999.

Current guidance for Army facilities is to design to current ASHRAE Standards, 90.1 2004.”

MR PR1 – LEED-H (Current Draft) has no requirements of occupant Storage & Collection of Recyclables.

IEQ PR2 – The Army has granted a policy waiver under SPiRiT for smoking, allowing it to occur in private residences and housing rooms. Smoke , however, it to be treated in such a manner so that it does not enter public spaces. In addition, there is no longer an ETS requirement under the draft LEED-H, and it will not be a factor.

IEQ 5 – LEED-H (Current Draft) has modified requirements for Indoor Chemical & Pollutant Source Control. The credit is now “Contaminant Control.” It no longer requires special means of separating occupants from chemical use areas and special plumbing for appropriate disposal of liquid waste. It does require Contaminant Control through sealing of ducts during construction OR cleaning of HVAC ducts and coils before occupancy. It also addresses installation of permanent walk-off mats at each entry OR installation central vacuum systems OR third party contaminant testing prior to occupancy.

IEQ 6.1 – LEED-H (Current Draft) has no requirements for occupant “Controllability of Systems.”

IEQ 6.2 – LEED-H (Current Draft) has no requirements for occupant “Controllability of Systems.”

IEQ 7.1 – The LEED-H (Current Draft) focus is on “Humidity Control,” requiring analysis of moisture loads, the need for a central humidity control system, with installation of a humidity control system only where needed to maintain humidity ratios per ASHRAE Standard 55-2004.

IEQ 7.2 – The LEED-H (Current Draft) focus is on “Humidity Control,” requiring analysis of moisture loads, the need for a central humidity control system, with installation of a humidity control system only where needed to maintain humidity ratios per ASHRAE Standard 55-2004.

Project Checklist

LEED-NC® 2.0

Ft. Knox

Family Housing (PN 058677)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
1	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
1	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	?	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y		N	Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1	Optimize Energy Performance	2
0	?	N	Credit 2	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
0	1	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Ft. Knox

Family Housing (PN 058677)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2	Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1	Construction Waste Management, Divert 50%	1
0	?	N	Credit 2.2	Construction Waste Management, Divert 75%	1
0	?	N	Credit 3.1	Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2	Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1	Recycled Content, Specify 25%	1
1	?	N	Credit 4.2	Recycled Content, Specify 50%	1
1	?	N	Credit 5.1	Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2	Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6	Rapidly Renewable Materials	1
0	1	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
0	?	N	Credit 1	Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2	Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1	Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2	Low-Emitting Materials, Paints	1
0	1	N	Credit 4.3	Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4	Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	?	N	Credit 6.1	Controllability of Systems, Perimeter	1
1	?	N	Credit 6.2	Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-1992	1
0	1	N	Credit 7.2	Thermal Comfort, Permanent Monitoring System	1
1	?	N	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
1	?	N	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

1	?	N	Credit 1.1	Innovation in Design	1
0	?	N	Credit 1.2	Innovation in Design	1
0	?	N	Credit 1.3	Innovation in Design	1
0	?	N	Credit 1.4	Innovation in Design	1
1	?	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

31	8	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Project Number: 059447

Project Description:	Barracks – Mobilization & Training
Installation:	Fort Riley
Project Manager:	Smith, Bryan A.
Project Status:	Approved

District SSD POC:	Hunt, John R.
SPiRiT (Actual):	50 (Gold)
LEED (Estimated):	25 (None)
LEED (Potential):	34 (Silver)
LEED (Probable):	28 (Certified)
LEED (Adjusted):	35 (Silver)

General Project Information

1391 Processor Number:	059447
MACOM/MAJCOM:	US Army Forces Command
Program Amount:	\$22,000,000.00
Authorized Year:	2005
Program Year:	2005
Tier:	2 20
Authorized Phase:	Construction Contract Award Authorized
Congressional District:	KS01
Scope/UOM:	235108 SF
Design % Comp:	0%
CEFMS WI Code:	8JGC38
SPiRiT Rating	
CEFMS Funded Amt:	\$20,865,737.00
Customer:	Fort Riley
Status Code	
Design Agent:	Kansas City District
Construction Agent:	Kansas City District
IMA Region:	Northwest
Congressional Add:	N
Supplemental Appropriations:	Yes
Type funds:	10 – Military Construction, Army
Design By:	AE – Architect-Engineer
Delay	
CWE (District):	\$20,193,632.94
CWE (HQ):	Not Found
Constr % Complete	

Comments

Barracks only

Project Checklist

LEED-NC® 2.0

Fort Riley

Barracks - Mobilization & Training (PN 059447)



Sustainable Sites

14 Possible Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
0	?	N	Credit 1	Site Selection	1
1	?	N	Credit 2	Urban Redevelopment	1
0	?	N	Credit 3	Brownfield Redevelopment	1
0	?	N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
0	?	N	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
0	?	N	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations	1
0	1	N	Credit 4.4	Alternative Transportation, Parking Capacity	1
0	1	N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	?	N	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
0	1	N	Credit 6.1	Stormwater Management, Rate or Quantity	1
0	1	N	Credit 6.2	Stormwater Management, Treatment	1
1	?	N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
0	?	N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
1	?	N	Credit 8	Light Pollution Reduction	1

Water Efficiency

5 Possible Points

1	?	N	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	?	N	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
0	?	N	Credit 2	Innovative Wastewater Technologies	1
1	?	N	Credit 3.1	Water Use Reduction, 20% Reduction	1
0	?	N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
0	?	N	Credit 1.1	Optimize Energy Performance	2
0	?	N	Credit 2.1	Renewable Energy	1
1	?	N	Credit 3	Additional Commissioning	1
0	1	N	Credit 4	Ozone Depletion	1
1	?	N	Credit 5	Measurement & Verification	1
0	?	N	Credit 6	Green Power	1

Project Checklist

LEED-NC® 2.0

Fort Riley

Barracks - Mobilization & Training (PN 059447)



Materials & Resources

13 Possible Points

Y		Prereq 1	Storage & Collection of Recyclables	Required
0	?	N	Credit 1.1 Building Reuse, Maintain 75% of Existing Shell	1
0	?	N	Credit 1.2 Building Reuse, Maintain 100% of Shell	1
0	?	N	Credit 1.3 Building Reuse, Maintain 100% Shell & 50% Non-Shell	1
1	?	N	Credit 2.1 Construction Waste Management, Divert 50%	1
1	?	N	Credit 2.2 Construction Waste Management, Divert 75%	1
1	?	N	Credit 3.1 Resource Reuse, Specify 5%	1
0	?	N	Credit 3.2 Resource Reuse, Specify 10%	1
1	?	N	Credit 4.1 Recycled Content, Specify 25%	1
0	?	N	Credit 4.2 Recycled Content, Specify 50%	1
1	?	N	Credit 5.1 Local/Regional Materials, 20% Manufactured Locally	1
1	?	N	Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally	1
0	?	N	Credit 6 Rapidly Renewable Materials	1
1	?	N	Credit 7 Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y		Prereq 1	Minimum IAQ Performance	Required
Y		Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1	?	N	Credit 1 Carbon Dioxide (CO2) Monitoring	1
1	?	N	Credit 2 Increase Ventilation Effectiveness	1
1	?	N	Credit 3.1 Construction IAQ Management Plan, During Construction	1
1	?	N	Credit 3.2 Construction IAQ Management Plan, Before Occupancy	1
1	?	N	Credit 4.1 Low-Emitting Materials, Adhesives & Sealants	1
1	?	N	Credit 4.2 Low-Emitting Materials, Paints	1
0	?	N	Credit 4.3 Low-Emitting Materials, Carpet	1
1	?	N	Credit 4.4 Low-Emitting Materials, Composite Wood	1
1	?	N	Credit 5 Indoor Chemical & Pollutant Source Control	1
0	1	N	Credit 6.1 Controllability of Systems, Perimeter	1
0	1	N	Credit 6.2 Controllability of Systems, Non-Perimeter	1
1	?	N	Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992	1
0	?	N	Credit 7.2 Thermal Comfort, Permanent Monitoring System	1
0	?	N	Credit 8.1 Daylight & Views, Daylight 75% of Spaces	1
0	?	N	Credit 8.2 Daylight & Views, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

0	1	N	Credit 1.1 Innovation in Design	1
0	?	N	Credit 1.2 Innovation in Design	1
0	?	N	Credit 1.3 Innovation in Design	1
0	?	N	Credit 1.4 Innovation in Design	1
0	1	N	Credit 2 LEED™ Accredited Professional	1

Project Totals

69 Possible Points

25	9	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

Appendix B: Transition Functional Review Groups

LEED®-NC (New Construction)

Barry Bartley, IMA, 703-602-3389, barry.bartley@hqda.army.mil

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Gary Skusek, DAIM-FDC, 703-604-2425, gary.skusek@hqda.army.mil

LEED®-H (Housing)

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David (Dave) A. Slenkamp, RCI/ASA(I&E), 703-697-8434,
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LEED®-EB (Existing Buildings)

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Vincent (Vince) Kam, DAIM-FDF-FE, 703-602-4591, vincent.kam.w@hqda.army.mil

John A. Scharl, DAIM-FDF-FE, 703-601-0700, john.scharl@hqda.army.mil

Appendix C: SPiRiT LEED Comparison

Comparative evaluation of SPiRiT 1.4.1 and LEED®-NC 2.2 2nd Public Comment Draft, Issued June 2005. The LEED®-NC 2.2 2nd Public Comment Draft was distributed without “Submittals.” Although the submittals are expected to change substantially with the final release of LEED®-NC 2.2, the following version of LEED®-NC includes “Submittals” from the 1st Public Comment Draft issued December 2004 for completeness. The final draft is expected to be released in November of 2005.

With the exception of “Potential Innovation in Design Credits” listed under LEED ID Credit 1, “Innovation in Design,” the text of the LEED®-NC 2.2 2nd Public Comment Draft is presented in the format of the LEED publication credit by credit, followed by commentary in a text box.

LEED®-NC 2.2 Credit	
SS Prerequisite 1:	Construction Activity Pollution Prevention
SS Credit 1:	Site Selection
SS Credit 2:	Development Density & Community Connectivity
SS Credit 3:	Brownfield Redevelopment
SS Credit 4.1:	Alternative Transportation- Public Transportation Access
SS Credit 4.2:	Alternative Transportation – Bicycle Storage & Changing Rooms
SS Credit 4.3:	Alternative Transportation – Low Emitting and Fuel Efficient Vehicles
SS Credit 4.4:	Alternative Transportation- Parking Capacity
SS Credit 5.1:	Site Development – Protect or Restore Habitat
SS Credit 5.2:	Site Development – Maximize Open Space
SS Credit 6.1:	Stormwater Design – Quantity Control
SS Credit 6.2:	Stormwater Design—Quality Control
SS Credit 7.1:	Heat Island Effect – Non-Roof
SS Credit 7.2:	Heat Islands Effect – Roof
SS Credit 8:	Light Pollution Reduction
WE Credit 1.1:	Water Efficient Landscaping – Reduce by 50%
WE Credit 1.2:	Water Efficient Landscaping – No Potable Water Use or No Irrigation
WE Credit 2:	Innovative Wastewater Technologies
WE Credit 3.1:	Water Use Reduction- 20% Reduction
WE Credit 3.2:	Water Use Reduction- 30% Reduction
EA Prerequisite 1:	Fundamental Commissioning of the Building Energy Systems
EA Prerequisite 2:	Minimum Energy Performance
EA Prerequisite 3:	Fundamental Refrigerant Management
EA Credit 1:	Optimize Energy Performance
EA Credit 2:	On Site Renewable Energy
EA Credit 3:	Enhanced Commissioning
EA Credit 4:	Enhanced Refrigerant Management
EA Credit 5:	Measurement and Verification
EA Credit 6:	Green Power
MR Prerequisite 1:	Storage & Collection of Recyclables
MR Credit 1.1:	Building Reuse – Maintain 75% of Existing Walls, Floors, and Roof
MR Credit 1.2:	Building Reuse – Maintain 95% of Existing Walls, Floors, and Roof
MR Credit 1.3:	Building Reuse – Maintain 50% of Interior Non-Structural Elements
MR Credit 2.1:	Construction Waste Management – Divert 50% From Disposal
MR Credit 2.2:	Construction Waste Management – Divert 75% From Disposal
MR Credit 3.1:	Materials Reuse – 5%
MR Credit 3.2:	Materials Reuse – 10%
MR Credit 4.1:	Recycled Content – 10% (post-consumer + ½ pre-consumer)
MR Credit 4.2:	Recycled Content – 20% (post-consumer + ½ pre-consumer)
MR Credit 5.1:	Regional Materials – 10% extracted, processed and manufactured regionally
MR Credit 5.2:	Regional Materials – 20% extracted, processed and manufactured regionally
MR Credit 6:	Rapidly Renewable Materials
MR Credit 7:	Certified Wood
EQ Prerequisite 1:	Minimum IAQ Performance
EQ Prerequisite 2:	Environmental Tobacco Smoke (ETS) Control
EQ Credit 1:	Outdoor Air Delivery Monitoring
EQ Credit 2:	Increased Ventilation
EQ Credit 3.1:	Construction IAQ Management Plan – During Construction
EQ Credit 3.2:	Construction IAQ Management Plan – Before Occupancy
EQ Credit 4.1:	Low-Emitting Materials – Adhesives & Sealants
EQ Credit 4.2:	Low-Emitting Materials – Paints and Coatings
EQ Credit 4.3:	Low-Emitting Materials – Carpet Systems
EQ Credit 4.4:	Low-Emitting Materials – Composite Wood and Agrifiber Products
EQ Credit 5:	Indoor Chemical & Pollutant Source Control
EQ Credit 6.1:	Controllability of Systems – Lighting
EQ Credit 6.2:	Controllability of Systems – Thermal Comfort
EQ Credit 7.1:	Thermal Comfort – Compliance
EQ Credit 7.2:	Thermal Comfort – Validation
EQ Credit 8.1:	Daylight and Views – Daylight 75% of Spaces
EQ Credit 8.2:	Daylight and Views – Views for 90% of Spaces
ID Credit 1:	Innovation in Design
ID Credit 2:	LEED Accredited Professional

Project Checklist

LEED-NC® 2.2 (Pilot Draft, October 2005)



Sustainable Sites

14 Possible Points

Y		Prereq 1	Construction Activity Pollution Prevention	Required
Y	?	N	Credit 1 Site Selection	1
Y	?	N	Credit 2 Development Density & Community Connectivity	1
Y	?	N	Credit 3 Brownfield Redevelopment	1
Y	?	N	Credit 4.1 Alternative Transportation , Public Transportation Access	1
Y	?	N	Credit 4.2 Alternative Transportation , Bicycle Storage & Changing Rooms	1
Y	?	N	Credit 4.3 Alternative Transportation , Low Emitting & Fuel Efficient Vehicles	1
Y	?	N	Credit 4.4 Alternative Transportation , Parking Capacity	1
Y	?	N	Credit 5.1 Site Development , Protect or Restore Habitat	1
Y	?	N	Credit 5.2 Site Development , Maximize Open Space	1
Y	?	N	Credit 6.1 Stormwater Design , Quantity Control	1
Y	?	N	Credit 6.2 Stormwater Design , Quality Control	1
Y	?	N	Credit 7.1 Heat Island Effect , Non-Roof	1
Y	?	N	Credit 7.2 Heat Island Effect , Roof	1
Y	?	N	Credit 8 Light Pollution Reduction	1

Water Efficiency

5 Possible Points

Y	?	N	Credit 1.1 Water Efficient Landscaping , Reduce by 50%	1
Y	?	N	Credit 1.2 Water Efficient Landscaping , No Potable Use or No Irrigation	1
Y	?	N	Credit 2 Innovative Wastewater Technologies	1
Y	?	N	Credit 3.1 Water Use Reduction , 20% Reduction	1
Y	?	N	Credit 3.2 Water Use Reduction , 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y		Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required
Y		Prereq 2	Minimum Energy Performance	Required
Y		Prereq 3	Fundamental Refrigerant Management	Required
Y	?	N	Credit 1 Optimize Energy Performance	1-10
Y	?	N	Credit 2 On Site Renewable Energy	1-3
Y	?	N	Credit 3 Enhanced Commissioning	1
Y	?	N	Credit 4 Enhanced Refrigerant Management	1
Y	?	N	Credit 5 Measurement & Verification	1
Y	?	N	Credit 6 Green Power	1

Project Checklist

LEED-NC® 2.2 (Pilot Draft, October 2005)



Materials & Resources

13 Possible Points

Y			Prereq 1	Storage & Collection of Recyclables	Required
Y	?	N	Credit 1.1	Building Reuse , Maintain 75% of Existing Walls, Floors & Roof	1
Y	?	N	Credit 1.2	Building Reuse , Maintain 95% of Existing Walls, Floors & Roof	1
Y	?	N	Credit 1.3	Building Reuse , 50% of Interior Non-Structural Elements	1
Y	?	N	Credit 2.1	Construction Waste Management , Divert 50% from Disposal	1
Y	?	N	Credit 2.2	Construction Waste Management , Divert 75% from Disposal	1
Y	?	N	Credit 3.1	Materials Reuse , 5%	1
Y	?	N	Credit 3.2	Materials Reuse , 10%	1
Y	?	N	Credit 4.1	Recycled Content , 10% (post-consumer + ½ pre-consumer)	1
Y	?	N	Credit 4.2	Recycled Content , 20% (post-consumer + ½ pre-consumer)	1
Y	?	N	Credit 5.1	Regional Materials , 10% Extracted, Processed & Manufactured Regionally	1
Y	?	N	Credit 5.2	Regional Materials , 20% Extracted, Processed & Manufactured Regionally	1
Y	?	N	Credit 6	Rapidly Renewable Materials	1
Y	?	N	Credit 7	Certified Wood	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Y	?	N	Credit 1	Outdoor Air Delivery Monitoring	1
Y	?	N	Credit 2	Increased Ventilation	1
Y	?	N	Credit 3.1	Construction IAQ Management Plan , During Construction	1
Y	?	N	Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1
Y	?	N	Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1
Y	?	N	Credit 4.2	Low-Emitting Materials , Paints & Coatings	1
Y	?	N	Credit 4.3	Low-Emitting Materials , Carpet Systems	1
Y	?	N	Credit 4.4	Low-Emitting Materials , Composite Wood & Agrifiber Products	1
Y	?	N	Credit 5	Indoor Chemical & Pollutant Source Control	1
Y	?	N	Credit 6.1	Controllability of Systems , Lighting	1
Y	?	N	Credit 6.2	Controllability of Systems , Thermal Comfort	1
Y	?	N	Credit 7.1	Thermal Comfort , Compliance	1
Y	?	N	Credit 7.2	Thermal Comfort , Validation	1
Y	?	N	Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1
Y	?	N	Credit 8.2	Daylight & Views , Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

Y	?	N	Credit 1.1	Innovation in Design	1
Y	?	N	Credit 1.2	Innovation in Design	1
Y	?	N	Credit 1.3	Innovation in Design	1
Y	?	N	Credit 1.4	Innovation in Design	1
Y	?	N	Credit 2	LEED™ Accredited Professional	1

Project Totals

69 Possible Points

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

LEED-NC® 2.2

(2nd Public Comment Draft, June 2005)

**Army LEED NC 2.2 Army Required & Target Credits**

Sustainable Sites			Materials & Resources		
9 Pts			4		
Prereq 1	Construction Activity Pollution Prevention	Required	Prereq 1	Storage & Collection of Recyclables	Re
Credit 1	Site Selection	1	Credit 1.1	Building Reuse , Maintain 75% of Existing Walls, Floors & Roof	
Credit 2	Development Density & Community Connectivity	1	Credit 1.2	Building Reuse , Maintain 95% of Existing Walls, Floors & Roof	
Credit 3	Brownfield Redevelopment	N	Credit 1.3	Building Reuse , 50% of Interior Non-Structural Elements	
Credit 4.1	Alternative Transportation , Public Transportation Access	?	Credit 2.1	Construction Waste Management , Divert 50% from Disposal	
Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1	Credit 2.2	Construction Waste Management , Divert 75% from Disposal	
Credit 4.3	Alternative Transportation , Low Emitting & Fuel Efficient Vehicles	N	Credit 3.1	Materials Reuse , 5%	
Credit 4.4	Alternative Transportation , Parking Capacity	1	Credit 3.2	Materials Reuse , 10%	
Credit 5.1	Site Development , Protect or Restore Habitat	1	Credit 4.1	Recycled Content , 10% (post-consumer + ½ pre-consumer)	
Credit 5.2	Site Development , Maximize Open Space	1	Credit 4.2	Recycled Content , 20% (post-consumer + ½ pre-consumer)	
Credit 6.1	Stormwater Design , Quantity Control	1	Credit 5.1	Regional Materials , 10% Extracted, Processed & Manufactured Regionally	
Credit 6.2	Stormwater Design , Quality Control	?	Credit 5.2	Regional Materials , 20% Extracted, Processed & Manufactured Regionally	
Credit 7.1	Heat Island Effect , Non-Roof	1	Credit 6	Rapidly Renewable Materials	
Credit 7.2	Heat Island Effect , Roof	?	Credit 7	Certified Wood	
Credit 8	Light Pollution Reduction	1			
Water Efficiency			Indoor Environmental Quality		
3 Pts			12		
Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1	Prereq 1	Minimum IAQ Performance	Re
Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Re
Credit 2	Innovative Wastewater Technologies	N	Credit 1	Outdoor Air Delivery Monitoring	
Credit 3.1	Water Use Reduction , 20% Reduction	1	Credit 2	Increased Ventilation	
Credit 3.2	Water Use Reduction , 30% Reduction	?	Credit 3.1	Construction IAQ Management Plan , During Construction	
			Credit 3.2	Construction IAQ Management Plan , Before Occupancy	
			Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	
			Credit 4.2	Low-Emitting Materials , Paints & Coatings	
			Credit 4.3	Low-Emitting Materials , Carpet Systems	
			Credit 4.4	Low-Emitting Materials , Composite Wood & Agrifiber Products	
			Credit 5	Indoor Chemical & Pollutant Source Control	
			Credit 6.1	Controllability of Systems , Lighting	
			Credit 6.2	Controllability of Systems , Thermal Comfort	
			Credit 7.1	Thermal Comfort , Compliance	
			Credit 7.2	Thermal Comfort , Validation	
			Credit 8.1	Daylight & Views , Daylight 75% of Spaces	
			Credit 8.2	Daylight & Views , Views for 90% of Spaces	
Energy & Atmosphere			Innovation & Design Process		
9 Pts			2		
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required	Credit 1.1	Innovation in Design (Charrette Process)	
Prereq 2	Minimum Energy Performance	Required	Credit 1.2	Innovation in Design	
Prereq 3	Fundamental Refrigerant Management	Required	Credit 1.3	Innovation in Design	
Credit 1	Optimize Energy Performance (Target 30% energy reduction over ASHRAE 90.1 -2004)	6	Credit 1.4	Innovation in Design	
Credit 2	On Site Renewable Energy	N		LEED™ Accredited Professional	
Credit 3	Enhanced Commissioning	1			
Credit 4	Enhanced Refrigerant Management (Yes 100% projects)	1			
Credit 5	Measurement & Verification	1			
Credit 6	Green Power	N			
KEY					
	Target Credits				
	Credits reqd by Federal, DOD or Army Policy				

Project Total Army Req'd & Target Credits

39

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 p

Sustainable Sites				
LEED®-NC 2.2 Credit	Points	Recommendation	Special Implementing Language	Supplemental Guidance
SS Prerequisite 1: Construction Activity Pollution Prevention	Required	Accept	No	Optional
SS Credit 1: Site Selection	1 Point	Accept	Yes	Optional
SS Credit 2: Development Density & Community Connectivity	1 Point	Accept	Yes	Optional
SS Credit 3: Brownfield Redevelopment	1 Point	Accept	Yes	Yes
SS Credit 4.1: Alternative Transportation- Public Transportation Access	1 Point	Accept	Yes	No
SS Credit 4.2: Alternative Transportation – Bicycle Storage & Changing Rooms	1 Point	Accept	No	No
SS Credit 4.3: Alternative Transportation – Low Emitting and Fuel Efficient Vehicles	1 Point	Accept	No	Yes
SS Credit 4.4: Alternative Transportation- Parking Capacity	1 Point	Accept	No	Yes
SS Credit 5.1: Site Development – Protect or Restore Habitat	1 Point	Accept	No	Optional
SS Credit 5.2: Site Development – Maximize Open Space	1 Point	Accept	No	Yes
SS Credit 6.1: Stormwater Design – Quantity Control	1 Point	Accept	No	No
SS Credit 6.2: Stormwater Design— Quality Control	1 Point	Accept	No	No
SS Credit 7.1: Heat Island Effect – Non-Roof	1 Point	Accept	No	No
SS Credit 7.2: Heat Islands Effect – Roof	1 Point	Accept	No	No
SS Credit 8: Light Pollution Reduction	1 Point	Accept	Yes	Yes

SS Prerequisite 1: Construction Activity Pollution Prevention Required**Intent**

Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

Requirements

Implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project. The ESC Plan shall conform to the construction activities requirements listed in Phase I and Phase II of the National Pollutant Discharge Elimination System (NPDES) program, OR local erosion and sedimentation control standards and codes, whichever is more stringent. The plan shall meet the following objectives:

- Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- Prevent sedimentation of storm sewer or receiving streams.
- Prevent polluting the air with dust and particulate matter.

Submittals

- Provide the LEED®-NC Letter Template, signed by the civil engineer or responsible party, declaring whether the project follows local erosion and sedimentation control standards or the referenced EPA standard. Provide a brief list of the measures implemented. If local standards and codes are followed, describe how they meet or exceed the referenced EPA standard.

Potential Technologies & Strategies

Create an Erosion and Sedimentation Control Plan during the design phase of the project. Consider employing strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps and sediment basins. Information on the requirements of Phase I and II of the NPDES program can be found at: <http://cfpub.epa.gov/npdes/stormwater/swphases.cfm>

SS Prerequisite 1: Construction Activity Pollution Prevention**Required****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Implementation Guidance.

Special Implementation Language None**Applications Guidance**

Optional—General guidance is already contained in Uniform Facility Criteria (UFC) and Army Installation Design Standards (IDS), however, if additional guidance is desired, it may be included in the IDS, DA Standard Designs, the Installation Design Guide (IDG) or the Installation SWPPP.

Standard MILCON Project Documentation Requirements

Standard MILCON project documentation describing how projects executed in accordance with Army Regulation (AR) 200-1 Environmental Protection and Enhancement, Department of the Army Pamphlet (DA Pam) 200-1 Environmental Protection and Enhancement, and Army Installation Storm Water Pollution Prevention Plan (SWPPP) requirements, meet or exceed the referenced EPA standards should be developed for application to all MILCON projects.

Suggested Project Documentation

Specifications: Uniform Facility Guide specification (UFGS) 01500N Temporary Facilities and Controls; 02231 Clearing and Grubbing; and 02300 Earthwork.

Drawings: Highlight erosion and sedimentation controls on the appropriate site plan sheet such as the Site Grading Plan, Site Erosion and Storm Drainage Control Plan, Site Pavement Plan, Site / Landscape Demolition Plan, Storm Water Pollution Prevention Plan or Site Development Plan.

Design Analysis: OR Prepare an Erosion and Sedimentation Control Plan to be included in the Design Analysis. Reference this plan in the general conditions sections of the specifications.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

The current equivalent SPiRiT requirement is for the preparation of a project specific pollution prevention plan. Mandatory construction pollution prevention requirements external to this rating tool govern and preclude the need for the current SPiRiT credit/guidance. Installations maintain by regulation Storm Water Pollution Prevention Plans (SWPPP) which include controls for construction projects.

References***Regulated Under***

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement 2002

40 CFR 122.26, the Clean Water Act, and State Regulations

Supplementary Guidance Under

EPA 832-R-92-006 Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices

EP 1110-1-16 Engineering and Design – Handbook for the Preparation of Storm Water Pollution Prevention Plans for Construction Activities

UFC 2-600-01 Installation Design

UFC 3-210-06A Site Planning and Design (by reference TM 5-803-14 Site Planning and Design)

UFC 3-230-14A Evaluation Criteria Guide for Water Pollution Prevention Control and Abatement Programs

Army IDS Installation Design Standards

LEED 2.2

National Pollutant Discharge Elimination System (NPDES)

SS Credit 1: Site Selection**1 Point****Intent**

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Requirements

Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any one of the following criteria:

- Prime farmland as defined by the United States Department of Agriculture in the United States Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5)
- Previously undeveloped land whose elevation is lower than 5 ft above the elevation of the 100-year flood as defined by FEMA.
- Land which is specifically identified as habitat for any species on Federal or State threatened or endangered lists.
- Within 100 ft of any water including wetlands as defined by United States Code of Federal Regulations 40 CFR, Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations as defined by local or state rule or law, whichever is more stringent.
- Previously undeveloped land that is within 50 ft of a water body.
- Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (Park Authority projects are exempt).

Submittals

- Provide the LEED®-NC Letter Template, signed by the civil engineer or responsible party, declaring that the project site meets the credit requirements.

Potential Technologies & Strategies

During the site selection process, give preference to those sites that do not include sensitive site elements and restrictive land types. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck-under parking, and sharing facilities with neighbors.

SS Credit 1: Site Selection**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. Implementation guidance must address installation versus civilian urban settings.

Special Implementation Language

Project sites should not be selected on prime training or maneuver land.

Project sites should not be selected on land lower than 5 ft above the FEMA 100-year flood, on land identified as threatened or endangered species habitat; in wetlands or where it will impact wetlands or water bodies; or on Open Space (Buffer and Easement, Greenbelt) or Outdoor Recreation (Park) land use areas. Where unavoidable due to installation circumstances, impacts will be mitigated to qualify for this credit.

Applications Guidance

Optional—If there are facility type, installation or project specific requirements, they may be incorporated in the DA Standard Designs, Installation Future Development Plans, IDG, or as project specific design requirements.

Standard MILCON Project Documentation Requirements

Standard MILCON project documentation describing the non-applicability of “farmland” and “public parkland” to projects executed on Army installations within cantonment areas should be developed for application to all MILCON projects.

Standard MILCON project documentation describing Army policy with regard to the mitigation of environmental impacts justifying “off-site” mitigation should be developed for application to all MILCON projects for CIR assessment

Suggested Project Documentation

Design Analysis: Include a narrative describing the site selection process. Specifically mention endangered species habitats, avoidance of prime farmland, parkland, or prime training lands, flood plain situation, and wetland situations for the site. When available, include FEMA maps, or USGS soil surveys maps.

SDD Documentation Notebook Evaluation Narrative**Discussion**

SPiRiT contains a separate ratable requirement under “Site Selection” to address the differences between installation and urban settings and stress the importance of protecting training lands. This requirement in part duplicates those under “Development Density” (LEED-NC v2.0) and “Alternative Transportation (LEED-NC v2.0). Evaluation criteria for the requirement represent current “best practice” for master planning site selection and are adequately covered in current master planning regulations and manuals, UFC and IDS materials. Differences in terminology will remain.

The current SPiRiT requirement, “1.C10 Facility Impact,” promotes sound master planning and site selection practices. While there are no similar credits in LEED-NC v2.1 or v2.2 based on requirements, “SS 1, Site Selection” is the most closely related. The selection of sites to minimize impact is a current master planning “best practice” and adequately covered in UFC and IDS materials.

References

Regulated Under

AR 415-15 MCA Program Development & Execution

Supplementary Guidance Under

AR 210-20 Master Planning for Army Installations

AR 210-21 Army Ranges and Training Land Program

UFC 2-600-01 Installation Design

AR 210-20 Master Planning for Army Installations

UFC 2-200-02AN Installation Master Planning (by reference TM 5-803-1 Installation Master Planning)

UFC 3-210-06A Site Planning and Design (by reference TM 5-803-14 Site Planning and Design)

UFC 3-210-01A Design – Area Planning, Site Planning, and Design (by reference TI 804-01 Area Planning, Site Planning, and Design)

Army IDS Installation Design Standards

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement

LEED 2.2

United States Department of Agriculture (USDA) United States Code of Federal Regulations (CFR), Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5)

CFR 40 CFR, Parts 230-233 and Part 22.

SS Credit 2: Development Density & Community Connectivity 1 Point

Intent

Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources.

Requirements

Construct or renovate building on a previously developed site AND in a community with a minimum density of 60,000 ft² per acre net (Note: density calculation must include the area of the project being built and is based on a typical two-story downtown development).

OR

Construct or renovate building on a previously developed site AND within ½ mile of a residential zone or neighborhood with an average density of 10 units per acre net AND within ½ mile of at least 10 Basic Services AND with pedestrian access between the building and the services.

Basic Services include, but are not limited to:

(6) Fire Station	(11) Medical/Dental	(16) Restaurant
(2) Place of Worship	(7) Hair Care	(12) Senior Care Facility
(3) Convenience Grocery	(8) Hardware	(13) Park
(4) Day Care	(9) Laundry	(14) Pharmacy
(5) Cleaners	(10) Library	(15) Post Office
		(17) School
		(18) Supermarket
		(19) Commercial Office
		(20) Community Center.

Proximity is determined by drawing a ½ mile radius around the main building entrance on a site map and counting the services within that radius.

Submittals

- Provide the LEED®-NC Letter Template, signed by the civil engineer, architect or other responsible party, declaring that the project has met the credit requirement.
- Provide density for the building and for the surrounding area with an area plan, highlighting the building location

OR

- Provide an area plan highlighting the building location, the residential zone or neighborhood, and 10 or more of the basic services located within ½ mile of the project space (inclusive of the applicant building).

Potential Technologies & Strategies

During the site selection process, give preference to urban sites with pedestrian access to a variety of services.

SS Credit 2: Development Density & Community Connectivity**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language

Installation development should be channeled to cantonment areas with existing infrastructure, with preference given to selection of previously developed sites to protect green fields, and preserve habitat and natural resources. Development density should conform to installation master planning desired levels, preferably by land use and visual theme, including historic, visual theme, transportation and other considerations by area. Increased levels of development density must be accomplished within the limitations imposed by Anti-Terrorism/Force Protection (AT/FP) setback restrictions.

Applications Guidance

Optional --If there are facility type or installation specific requirements, they may be incorporated in the DA Standard Designs, Installation Future Development Plans or IDG.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Drawings: Highlight the project location on an Area Plan or Site Plan sufficient to indicate the project setting, site development, development current and planned around the project site including facilities and land uses, and specified basic services located within ½ mile of the project.

Design Analysis: Describe the density goals for the project and discuss any density requirements from the installation/base Master Plan. Calculate and provide the density for the building and the surrounding area according to the procedure in the LEED Reference Guide showing that the minimum development density has been achieved. Discuss how the local density fits with the project density goals. OR Develop typical densities for various areas of the installation and then show that the new building contributes to an increase in the local density where it is sited.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT promotes infill versus green field development to achieve sustainability goals. While SPiRiT uses Army terminology for the “installation” versus “urban” setting, infill development is not a uniquely Army issue. Infill development represents the current “best practice” for master planning land use planning and site selection. General guidance promoting development in cantonment areas with existing infrastructure to preserve greenfields and training lands is readily available in current master planning regulations and manuals, UFC and IDS materials. While increasing developmental density is considered beneficial to sustainable design, increasing developmental must be accomplished in balance with historic, visual theme, transportation, AT/FP, and other considerations. General guidance already exists on these issues in the Whole Building Design Guide (WBDG). There is neither a need for a separate green rating or additional guidance.

References

Supplementary Guidance Under

AR 210-20 Master Planning for Army Installations

UFC 2-200-02AN Installation Master Planning (by reference TM 5-803-1 Installation Master Planning)

UFC 2-600-01 Installation Design

UFC 3-210-06A Site Planning and Design (by reference TM 5-803-14 Site Planning and Design)

UFC 3-210-01A Design – Area Planning, Site Planning, and Design (by reference TI 804-01 Area Planning, Site Planning, and Design)

Army IDS Installation Design Standards

UFC 4-010 -01 DOD Minimum Antiterrorism Standards for Buildings

Whole Building Design Guide (WBDG) (Tools – LEED-DOD Antiterrorism Standards Tool, available through URL: http://www.wbdg.org/tools/leed_atfp_rp.php?l=ss-2)

SS Credit 3: Brownfield Redevelopment**1 Point****Intent**

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

Requirements

Develop on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment) OR on a site defined as a brownfield by a local, state or Federal government agency. Remediation must be completed in accordance with the requirements of the designating agency.

Submittals

- Provide a copy of the pertinent sections of the ASTM E1903-97 Phase II Environmental Site Assessment documenting the site contamination OR provide a letter from a local, state or Federal regulatory agency confirming that the site is classified as a brownfield by that agency.
- Provide the LEED®-NC Letter Template, signed by the civil engineer or responsible party, declaring the type of damage that existed on the site and describing the remediation performed.

Potential Technologies & Strategies

During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings. Develop and implement a site remediation plan using strategies such as pump-and-treat, bioreactors, land farming and in-situ remediation.

SS Credit 3: Brownfield Redevelopment**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. Implementation guidance needs to address installation versus civilian urban settings. General guidance on installation contaminated sites should be developed and included in the IDS.

Special Implementation Language

Installation development should be channeled to cantonment brownfield sites, sites that have been contaminated by previous uses, or sites that have been restored through remediation under the Installation Restoration Program.

Applications Guidance***Recommended – IDS Addendum***

IDS CHAPTER 2—SITE PLANNING DESIGN STANDARDS 2.1.4.4 (New Section)

“Development should be channeled to brownfield sites, sites that have been contaminated by previous uses, or sites that have been restored through remediation under the Installation Restoration Program. Although contaminated lands on military installations are not classified as brownfields under the EPA’s Brownfield Redevelopment program requirements, lands where pollutants, hazardous materials, and contaminants are present that would designate it as a brownfield according to the EPA definition are considered “brownfields” for meeting LEED requirements (See Appendix D for a more complete discussion on Sustainable Design). If contaminated lands are not documented as contaminated in the Defense Site Environmental Restoration Tracking System, the installation’s environmental office can identify which lands are contaminated and the nature of that contamination for the purposes of determining if the land is contaminated according to the EPA definition.”

Optional—If there are installation specific requirements, they may be incorporated in the Installation Future Development Plans or IDG.

Standard MILCON Project Documentation Requirements

LEED®-NC requires that a project remediate sites contaminated according to “EPA Brownfields” definitions as an element of project development to qualify for this point. Remediation of contaminated sites on Army installations is accomplished under separate funds and often years in advance of a military construction project. For an Army project to qualify for this credit, project documentation will have to present proof of the site’s previous contamination and describing the remediation performed.

Suggested Project Documentation

Design Analysis: For contaminated sites, include a Site Remediation Plan in accordance with the EPA's Brownfield Redevelopment program requirements. For previously remediated sites, include documentation from the Defense Site Environmental Restoration Tracking System, or the Installation Restoration Program identifying the contaminated lands, the nature of that contamination, and remediation that was performed showing compliance with the EPA standard mentioned.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet

Discussion

SPiRiT promotes development of previously contaminated sites instead of green field development to achieve sustainability goals. While SPiRiT uses Army terminology for the "installation" versus "urban" setting, and clarifies the Army definition of brownfield, the promotion of the use of contaminated sites is not uniquely an Army issue. It represents the current "best practice" for master planning site selection, and is adequately covered in current master planning and environmental regulations and manuals, and UFC and IDS materials. While there is no need for a separate green rating requirement, it is recommended that general guidance be included in the IDS to explain the differences between "EPA Brownfields" and contaminated installation sites, and to promote channeling of development to previously contaminated sites.

References

Regulated Under

AR 415-15 MCA Program Development & Execution

Supplementary Guidance Under

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

AR 200-2 Environmental Effects of Army Actions

DA Pam 200-1 Environmental Protection and Enhancement

Army IDS Installation Design Standards

AR 210-20 Master Planning for Army Installations

UFC 2-200-02AN Installation Master Planning (by reference TM 5-803-1 Installation Master Planning)

LEED®-NC 2.2

ASTM E1903-97 Phase II Environmental Site Assessment

**SS Credit 4.1: Alternative Transportation-
Public Transportation Access****1 Point****Intent**

Reduce pollution and land development impacts from automobile use.

Requirements

Locate project within 1/2 mile of an existing, or planned and funded, commuter rail, light rail or subway station

OR

Locate project within 1/4 mile of one or more stops for two or more public or campus bus lines usable by building occupants.

Submittals

- Provide the LEED®-NC Letter Template, signed by an appropriate party, declaring that the project building(s) are located within required proximity to mass transit.
- Provide an area drawing or transit map highlighting the building location and the fixed rail stations and bus lines, and indicate the distances between them. Include a scale bar for distance measurement.
- For projects achieving this credit through a planned fixed rail line, provide additional documentation that funding has been allocated to construct the referenced route and stations.
- For projects achieving the credit through shuttle service, provide documentation of the shuttle service frequency, schedule, and vehicle capacity.

Potential Technologies & Strategies

Perform a transportation survey of future building occupants to identify transportation needs. Site the building near mass transit.

SS Credit 4.1: Alternative Transportation- Public Transportation Access 1 Point**Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language

Installations with planned mass transit transportation systems, whether funded or unfunded, will be considered eligible for this point.

Applications Guidance

None

Standard MILCON Project Documentation Requirements

LEED®-NC requires that a project be located within specified distances to mass transit transportation systems. Where installation mass transit transportation systems are not available, but are planned and funded, points will be awarded. Where they are planned but unfunded a LEED®-NC Credit Interpretation Ruling (CIR) must be requested.

Suggested Project Documentation

Drawings: Highlight the building location, available bus or rail lines and the distance to them on an Area Plan, Site Plan, or other appropriate plan.

Design Analysis: Describe the proximity to mass transit system in a design narrative. Specify the distance to bus stops or commuter rail, light rail, or subway stops.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

Guidance concerning the distance to transit stops for various conditions, necessary under SPiRiT 1.4.1 to clarify the LEED-NC v2.0 requirement, is no longer needed. The requirement has been clarified under LEED-NC v2.1 & v2.2.

References***Regulated Under***

AR 11-27 Army Programs: Army Energy Program

**SS Credit 4.2: Alternative Transportation -
Bicycle Storage & Changing Rooms****1 Point****Intent**

Reduce pollution and land development impacts from automobile use.

Requirements

For commercial or institutional buildings, provide secure bicycle storage (within 200 yards of a building entrance) for 5% or more of all building users (measured at peak periods), AND, provide shower and changing facilities in the building, or within 200 yards of a building entrance, for 0.5% of Full-Time Equivalent (FTE) employees.

OR

For residential buildings, provide covered storage facilities for securing bicycles for 15% or more of building occupants in lieu of changing/shower facilities.

Submittals

- For commercial projects: provide the LEED®-NC Letter Template, signed by the Architect or responsible party, declaring the distance to bicycle storage and showers from the building entrance and demonstrating that these facilities can accommodate at least 5% of building occupants.

OR

- For residential projects: provide the LEED®-NC Letter Template, signed by the architect or responsible party, declaring the design occupancy for the buildings, number of covered bicycle storage facilities for securing bicycles, and demonstrating that these facilities can accommodate at least 15% of building occupants.

Potential Technologies & Strategies

Design the building with transportation amenities such as bicycle racks and showering/changing facilities.

**SS Credit 4.2: Alternative Transportation -
Bicycle Storage & Changing Rooms****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: Specify bike parking under one of the following: UFGS 05500A Miscellaneous Metal; 02870A Site Furnishings or 10430 Exterior Signage.

Drawings: Highlight bike parking on the Area Plan, General Landscaping Plan, Site Development Plan, or equivalent plan. Include details for bike storage in the Site Details sheets. Also highlight the location of showers on the Area Plan or Architectural Plans.

Design Analysis: Provide calculations showing that bike storage and shower facilities are provided based on building type at the required level. The regular building occupant population is based on FTE. For training facilities only consider the permanent cadre. For residential buildings, it is based on permanent occupants. For multifunction buildings, consider each category of occupant and provide for each.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

SS Credit 4.3: Alternative Transportation – Low Emitting and Fuel Efficient Vehicles

1 Point

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

Provide low-emitting and fuel-efficient vehicles for 3% of Full-Time Equivalent (FTE) employees, AND, provide preferred parking for these vehicles.

OR

Provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site.

OR

Install alternative-fuel refueling stations for three percent of the total vehicle parking capacity of the site (liquid or gaseous fueling facilities must be separately ventilated or located outdoors).

For the purposes of this credit, low-emitting and fuel-efficient vehicles are defined as vehicles that are either classified as Zero Emission Vehicles by the California Air Resources Board or have achieved a minimum green score of 40 on the American Council for an Energy efficient Economy (ACEEE) annual vehicle rating guide in the year the vehicle was purchased.

“Preferred parking” refers to the parking spots that are closest to the main entrance of the project (exclusive of spaces designated for handicapped).

Submittals

- Provide the LEED®-NC Letter Template and proof of ownership of, or two year lease agreement for, low emitting and fuel efficient vehicles and calculations indicating that the vehicles will serve 3% of building occupants. Provide site drawings or parking plan highlighting preferred parking for low emitting and fuel efficient vehicles.

OR

- Provide the LEED®-NC Letter template with calculations documenting that preferred parking for low emitting and fuel efficient vehicles is being provided for at least 5% of the total vehicle parking capacity of the site. Provide site drawings or parking plan highlighting preferred parking for low emitting and fuel efficient vehicles. Provide a parking management plan that explains how preferred parking status for low emitting and fuel efficient vehicles will be enforced.

OR

- Provide the LEED®-NC Letter Template with specifications and site drawings highlighting alternative-fuel refueling stations. Provide calculations demonstrating that these facilities accommodate 3% or more of the total vehicle parking capacity. Provide documentation that the alternative fuel refueling stations proposed will serve current available street legal vehicles.

Potential Technologies & Strategies

Provide transportation amenities such as alternative fuel refueling stations and carpool/vanpool programs. Consider sharing the costs and benefits of refueling stations with neighbors.

SS Credit 4.3: Alternative Transportation - Low Emitting and Fuel Efficient Vehicles

1 Point

Recommendation

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on installation alternative-fueling stations should be included in the IDS.

Special Implementation Language

– None

Applications Guidance

Recommended – IDS Addenda:

IDS CHAPTER 2—SITE PLANNING DESIGN STANDARDS 2.3.3.1.16 (New Section)

“Locate facilities to have convenient access to a nearby alternative fuel fueling station.”

IDS CHAPTER 4—PARKING STANDARDS 4.9.1 (Revision)

“ ... if a parking study verifies requirements. Provisions will be made for preferred parking for carpools, vanpools, and low-emitting and fuel-efficient vehicles.”

IDS CHAPTER 4—PARKING STANDARDS 4.9.2.13 (Revision)

“On installations with alternative-fuel refueling stations or with central motor pool alternative fuel vehicles, preferred parking must be provided for 5% of the total vehicle parking capacity served; or alternative-fuel refueling stations must be installed for 3% percent of the project’s total vehicle parking capacity. Preferred parking spaces are defined as those closest to the main entrance of the project, excluding designated handicapped spaces. In the case of centralized parking, accommodations for alternative-fueled vehicles must be made at the central parking facilities. The centralized parking must be within ¼ mile of the project or serviced by an installation shuttle or bus system.”

Optional—If there are installation specific requirements, they may be incorporated in the Installation Future Development Plans or IDG.

Standard MILCON Project Documentation Requirements – None

Suggested Project Documentation

Drawings: Show the number of parking spaces provided on the appropriate site plan drawing such as the Site Paving Plan, or Site Development Plan. Highlight alternative fuel vehicle preferred parking. Show the location of alternative-fuel refueling stations on an Area Plan.

Design Analysis: Provide a narrative discussing the ownership or lease for low emitting and fuel efficient vehicles and calculations indicating the percentage of occupants served; OR Provide calculations documenting the provision of preferred low emitting and fuel efficient vehicle parking; Indicate how preferred parking will be managed / enforced; OR Provide calculations demonstrating the capability of alternative-fuel refueling stations to accommodate appropriate occupant percentages.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT amended the LEED-NC v2.0 requirement for on site vehicle fueling to allow points for centrally located alternative fueling facilities within a specified distance. This approach neither gives preference to building occupants with alternative fueled vehicles nor provides on site refueling; however, it allows an installation to develop central alternative fueling facilities and still take credit for individual buildings. The LEED®-NC Application Guide for Multiple and Campus Building Projects (draft) does not accommodate this exception, but does address alternative fuel fleet vehicles, central motor pool facilities, and access to nearby alternative fueling station into consideration for this point. Army Installation low emitting and fuel efficient fleet vehicles could be considered towards this LEED®-NC point. "Innovation in Design" points are arguably justifiable if an alternative fueling station is available within a reasonable distance from the facility. Similarly, points may be justifiable via a USGBC credit interpretation ruling (CIR). It is recommended that general guidance concerning alternative-fueling stations be contained in the IDS.

Accommodation of / and access to alternative fuel vehicles is no longer a requirement for housing under LEED-H (draft) for residential facilities, and will not be a factor.

References

Supplementary Guidance Under

DOD Instruction 4170.11 Installation Energy Management

AR 11-27 Army Programs: Army Energy Program

LEED®-NC 2.2

California Air Resources Board

American Council for an Energy Efficient Economy (ACEEE)

SS Credit 4.4: Alternative Transportation- Parking Capacity**1 Point****Intent**

Reduce pollution and land development impacts from single occupancy vehicle use.

Requirements

For projects that provide new parking:

- Size parking capacity to meet, but not exceed, minimum local zoning requirements, AND, provide preferred parking for carpools or vanpools, marked as such, capable of serving 5% of the total provided parking spaces;

OR

For projects that provide parking for less than 5% of FTE building occupants:

- Provide preferred parking for carpools or vanpools, marked as such, capable of serving 5% of FTE building occupants or the equivalent of 5% of total provided parking spaces;

OR

For residential projects that provide new parking:

- Size parking capacity to not exceed minimum local zoning requirements, AND, provide infrastructure and support programs to facilitate shared vehicle usage such as carpool drop-off areas, designated parking for vanpools, or car-share services, ride boards, and shuttle services to mass transit;

OR

For projects that do not provide new parking, the credit is achieved.

“Preferred parking” refers to the parking spots that are closest to the main entrance of the project (exclusive of spaces designated for handicapped).

Submittals

- For new projects: provide the LEED®-NC Letter Template, signed by the civil engineer or responsible party, stating any relevant minimum zoning requirements and declaring that parking capacity is sized to meet, but not exceed, them. State the number of preferred parking spaces for carpools and include a description of the carpool/vanpool incentive program.

OR

- For rehabilitation projects: provide the LEED®-NC Letter Template, signed by the civil engineer or responsible party, declaring that no new parking capacity has been added. State the number of preferred parking spaces for carpools and include a description of the carpool/vanpool incentive program.

OR

- For carsharing programs: provide calculations demonstrating that the FlexCar™ fleet will serve 5% of building occupants, within a 5% margin of error.

OR

- For projects achieving this credit through the parking cash-out option, provide documentation of the program details including availability to employees, publicity through organization and enforcement.

Potential Technologies & Strategies

Minimize parking lot/garage size. Consider sharing parking facilities with adjacent buildings. Consider alternatives that will limit the use of single occupancy vehicles.

SS Credit 4.4: Alternative Transportation- Parking Capacity**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on facilities parking capacities should be included in the IDS and DA Standard Designs.

Special Implementation Language – None**Applications Guidance*****Recommended – IDS Addendum:***

IDS CHAPTER 4—PARKING STANDARDS 4.9.1 (Revision)

“The parking standards for any one location will vary depending on the needs of the facility/facilities it supports. Table 4.1 that follows shows the maximum number of spaces for non-organizational vehicles. Additional spaces may be provided if a parking study verifies requirements ...”

Note—Maximum authorizations for parking need to be established. The IDS currently cites the Architectural and Engineering Instructions (AEI) which were superseded by TI 800-01, Design Criteria. TI 800-01 has been in turn superseded by UFC 2-600-01 Installation Design. The new UFC includes no minimum or maximum parking lot size requirements.

Optional—If there are installation or project specific requirements, guidance may be additionally incorporated in Installation Future Development Plans, IDG, or as project specific design requirements.

Standard MILCON Project Documentation Requirements**-None****Suggested Project Documentation**

Drawings: Show the number of parking spaces provided on the appropriate site plan drawing such as the Landscape Plan; Site Plan; Site Paving Plan, or Site Development Plan. Highlight preferred parking for carpools or vanpools.

Design Analysis: Include a narrative describing the source of the parking requirements and provide calculations demonstrating compliance with the minimum allowable requirements.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are virtually identical for this sub-requirement, therefore, LEED-NC may be implemented with no Army Supplemental Requirements. It is recommended that parking capacities identified in the IDS and DA Standard Designs be re-evaluated and reduced where possible to reflect Sustainability goals and objectives.

References

Regulated Under

AR 11-27 Army Programs: Army Energy Program

Supplementary Guidance Under

Army IDS Installation Design Standards

Whole Building Design Guide (WBDG) (Design Guidance – Building Types – Parking Facilities, available through URL: <http://www.wbdg.org/design/parking.php>)

SS Credit 5.1: Site Development – Protect or Restore Habitat**1 Point****Intent**

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirements

On greenfield sites, limit all site disturbance to 40 ft beyond the building perimeter, 10 ft beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter; 15 ft beyond primary roadway curbs and main utility branch trenches, and 25 ft beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area;

OR,

On previously developed or graded sites, restore or protect a minimum of 50% of the site area (excluding the building footprint) with native or adapted vegetation. Native/adapted plants are plants indigenous to a locality or cultivars of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds. These plants require minimal or no irrigation following establishment, do not require active maintenance such as mowing or chemical inputs such as fertilizers, pesticides or herbicides, and provide habitat value and promote biodiversity through avoidance of monoculture plantings. Projects earning SS credit 2 and using vegetated roof surfaces may apply the vegetated roof surface to this calculation if the plants meet the definition of native/adapted.

Greenfield sites are those that are not previously developed or graded and remain in a natural state. Previously developed sites are those that previously contained buildings, roadways, parking lots, or were graded or altered by direct human activities.

Submittals

- For greenfield sites: provide the LEED®-NC Letter Template, signed by the civil engineer or responsible party, demonstrating and declaring that site disturbance (including earthwork and clearing of vegetation) has been limited to applicable distances as noted in credit requirements. Provide site drawings and specifications highlighting limits of construction disturbance. Provide photographs of the construction site showing how requirements were enforced.

OR

- For previously developed sites: provide a LEED®-NC Letter Template, signed by the civil engineer or responsible party, declaring and describing restoration of degraded habitat areas. Include highlighted site drawings with area calculations demonstrating that 50% of the site area that does not fall within the building footprint has been restored. Provide list of all plants installed on the site, highlighting the native or adaptive selections.

Potential Technologies & Strategies

On greenfield sites, perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with a minimal footprint to minimize site disruption. Strategies include stacking the building program,

tuck-under parking and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of the existing site and restore previously degraded areas to their natural state. For previously developed sites, utilize local and regional governmental agencies, consultants, educational facilities, and native plant societies as resources for the selection of appropriate native or adapted plant materials. Prohibit plant materials listed as invasive or noxious weed species.

SS Credit 5.1: Site Development – Protect or Restore Habitat**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance**

Optional—If there are facility type, installation or project specific requirements, they may be incorporated in the DA Standard Designs, IDG, or as project specific design requirements.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Specifications: UFGS 01500A Temporary Construction Facilities; 02231 Clearing and Grubbing; and 02300A Earthwork.

Drawings: Show the boundary for site disturbance on the Site Grading Plan, Site Demolition / Development Plans, Landscape Plan, or equivalent plans demonstrating that all site disturbance is within the required dimensions; OR show the planting areas as well as a planting schedule on the Landscape Plan, distinguishing between existing landscaping and restored landscaping.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement. (Note that while the title of this credit has changed from “Reduced Site Disturbance,” the requirement has not changed.

The current SPiRiT requirement “1.C9, Optimize Site Features” promotes optimization of site features; “optimization of cut and fill” is addressed in part under “Site Development, Protect or Restore Habitat” and is a current “best practice” adequately covered in UFC and IDS materials.

The current SPiRiT requirement, “1.C1, Site Ecology,” promotes preparation of site specific environmental management plans. Army environmental protection and energy management systems regulations govern from the installation to the project level. LEED-NC v2.2 addresses these requirements in part under “Site Development—Protect and Restore Habitat.” In addition to the regulatory and guidance information contained in AR 200-1 and DA Pam 200-1, general guidance is given in UFC and IDS materials. In addition to the regulatory and guidance information contained in AR200-1 and DA Pam 200-1, general guidance is contained in UFC and IDS materials.

References

Regulated Under

AR 210-20 Master Planning for Army Installations

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement

Supplementary Guidance Under

UFC 2-600-01 Installation Design

UFC 3-210-01A Design – Area Planning, Site Planning, and Design (by reference TI 804-01 Area Planning, Site Planning, and Design)

UFC 3-210-06A Site Planning and Design (by reference TM 5-803-14 Site Planning and Design)

Army IDS Installation Design Standards

UFC 2-200-02AN Installation Master Planning (by reference TM 5-803-01 Installation Master Planning)

EO 13148 Greening the Government Through Leadership in Environmental Management

AR 200-2 Environmental Effects of Army Actions

SS Credit 5.2: Site Development – Maximize Open Space**1 Point****Intent**

Provide a high ratio of open space to hardscape and promote biodiversity.

Requirements

Reduce the development footprint (defined as the total area of the building footprint, hardscape, access roads and parking) and/or provide new open space within the project boundary to exceed the local zoning's open space requirement for the site by 25%.

OR

For areas with no local zoning requirements (e.g., some university campuses, military bases), designate open space area adjacent to the building that is equal to the building footprint.

OR

Where a zoning ordinance exists, but there is no requirement for open space (zero), and the project is located in an urban area (as demonstrated by compliance with SSc2), designate open space equal to 20% of the project's site area.

NOTE: For projects located in urban areas that earn SS credit 2, areas of vegetated roofs planted with non-invasive species may be used to contribute to credit compliance.

Submittals

- Provide a copy of the local zoning requirements highlighting the criteria for open space. Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, demonstrating and declaring that the open space exceeds the local zoning open space requirement for the site by 25%.

OR

- For areas with no local zoning requirements (e.g., some university campuses, military bases), provide the LEED-NC Letter Template indicating this condition. Designate open space area adjacent to the building that is equal to the building footprint. Provide a site plan indicating the location of the preserved open space and a letter from the property owner stating that the open space will be conserved for the life of the building.

OR

- For areas where a zoning ordinance exists, but there is no requirement for open space (zero), provide the LEED-NC Letter Template indicating this condition. Designate open space area adjacent to the building that is equal to the building footprint. Provide a site plan indicating the location of the preserved open space and a letter from the property owner stating that the open space will be conserved for the life of the building.

Potential Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with a minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck-under parking and sharing facilities with neighbors to maximize open space on the site.

SS Credit 5.2: Site Development – Maximize Open Space**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on installation open space requirements needs to be developed and included in the IDS.

Special Implementation Language – None**Applications Guidance*****Recommended – IDS Addendum:***

IDS Chapter 2—Site Planning Design Standards 2.3.3.1.17 (New Section)

“Projects should be designed to reduce the development footprint (including building, access roads and parking) and/or provide new open space within the project boundary to exceed installation master plan preferred developmental densities by 25%. Open space may include such features as force protection setbacks, bio-swales, constructed wetlands, ground water recharge gardens, etc. Where no established installation policy on open space exists, by land use, visual theme, or otherwise, open space must be designated adjacent to the building that is equal to the building footprint.”

Optional—If there are facility type, installation or project specific requirements, they may be incorporated in the DA Standard Designs, Installation Future Development Plans, IDG, or as project specific design requirements.

Suggested Project Documentation

Drawings: Provide a Site Plan indicating the location of the preserved open space.

Design Analysis: Include a copy of the open space requirements from the Installation Master Plan or local zoning code. Provide calculations demonstrating that the requirement has been satisfied. When no zoning codes exist, demonstrate that an area equal to the development footprint (including building, access roads and parking) is designated as open space.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT amended the LEED-NC v2.0 requirement to differentiate between urban and installation/base environments and to accommodate open space requirements. LEED-NC requirements are valid, however, current UFC, IDS and master planning guidance is insufficient in identifying appropriate open space requirements. It is recommended that general guidance on open space requirements be developed and incorporated in the IDS. Additional guidance will be available in the LEED Application Guide for Multiple and Campus Building Projects when the draft guide is approved.

References – None

SS Credit 6.1: Stormwater Design – Quantity Control**1 Point****Intent**

Limit disruption and pollution of natural water flows by managing stormwater runoff.

Requirements

IF EXISTING IMPERVIOUSNESS IS LESS THAN OR EQUAL TO 50%:

Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate for the 1- and 2-year, 24-hour design storms;

OR

Implement a stormwater management plan that protects receiving stream channels from excessive erosion by implementing a stream channel protection strategy and quantity;

IF THE EXISTING IMPERVIOUSNESS IS GREATER THAN 50%:

Implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the 2-year, 24-hour design storm;

OR

If the site is located in an urban area and drains to an existing combined sewer system (CSS), implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff into the CSS from the 2-year, 24-hour design storm.

Submittals

- Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, declaring: (1) that existing imperviousness is less than or equal to 50%; (2) that a stormwater management plan has been implemented; (3) annual recharge rates are maintained; and (4) the required volume of runoff is captured and treated using nonstructural techniques or acceptable structural practices.

OR

- Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, declaring that: (1) existing site imperviousness is greater than 50%; (2) a stormwater management plan has been implemented; (3) runoff from existing imperviousness is reduced by at least 25% of the annual stormwater load; (4) stormwater runoff from 100% of newly added impervious surfaces is prevented; (5) annual recharge rates are maintained; and (6) the required volume of runoff is captured and treated using nonstructural techniques or acceptable structural practices.
- In the United States, there are three distinct climates that influence the nature and amount of rainfall occurring on an annual basis. Humid watersheds are defined as those that receive at least 35 inches of rainfall each year, Semi-arid watersheds receive between 15 and 35 inches of rainfall per year, and Arid watersheds receive less than 15 inches of rainfall per year. For this credit, the volume of runoff from 90% of the average annual rainfall is equivalent to the runoff from: (a) Humid Watersheds – 1 inch of rainfall; (b) Semi-arid Watersheds – 0.75 inches of rainfall; and (c) Arid Watersheds – 0.5 inches of rainfall.

- Structural BMPs used to treat runoff must be capable of removing 80% of the average annual post development total suspended solids (TSS) load based on existing field monitoring information. Structural practices are considered to meet these criteria if (1) they are designed in accordance with standards and specifications from a state or local program that has adopted these performance standards, or (2) there exists in-field performance monitoring data demonstrating compliance with the criteria. Data must conform to accepted protocol (e.g., Technology Acceptance Reciprocity Partnership (TARP), Washington State Department of Ecology) for BMP monitoring.

Potential Technologies & Strategies

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify garden roofs and pervious paving to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing and custodial uses.

SS Credit 6.1: Stormwater Design – Quantity Control**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 02300A Earthwork; 02620 Subdrainage System; 02630A Storm-Drainage System; and 02661 Pond and Reservoir Liners.

Drawings: On the appropriate site plan, such as the Site Paving Plan, Landscape Plan, Site Grading Plan, or Site Utility Layout, highlight paved area and site contours showing how water is retained on site. Provide a paving schedule indicating the type of paving used in each area and a reference to the perviousness of the material. Also highlight locations of retaining ponds or other systems intended to minimize stormwater runoff.

Design Analysis: Provide cut sheets for pervious paving systems used to lower runoff; OR Provide a stormwater management plan as described in the credit for sites with existing imperviousness. Provide calculations showing that run off has been reduced by 50% from undeveloped to developed conditions.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

Guidance concerning stormwater runoff increases, necessary under SPiRiT 1.4.1 to clarify the LEED-NC v2.0 requirement, is no longer needed. The requirement has been clarified under LEED-NC v2.1 & v2.2.

The key to obtaining this credit is in developing and effectively implementing a stormwater management plan. AR 200-1 only requires preparation of a Stormwater Prevention Plan if required under State or Federal (40 CFR 122.26) regulation. State regulations are based on 40 CFR 123.25, and Federal regulations are based on 40 CFR 122.26. These CFR citations outline what is necessary to operate a stormwater permit program and what the state has to do to have primacy. Regardless of whether the Federal or State government is issuing the stormwater permit, the permit has to contain at a minimum the applicable limitations in 40 CFR 125. These CFR citations do not require Stormwater Prevention Plans; however, in practice almost every Stormwater permit issued by the Federal or State governments has in it a requirement to have a Stormwater Prevention Plan. Permits detail what the plan has to include and the minimum requirements the plan must address. Permit requirements vary greatly depending on the geology, the size, and the project for which the permit is issued. See DA Pam 200-1, para 2-3f(2).

References***Regulated Under***

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement 2002

40 CFR 122.26, the Clean Water Act, and State Regulations

UFC 3-210-10 Design: Low Impact Development Manual

PWTB 200-1-21, Applicability of Constructed Wetlands for Army Installations

Supplementary Guidance Under

EPA 832-R-92-006 Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices

EP 1110-1-16 Engineering and Design – Handbook for the Preparation of Storm Water Pollution Prevention Plans for Construction Activities

UFC 2-600-01 Installation Design

UFC 3-210-06A Site Planning and Design (by reference TM 5-803-14 Site Planning and Design)

UFC 3-230-14A Evaluation Criteria Guide for Water Pollution Prevention Control and Abatement Programs

Army IDS Installation Design Standards

LEED®-NC 2.2

Technology Acceptance Reciprocity Partnership (TARP)

Washington State Department of Ecology

SS Credit 6.2: Stormwater Design—Quality Control**1 Point****Intent**

Limit disruption of natural water hydrology by reducing impervious cover, increasing on-site infiltration, and eliminating pollution from stormwater runoff, and eliminating contaminants.

Requirements

Implement a stormwater management plan that reduces impervious cover, promotes infiltration, and captures and treats the stormwater runoff from 90% of the average annual rainfall using acceptable best management practices (BMPs).

Best management practices (BMPs) used to treat runoff must be capable of removing 80% of the average annual post development total suspended solids (TSS) load based on existing monitoring reports. BMPs are considered to meet these criteria if (1) they are designed in accordance with standards and specifications from a state or local program that has adopted these performance standards, or (2) there exists in-field performance monitoring data demonstrating compliance with the criteria. Data must conform to accepted protocol [e.g., Technology Acceptance Reciprocity Partnership (TARP), Washington State Department of Ecology] for BMP monitoring.

Submittals

- Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, declaring that: (1) a stormwater management plan has been implemented; (2) identifies the nationally recognized channel protection strategy used or provides a narrative description and necessary calculations showing that stream channel stability is protected; and (3) demonstrates that overbank flood protection is not necessary or that the post-development 10-year, 24 hour peak discharge rate does not exceed the pre-development 10-year peak discharge rate

OR

- Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, declaring that: (1) existing site imperviousness is greater than 50%; (2) a stormwater management plan has been implemented; (3) runoff from the site is reduced by at least 50% of the annual stormwater load falling on the site; and (4) runoff of stormwater from 100% of newly added impervious surfaces has been prevented.

Potential Technologies & Strategies

Use alternative surfaces (e.g., green roofs, pervious pavement or grid pavers) and nonstructural techniques (e.g., rain gardens, vegetated swales, disconnection of imperviousness, rainwater recycling) to reduce imperviousness and promote infiltration.

Use sustainable design strategies (e.g., Low Impact Development, Environmentally Sensitive Design) to design integrated natural and mechanical treatment systems such as constructed wetlands, vegetated filters, and open channels to treat stormwater runoff.

SS Credit 6.2: Stormwater Design—Quality Control**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 02300A Earthwork; 02620 Subdrainage System; 02630A Storm-Drainage System; 02921N Turf; 01356A Storm Water Pollution Prevention Measures; and 02930A Exterior Planting.

Drawings: Show the location of passive systems on the appropriate site plan such as on the Site Grading Plan, Site Development Plan, Utility Layout Plan; Drainage Profile; or Landscape Plan. Include detail drawings for active systems such as mechanical filters.

Design Analysis: Provide a design narrative and calculations describing how the designed treatment systems will meet the requirements of this credit.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

The key to obtaining this credit is in developing and effectively implementing a stormwater management plan. AR 200-1 only requires preparation of a Stormwater Prevention Plan if required under State or Federal (40 CFR 122.26) regulation. State regulations are based on 40 CFR 123.25, and Federal regulations are based on 40 CFR 122.26. These CFR citations outline what is necessary to operate a stormwater permit program and what the state has to do to have primacy. Regardless of whether the Federal or State government is issuing the stormwater permit, the permit has to contain at a minimum the applicable limitations in 40 CFR 125. These CFR citations do not require Stormwater Prevention Plans; however, in practice almost every Stormwater permit issued by the Federal or State governments has in it a requirement to have a Stormwater Prevention Plan. Permits detail what the plan has to include and the minimum requirements the plan must address. Permit requirements vary greatly depending on the geology, the size, and the project for which the permit is issued. See DA Pam 200-1, para 2-3f(2).

References***Regulated Under***

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement 2002

Supplementary Guidance Under

UFC 3-210-10, Design: Low Impact Development Manual

PWTB 200-1-21, Applicability of Constructed Wetlands for Army Installations

LEED®-NC 2.2

Technology Acceptance Reciprocity Partnership (TARP)

Washington State Department of Ecology

SS Credit 7.1: Heat Island Effect – Non-Roof**1 Point****Intent**

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements

Provide any combination of the following strategies for 50% of the site hardscape (including parking lot areas):

- Shade (within 5 years of occupancy)
- Paving materials with a Solar Reflectance Index (SRI)² of at least 29
- Open grid pavement system;

OR

Place a minimum of 50% of parking spaces under cover (defined as under ground, under deck, under roof, or under a building). Roof used to shade 50% of parking must have an SRI of at least 29.

Submittals

- Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, referencing the site plan to demonstrate areas of hardscape (including paving, walking areas, plazas, fire lanes, etc.), landscaping (list species) and building footprint, and declaring that:
 - At least 50% of the site's hardscape has an SRI of at least 29 and/or at least 50% of the hardscape is comprised of open grid pavement and/or at least 50% of the hardscape will be shaded within 5 years AND
 - * The SRI has been calculated in accordance with ASTM E1989-98 for the hardscape
 - * Reflectance values used to calculate SRI are based on field measurements using the ASTM E1918-97 procedure
 - * Emissivity values used to calculate SRI are based on Table 1 (below) or field measurements using the ASTM E408-71 procedure

OR

- A minimum of 50% of parking spaces have been placed underground or are covered by structured parking

OR

- An open-grid pavement system (less than 50% impervious) has been used for a minimum of 50% of the parking lot area.

Potential Technologies & Strategies

Shade constructed surfaces on the site with landscape features and utilize high-reflectance materials for hardscape. Consider replacing constructed surfaces (i.e., roof, roads, sidewalks, **etc.**) with vegetated surfaces such as garden roofs and open grid paving or specify high-albedo materials to reduce the heat absorption.

SS Credit 7.1: Heat Island Effect – Non-Roof**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements**

-None

Suggested Project Documentation

Specifications: UFGS 02754A Concrete Pavements for Small Projects; 02780 Concrete Block Pavements; and 02930A Exterior Planting.

Drawings:

On Landscaping Plans, show location, type of vegetation used for shading, and information about the mature size of selected vegetation. Highlight the impervious area to be shaded, or otherwise demonstrate with calculations and diagrams that 50% will be shaded with in 5 years.

OR

Indicate on the Site Paving Plan the area where light-colored/high-albedo materials will be used and demonstrate that it accounts for at least 50% of the impervious areas.

OR

Demonstrate that at least 50% of the total parking is under-ground by indicating the number of spaces located in the underground parking as well as the number of parking spaces above ground. When underground parking is provided, the first few sheets of the architectural plans are typically reserved for below-grade floors and parking information used to satisfy this credit should be shown on these sheets.

OR

Indicate on the Site Paving Plan the area where open-grid pavement systems will be used and demonstrate that it accounts for at least 50% of the parking lot areas. Also include a note on the Site Paving Plan drawings stating that the pervious paving system is to have an impervious area of LESS than 50%

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Supplementary Guidance***

UFC 3-210-10, Design: Low Impact Development Manual

SS Credit 7.2: Heat Islands Effect – Roof**1 Point****Intent**

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements

Use roofing materials having a Solar Reflectance Index (SRI)³ as required in Table 2 (below) for a minimum of 75% of the roof surface

OR

Install a “green” (vegetated) roof for at least 50% of the roof area.

Note: Combinations of high albedo and vegetated roof can be used if they meet, in combination, the following criteria:

Total Roof Area $\leq$ (Area of SRI Roof * 1.33) + (Area of green roof * 2)

Table 2

Roof Type	Slope	SRI
Low-Sloped Roof	$\leq 2:12$	78
Steep-Sloped Roof	$> 2:12$	29

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, civil engineer or responsible party, referencing the building roof plan and declaring that:
 - The SRI calculated in the letter template is equal to or greater than the value required in Table 2 for the applicable roof type
 - * Reflectance values used to calculate the SRI are based on values from product ratings from the Cool Roof Rating Council's (CRRC) Directory of Rated Products or the EnergyStar™ Rated Products list or Independent Laboratory testing in accordance with ASTM E903-96 for homogeneous, non-patterned materials having both specular and diffused optical properties OR ASTM E1084 for inhomogeneous, patterned, or corrugated materials OR field measurements using the ASTM E1918-97 procedure
 - * Emissivity values used to calculate SRI are based upon product ratings from the CRRC's Directory of Rated Products OR field measurements using the ASTM E408-71 procedure.
 - AND that
 - * 75% of the building's total roof area meets the required SRI as noted in Table 2

OR

- Provide the LEED-NC Letter Template, signed by the architect, civil engineer or responsible party, referencing the building roof plan and demonstrating that vegetated roof areas comprise at least 50% of the total roof area.

OR

- Provide the LEED-NC Letter Template, signed by the architect, civil engineer, or responsible party, including the calculation showing that $\text{Total Roof Area} \leq ((\text{Area of SRI Roof} * 1.33) + (\text{Area of green roof} * 2))$

Potential Technologies & Strategies

Consider installing high-albedo and vegetated roofs to reduce heat absorption. SRI is calculated according to ASTM E 1980. Reflectance is calculated according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance is calculated according to ASTM E 408 or ASTM C 1371. Default values will be available in the LEED-NC v2.2 Reference Guide. Product information is available from the Cool Roof Rating Council website, through URL: www.coolroofs.org

SS Credit 7.2: Heat Islands Effect – Roof**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements**

-None

Suggested Project Documentation

Specifications: UFGS 07416A Structural Standing Seam Metal Roof (SSSMR) System; and 07515 Protected Membrane Roofing (PMR).

Drawings:

On the Architectural Roof Plan, show that a minimum of 75% of the roof area meets the requirements for reflectance and emissivity. Specify roofing type, reflectance, and emissivity on the Roof Plan as well as any area calculations.

For Green roofs, show on the Roof Plan that the green roof covers at least 50% of the total roof area or that a combination of green roof and high-reflectance and high emissivity roofing account for 75% of the total roof area. Also reference detail drawings for the green roof.

Design Analysis: Provide calculations documenting that the solar reflectance index (SRI) meets requirements for a minimum of 75% of the roof area for the applicable roof type.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Supplementary Guidance***

UFC 3-210-10, Design: Low Impact Development Manual (discusses vegetated roofs)

LEED®-NC 2.2

ASTM E 408-71, ASTM E 1084, ASTM E 1980, ASTM E 903-96, ASTM E 1918-97, ASTM C 1549

Cool Roof Rating Council (CRRC) Directory of Rated Products

EPA EnergyStar™ Rated Products

SS Credit 8: Light Pollution Reduction

1 Point

Intent

Minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments.

Requirements

Design interior lighting so that the angle of maximum candela from each interior luminaire as located in the building shall intersect opaque building interior surfaces and not exit out through the windows,

OR

Design all non-emergency interior lighting to be automatically controlled to turn off during non-business hours. Provide manual override capability for after hours use.

AND

For all projects with exterior lighting: Only light areas where exterior lighting is clearly required for safety and comfort. Design the exterior lighting not to exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without amendments.

All projects shall be classified under one of the following zones and shall follow all of the requirements for that specific zone:

LZ1 (wilderness/national and state parks). Design exterior lighting so that all site and building mounted initial illuminance value no greater than 0.01 horizontal and boundary and beyond. Document that 0% of the total initial designed at an angle of 90 degrees or higher from nadir (straight down).

LZ2 (Default for residential areas – rural). Design exterior lighting so that all site and building mounted luminaires produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical footcandles at the site boundary and must drop off to 0.01 footcandles within 10 ft beyond the site boundary. Document that no more than 2% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ3 (Default for urban areas). Design exterior lighting so that all site and building mounted luminaires produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical footcandles at the site boundary and must drop off to 0.01 footcandles within 15 ft beyond the site. Document that no more than 5% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ4 (City centers of cities with populations over 100,000). Design exterior lighting so that all site and building mounted luminaires produce a maximum initial illuminance value no greater than 0.60 horizontal and vertical footcandles at the site boundary and must drop off to 0.01 footcandles within 15 ft beyond the site. Document that no more than 10% of the total initial designed site lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

Verify the percent of site lumens at 90 degrees or higher from nadir using the table below. Note: luminaires without photometric distribution and ALL adjustable luminaires shall be assumed to have 100% of its lumens at or above 90 degrees. Luminaires that are adjusted upon installation based on project design conditions and then fixed in place shall require documentation of final photometric distribution to confirm classification.

Luminaire type	Quantity of Installed Luminaires	Initial Lamp Lumens Per Luminaire	Total Lamp Lumens (column 2 X column 3)	Initial Lamp Lumens from Luminaire above 90 degrees (from nadir-straight down)	Total Lamp Lumens above 90 Degrees (column 2 X column 5)
A	10	4600	46000	100	1000
B	20	11900	238000	0	0
C	5	2000	10000	2000	10000
Total			294000		11000
Percent lamp lumens at or above 90 degrees					3.74%

Submittals

- Provide the LEED-NC Letter Template, signed by an appropriate party, declaring that the credit requirements have been met.
- Verify light trespass requirements are met by providing a site plan showing initial horizontal footcandle levels on a 5 foot grid at the site boundary and 5, 10, and 15 ft past the site boundary. Calculate initial horizontal footcandles at grade level.
- Verify light trespass requirements are met by providing a site plan showing initial vertical footcandles at the property line on a 5 foot horizontal and 1 foot vertical grid. Calculate initial vertical footcandles perpendicular to the property line facing the site at 0 ft to the maximum luminaire mounting height above the grade level.
- Verify light pollution requirements are met by providing catalog cut-sheets of all site and building mounted luminaires including zonal lumen distribution summary. Additionally, provide spreadsheet documentation similar to below. Note: luminaires without photometric distribution and ALL adjustable luminaires shall be assumed to have 100% of its lumens at or above 90 degrees.

Potential Technologies & Strategies

Accept site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaires, low-reflectance surfaces and low-angle spotlights.

SS Credit 8: Light Pollution Reduction**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on “light pollution reduction” needs to be developed and included in the IDS.

Special Implementation Language

Project design for light pollution reduction must be accomplished in balance with the installation design guide and AT/FP considerations.

Applications Guidance***Recommended – IDS Addendum:***

IDS CHAPTER 7 FORCE PROTECTION DESIGN STANDARDS 7.5 (Revision)

Add line, “Balance security requirements with sustainable design principles, minimizing light trespass from the building and site, reducing sky-glow to increase night sky access and reduce night training impact, improving nighttime visibility, and reducing impact on nocturnal environments.”

IDS CHAPTER 8 BUILDINGS DESIGN STANDARDS 8.13.8.5 (New Section)

Design interior lighting so that light from each interior luminaires does not exit through the windows, minimizing light trespass from the building and site, reducing sky-glow to increase night sky access and reduce night training impact, improving nighttime visibility, and reducing impact on nocturnal environments.”

IDS CHAPTER 6 SITE ELEMENTS DESIGN STANDARDS 6.5.3 (Revision)

“... All lighting will be located or designed to minimize light trespass, reduce sky-glow to increase night sky access and reduce night training impact, improve nighttime visibility, and reduce impact on nocturnal environments. Spotlights in particular should be ...”

Consider a new IDS / Master Plan element “exterior lighting master plan.”

IDS CHAPTER 6 SITE ELEMENTS DESIGN STANDARDS 6.5.6 (New Section)

“Develop an installation exterior lighting master plan addressing installation safety and force protection issues while minimizing light pollution and energy consumption. The master plan must show the following: (1) Coverage and elements of the Exterior Lighting System (Street, Walkways, Bikeways, Site, etc.); (2) Controls to reduce light trespass, reduce night training impact, reduce impact on nocturnal environments, and increase night sky access; (3) Safety, force protection, and comfort requirements; and (4) Design to ASHRAE/IESNA Standard 90.1- 2004, Exterior Lighting Section (current version).”

Optional—If there are facility type, installation or project specific requirements, they may be incorporated in the DA Standard Designs, Installation Future Development Plans, IDG, or as project specific design requirements.

Standard MILCON Project Documentation Requirements – None

Suggested Project Documentation

Specifications: UFGS 16510 Interior Lighting; 16520N Exterior Lighting; and 16528A Exterior Lighting Including Security and CCTV Applications.

Drawings: On Interior and Exterior Electrical Plans, highlight lighting as needed to demonstrate compliance. Document special cut-off features of selected lighting in Electrical Lighting Fixture Schedules.

Design Analysis: Include a brief lighting design narrative, cut sheets, scale diagrams, and lighting calculations that demonstrate lighting objectives and measures preventing direct-beam illumination leaving the project site. If not clearly defined, the site boundary shall be considered to include all disturbed land with a 50 foot buffer.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT amended the LEED-NC v2.0 “Light Pollution Reduction” requirement minimally to highlight the need to balance light pollution and security lighting issues. Current IDS and UFC guidance is insufficient, and there is no mention of “light pollution reduction” in the current TI 811-16, Lighting Design. It is recommended that general guidance on “light pollution reduction” and potential conflicts with AT/FP be developed and incorporated in the IDS. It is also recommended that general guidance be developed and incorporated in the Whole Building Design Guide (WBDG).

Reference

LEED®-NC 2.2

ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section

International Dark Sky Association (website, identifies light features that comply with Light Pollution Standards):

<http://www.darksky.org/>

Water Efficiency				
LEED®-NC 2.2 Credit	Points	Recommendation	Special Implementing Language	Supplemental Guidance
WE Credit 1.1: Water Efficient Landscaping – Reduce by 50%	1 Point	Accept	No	No
WE Credit 1.2: Water Efficient Landscaping – No Potable Water Use or No Irrigation	1 Point in addition to WE 1.1	Accept	No	No
WE Credit 2: Innovative Wastewater Technologies	1 Point	Accept	No	No
WE Credit 3.1: Water Use Reduction- 20% Reduction	1 Point	Accept	No	No
WE Credit 3.2: Water Use Reduction- 30% Reduction	1 Point in addition to WE 3.1	Accept	No	No

WE Credit 1.1: Water Efficient Landscaping- Reduce by 50%**1 Point****Intent**

Limit or eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

Requirements

Reduce water consumption for irrigation by 50% from a calculated baseline case. The baseline consumption is derived from the landscape area, plant species factor, and irrigation efficiency. Water demand for the month of July is used for both the design and baseline case.

OR

Use water that would otherwise be discharged, such as rainwater, recycled wastewater, or use water treated and conveyed by a public agency specifically for nonpotable uses, or use a combination of water from these sources to reduce potable water consumption for irrigation by 50% from the calculated baseline case.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, engineer or responsible party, declaring that potable water consumption for site irrigation has been reduced by 50%. Include a brief narrative of the equipment used and/or the use of drought-tolerant or native plants.

Potential Technologies & Strategies

Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adapted plants to reduce or eliminate irrigation requirements. Where irrigation is required, use high-efficiency equipment and/or climate-based controllers.

WE Credit 1.1: Water Efficient Landscaping- Reduce by 50%**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 02630A Storm-Drainage System; 02811A Underground Sprinkler Systems; 02930A Exterior Planting; and 02935 Landscape Establishment.

Drawings: Planting or Landscape Plans and Schedules indicating use of drought-tolerant or native plants; Civil Site, Cut Sheets and/or Mechanical Plans showing and highlighting any rain-water storage or collection systems, gray water irrigation systems, or high efficiency irrigation systems; OR Note on Landscape Plans “NO PERMANENT LANDSCAPE IRRIGATION SYSTEM TO BE INSTALLED”

Design Analysis: Narrative descriptions, baseline calculations and design calculations demonstrating means by which potable water demand has been decreased or eliminated.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Supplementary Guidance Under***

AR 11-27 Army Programs: Army Energy Program

WE Credit 1.2: Water Efficient Landscaping - (1 Point in addition to WE 1.1) No Potable Water Use or No Irrigation

Intent

Eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

Requirements

In addition to achieving WE credit 1.1,

Use only captured rainwater, recycled wastewater, recycled greywater, or water treated and conveyed by a public agency specifically for nonpotable uses (reclaimed water) for site irrigation.

OR

Do not install permanent landscape irrigation systems. Temporary irrigation systems used for plant establishment are allowed only if removed within 1 year of installation.

Submittals

- Provide the LEED-NC Letter Template, signed by the responsible architect and/or engineer, declaring that the project site will not use potable water for irrigation. Include a narrative describing the captured rain system, the recycled site water system, and their holding capacity. List all the plant species used. Include calculations demonstrating that irrigation requirements can be met from captured rain or recycled site water.

OR

- Provide the LEED-NC Letter Template, signed by the landscape architect or responsible party, declaring that the project site does not have a permanent landscape irrigation system. Include a narrative describing how the landscape design allows for this.

Potential Technologies & Strategies

Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Consider using stormwater greywater, and/or condensate water for irrigation.

**WE Credit 1.2: Water Efficient Landscaping -
No Potable Water Use or No Irrigation****1 Point in addition to WE 1.1****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 02630A Storm-Drainage System; 02811A Underground Sprinkler Systems; 02930A Exterior Planting; and 02935 Landscape Establishment.

Drawings: Planting or Landscape Plans and Schedules indicating use of drought-tolerant or native plants; Civil Site, Cut Sheets and/or Mechanical Plans showing and highlighting any rain-water storage or collection systems, gray water irrigation systems, or high efficiency irrigation systems; OR Note on Landscape Plans "NO PERMANENT LANDSCAPE IRRIGATION SYSTEM TO BE INSTALLED"

Design Analysis: Narrative descriptions, baseline calculations and design calculations demonstrating means by which potable water demand has been decreased or eliminated.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Supplementary Guidance Under***

AR 11-27 Army Programs: Army Energy Program

WE Credit 2: Innovative Wastewater Technologies**1 Point****Intent**

Reduce generation of wastewater and potable water demand, while increasing the local aquifer recharge.

Requirements

Reduce potable water use for building sewage conveyance by 50% through the use of water conserving fixtures (water closets, urinals) or non-potable water (captured rainwater, recycled greywater, and on-site or municipally treated wastewater).

OR

Treat 50% of wastewater on-site to tertiary standards. Treated water must be infiltrated or used on site.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, MEP engineer or responsible party, declaring that water for building sewage conveyance will be reduced by at least 50%. Include the spreadsheet calculation and a narrative demonstrating the measures used to reduce wastewater by at least 50% from baseline conditions.

OR

- Provide the LEED-NC Letter Template, signed by the civil engineer or responsible party, declaring that 100% of wastewater will be treated to tertiary standards on site. Include a narrative describing the on-site wastewater treatment system.

Potential Technologies & Strategies

Specify high-efficiency fixtures and dry fixtures such as composting toilet systems and non-water using urinals to reduce wastewater volumes. Consider reusing stormwater or greywater for sewage conveyance or on-site wastewater treatment systems (mechanical and/or natural). Options for on-site wastewater treatment include packaged biological nutrient removal systems, constructed wetlands, and high-efficiency filtration systems.

WE Credit 2: Innovative Wastewater Technologies**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 15400 Plumbing, General Purpose; 11390 Prefabricated Biochemical Wastewater Treatment Plant; and 11391 Continuous Loop Reactor Wastewater Treatment System.

Drawings:

Highlight fixtures and schedules on the Plumbing or Mechanical Plans for systems used to reduce potable water use.

OR

Show organic or natural treatment systems on the Site Plan or on the Landscape Plan. Show location of mechanical treatments systems on the Floor Plan and submit shop drawings. Highlight high-efficiency plumbing fixtures on the Mechanical or Plumbing sheets.

Design Analysis:

Describe measures taken to reduce potable water consumption. Provide design calculations and baseline calculations for municipally provided potable water.

OR

Provide design calculations for the on-site wastewater system. Describe how the system works and demonstrate that it is capable of treating all wastewater to the required levels.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Supplementary Guidance Under***

AR 11-27 Army Programs: Army Energy Program

WE Credit 3.1: Water Use Reduction- 20% Reduction**1 Point****Intent**

Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements

Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include the following fixtures (as applicable to the building): Water Closets, Urinals, Lavatory Faucets, Showers, Kitchen Sinks, and Janitor/Service Sinks.

Submittals

- Provide the LEED-NC Letter Template, signed by the MEP engineer or responsible party, declaring that the project uses 20% less water than the baseline fixture performance requirements of the Energy Policy Act of 1992.
- Provide the spreadsheet calculation demonstrating that water-consuming fixtures specified for the stated occupancy and use of the building reduce occupancy-based potable water consumption by 20% compared to baseline conditions.

Potential Technologies & Strategies

Use high-efficiency fixtures, dry fixtures such as composting toilet systems and non-water using urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and greywater for non-potable applications such as toilet and urinal flushing and custodial uses.

WE Credit 3.1: Water Use Reduction- 20% Reduction**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 15400 Plumbing, General Purpose.

Design Analysis: Describe the strategies used to reduce the water consumption from the baseline by the required percentage for the given points. Provide design calculations and baseline calculations demonstrating that the requirement has been met.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Regulated Under***

AR 11-27 Army Programs: Army Energy Program (Revisions Pending)

2005 Federal Energy Policy Act

UFGS 15400 Plumbing, General Purpose

Supplementary Guidance Under

AR 11-27 Army Programs: Army Energy Program

LEED®-NC 2.2

Energy Policy Act of 1992 Fixture Performance Requirements

WE Credit 3.2: Water Use Reduction- 30% Reduction1 Point in addition to WE 3.1**Intent**

Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements

Employ strategies that in aggregate use 30% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include the following fixtures (as applicable to the building): Water Closets, Urinals, Lavatory Faucets, Showers, Kitchen Sinks, and Janitor/Service Sinks.

Submittals

- Provide the LEED-NC Letter Template, signed by the MEP engineer or responsible party, declaring that the project uses 30% less water than the baseline fixture performance requirements of the Energy Policy Act of 1992.
- Provide the spreadsheet calculation demonstrating that water-consuming fixtures specified for the stated occupancy and use of the building reduce occupancy-based potable water consumption by 30% compared to baseline conditions.

Potential Technologies & Strategies

Use high-efficiency fixtures, dry fixtures such as composting toilets and waterless urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and greywater for non-potable applications such as toilet and urinal flushing, mechanical systems and custodial uses.

Energy & Atmosphere				
LEED®-NC 2.2 Credit	Points	Recommendation	Special Implementing Language	Supplemental Guidance
EA Prerequisite 1: Fundamental Commissioning of the Building Energy Systems	Required	Accept	Yes	Optional
EA Prerequisite 2: Minimum Energy Performance	Required	Accept	No	No
EA Prerequisite 3: Fundamental Refrigerant Management	Required	Accept	No	No
EA Credit 1: Optimize Energy Performance	1-10 Points	Accept	Yes	Optional
EA Credit 2: On Site Renewable Energy	1-3 Points	Accept	No	No
EA Credit 3: Enhanced Commissioning	1 Point	Accept	No	No
EA Credit 4: Enhanced Refrigerant Management	1 Point	Accept	No	No
EA Credit 5: Measurement and Verification	1 Point	Accept	No	Optional
EA Credit 6: Green Power	1 Point	Accept	No	No

WE Credit 3.2: Water Use Reduction- 30% Reduction 1 Point in addition to WE 3.1**Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 15400 Plumbing, General Purpose.

Design Analysis: Describe the strategies used to reduce the water consumption from the baseline by the required percentage for the given points. Provide design calculations and baseline calculations demonstrating that the requirement has been met.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Regulated Under***

AR 11-27 Army Programs: Army Energy Program (Revisions Pending)

Supplementary Guidance Under

AR 11-27 Army Programs: Army Energy Program

LEED®-NC 2.2

Energy Policy Act of 1992 Fixture Performance Requirements

EA Prerequisite 1: Fundamental Commissioning of the Building Energy Systems (Required)

Intent

Verify that the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, basis of design, and construction documents.

Benefits of Commissioning

Benefits of commissioning include reduced energy use, lower operating costs, reduced contractor callbacks, better building documentation, improved occupant productivity, and verification that the systems perform in accordance with the owner's project requirements.

Requirements

The following commissioning process activities shall be completed by the commissioning team, in accordance with the LEED-NC 2.2 Reference Guide.

5. Designate an individual as the Commissioning Authority (CA) to lead, review, and oversee the completion of the commissioning process activities.
 - a. The CA shall have documented commissioning authority experience in at least two building projects with technical and managerial complexity similar to this project.
 - b. The individual serving as the CA shall be independent of the project's design and construction teams, though they may be employees of the firms providing those services. The CA may be a qualified employee or consultant of the Owner.
 - c. The CA shall report directly to the Owner.
 - d. For projects smaller than 50,000 gross SF, the CA may include qualified persons on the design or construction teams who have the required experience.
 - e. The Owner shall document the Owner's Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CA shall review these documents for clarity and completeness. The Owner and design team shall be responsible for updates to their respective documents.
6. Develop and incorporate commissioning requirements into the construction documents.
7. Develop and implement a commissioning plan.
8. Verify the installation and performance of the systems to be commissioned.
9. Complete a commissioning report.

Commissioned Systems

Commissioning process activities shall be completed for the following energy-related systems, at a minimum:

- Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems mechanical and passive) and associated controls
- Lighting and daylighting controls
- Domestic hot water systems
- Renewable energy systems (PV, wind, solar etc.)

Submittals

- Provide the LEED-NC Letter Template, signed by the owner and commissioning authority, confirming that the commissioning requirements for the building's energy related systems have been successfully executed or will be provided under existing contract(s).

Potential Technologies & Strategies

Owners are encouraged to seek out qualified individuals to lead the commissioning process with experience reflecting a high level of:

- Energy systems design, installation and operation
- Commissioning planning and process management
- Hands-on field experience with energy systems performance, interaction, start-up, balancing, testing, troubleshooting, operation, and maintenance procedures
- Energy systems automation control knowledge

Owners are encouraged to consider including water-using systems, building envelope systems, and other systems in the scope of the commissioning plan as appropriate.

The LEED-NC 2.2 Reference Guide provides guidance on the rigor expected for this prerequisite for the following:

- Owner's project requirements
- Basis of design
- Commissioning plan
- Commissioning specification
- Performance verification documentation
- Commissioning report

EA Prerequisite 1: Fundamental Commissioning of the Building Energy Systems

Required

Recommendation

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language

Prerequisite fundamental commissioning shall be accomplished in accordance with Engineering Regulation (ER) 1110-345-723, Systems Commissioning Procedures.

Applications Guidance

Optional—If additional guidance is desired, it may be successfully incorporated in the Installation Design Standard. If there are facility type, installation or project specific requirements, they may be incorporated in the DA Standard Designs, Installation Facility Design Guidance, or as project specific design requirements.

Standard MILCON Project Documentation Requirements

Standard MILCON project documentation describing how projects executed in accordance with ER 1110-345-723 and UFGS 15995A meet or exceed LEED®-NC Fundamental Commissioning requirements should be developed for application to all MILCON projects.

Suggested Project Documentation

Specifications: UFGS 15950N HVAC Testing/Adjusting/Balancing; 15990A Testing, Adjusting, and Balancing of HVAC Systems; and 15995A Commissioning of HVAC Systems.

Design Analysis: Provide a copy of the commissioning plan including a narrative that describes how the requirements for fundamental commissioning have been satisfied.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

LEED mandates specific commissioning process activities including: designation of a commissioning authority, documentation of baseline requirements, incorporation of commissioning requirements into construction documentation, development and use of a commissioning plan, verification that installation and performance of energy consuming systems meets owner requirements, and completion of a commissioning report. LEED further mandates the commissioning of HVAC&R, lighting controls, domestic hot water systems and renewable energy systems.

Commissioning processes meeting this prerequisite are highly recommended for large, unique, complex, critical, process oriented Army projects requiring systems operation and maintenance documentation, executed by the Corps of Engineers. Commissioning guidance for projects of this nature is provided under Engineering Regulation (ER) 1110-345-723, Systems Commissioning Procedures. Commissioning processes for HVAC Systems meeting this prerequisite are mandatory for Army projects executed by the Corps of Engineers, by policy issued under CEMP-ED Memorandum, 24 July 2000, Heating, Ventilating, and Air Conditioning (HVAC) Systems Design. Commissioning guidance is provided under ER 1110-345-723 and UFGS 15995A Commissioning of HVAC Systems. Additional commissioning guidance is available in the WBDG.

SPiRiT “5.C10, Facility In-Use IAQ Management Plan,” supplemented LEED v2.0 IEQ requirements by requiring the development of a “facility in-use air quality action plan” during facility design / construction to be used by the end occupants to ensure in use air quality. While there is no “air quality action plan” required under “Fundamental Commissioning,” the intent of fundamental commissioning in part includes: (1) plans for scheduled maintenance of HVAC systems to ensure air quality, (2) the training of key users/facility staff in operations and maintenance procedures, (3) the ongoing functional testing / monitoring of systems components, and (4) the provision of complete systems operations and maintenance manuals. Adequate commissioning guidance currently exists in the WBDG, UFC and Corps of Engineers guidance. In addition, with the adoption of LEED-EB, there will be means to rate in-use maintenance of indoor air quality.

SPiRiT “7.C1, Operation & Maintenance,” supplements LEED®-NC 2.0 by requiring development of a thorough operations and maintenance program. SPiRiT credit 7.C, however, duplicates features of SPiRiT Credit “5.C10, Facility In-Use IAQ Management Plan” which in turn duplicates features under “Fundamental Commissioning,” ex. (1) Commissioning instructions for all facility systems, (2) the provision of complete systems operations and maintenance manuals, (3) initial training of key users/facility staff in operations and maintenance procedures, and (4) guidance on sustainable cleaning/pest practices. While there is not a 1:1 match, essential requirements are sufficiently addressed under this or other LEED credits. In addition, with the adoption of LEED-EB, there will be means to rate in-use operations and maintenance practices and cover periodic training.

References

Regulated Under

IBC – International Building Code
 ER 1110-345-723, Systems Commissioning Procedures
 UFGS 15995A – Commissioning of HVAC Systems
 ECB 2005-14 Building Commissioning Versus Corps of Engineers Military Design/Construction Process

Supplementary Guidance Under

AR 415-15 MCA Program Development & Execution
 WBDG (Project Management – Project Planning & Development – Building Commissioning), available through URL: <http://www.wbdg.org/project/buildingcomm.php>
 WBDG (Design Guidance – Design Objectives – Sustainable – Optimize Operational and Maintenance Practices), available through URL: http://www.wbdg.org/design/optimize_om.php
 UFC 3-400-01 Design Energy Conservation
 CEMP-ED Memorandum, 24 July 2000, Heating, Ventilating, and Air Conditioning (HVAC) Systems Design

EA Prerequisite 2: Minimum Energy Performance**Required****Intent**

Establish the minimum level of energy efficiency for the proposed building and systems.

Requirements

Design the building project to comply with both:

- (a) The mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4) of ASHRAE/IESNA Standard 90.1-2004 (without amendments); and
- (b) The prescriptive requirements (Sections 5.5, 6.5, 7.5, and 9.5) or performance requirements (Section 11) of ASHRAE/IESNA Standard 90.1-2004 (without amendments).

Submittals

- Provide a LEED-NC Letter Template, signed by a licensed professional engineer or architect, stating that the building project complies with both:
 - The mandatory provisions in Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4 of ASHRAE/IESNA Standard 90.1-2004 (without amendments); and
 - The prescriptive requirements in Sections 5.5, 6.5, 7.5, and 9.5 or the performance requirements in Section 11 of ASHRAE/IESNA 90.1-2004 or the local energy code, whichever is more stringent. If the local energy code was applied, demonstrate that the local code is equivalent to, or more stringent than, the prescriptive or performance provisions in ASHRAE/IESNA 90.1-2004 (without amendments).

Potential Technologies & Strategies

Design the building envelope, HVAC, lighting, and other systems to maximize energy performance. The ASHRAE 90.1-2004 User's Manual contains worksheets that can be used to document compliance with this prerequisite. For projects pursuing points under EA credit 1, the computer simulation model may be used to confirm satisfaction of this prerequisite.

The establishment of local energy codes as equivalent to or more stringent than ASHRAE 90.1-2004 is a considerable task. It is unlikely to be a research project that can be completed by members of a single project team during the design and construction process of a LEED building. Quantitative and textual equivalence must be established following, at a minimum, the U.S. Department of Energy standard process for commercial energy code determination. Details on the DOE process for commercial energy code determination are available through URL:

http://www.energycodes.gov/implement/determinations_com.stm

Additional requirements on commercial energy code determination will be provided by the Energy and Atmosphere Technical Advisory Group upon request, through e-mail:

ea@committees.usgbc.org

EA Prerequisite 2: Minimum Energy Performance**Required****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide a narrative or summary table of design features that comply with UFC 3-400-01, Design: Energy Conservation.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT varied from LEED v2.0 only in that it replaced ASHRAE ASHRAE/IESNA 90.1-1999 with the Army Standard valid at that time, TI 800-01 Design Criteria. It additionally recommended the use of computer energy modeling tools to assess energy performance. LEED v2.1 and the future v2.2 now reference ASHRAE/IESNA Standard 90.1-2004 which has also been adopted by the Army.

References***Regulated Under***

- 2005 Federal Energy Policy Act
- 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings
- 10 CFR Part 435 Energy Conservation Voluntary Performance Standards for New Buildings; Mandatory for Federal Buildings
- AR 420-1 Army Energy Program (Final pending)
- Army Energy Campaign Plan (Pending)

Supplementary Guidance Under

- UFC 3-400-01 Design Energy Conservation
- UFC 3-401-01FA Utility Monitoring Control Systems
- DOD Instruction 4170.11 Installation Energy Management

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- ASHRAE/IESNA Standard 90.1-2004

EA Prerequisite 3: Fundamental Refrigerant Management**Required****Intent**

Reduce ozone depletion.

Requirements

Zero use of CFC-based refrigerants in new base building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phase-out conversion prior to project completion. Phase out plans extending beyond the project completion date will be considered on their merits.

Submittals

- Provide a LEED-NC Letter Template, signed by a licensed professional engineer or architect, declaring that the building's HVAC&R systems do not use CFC-based refrigerants.

Potential Technologies & Strategies

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and provide a replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment in the base building that uses no CFC refrigerants.

EA Prerequisite 3: Fundamental Refrigerant Management**Required****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 15601N Central Refrigeration Equipment for Air Conditioning; 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems; and 15995A Commissioning of HVAC Systems.

Drawings: Mechanical Schedules

Design Analysis: Provide or include a review of the CFC phase-out/conversion in the commissioning plan demonstrating compliance as outlined.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Regulated Under***

FAR Part 23 – 52.223-11 Ozone-Depleting Substances.

UFGS 15601N Central Refrigeration Equipment for Air Conditioning

UFGS 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems

EA Credit 1: Optimize Energy Performance

1-10 Points

Intent

Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

Requirements

Select one of the three compliance path options described below. Project teams documenting achievement using any of the three options are assumed to be in compliance with EAp2.

OPTION 1 – WHOLE BUILDING ENERGY SIMULATION (1-10 Points)

Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments) by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard.

% Energy Cost Savings (minimum)	Points
10.5%	1
14%	2
17.5%	3
21%	4
24.5%	5
28%	6
31.5%	7
35%	8
38.5%	9
42%	10

Appendix G of Standard 90.1-2004 requires that the energy analysis done for the Building Performance Rating Method include ALL of the energy costs within and associated with the building project. To achieve points using this credit, the proposed design:

- Must comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4) in Standard 90.1-2004 (without amendments);
- Must include all the energy costs within and associated with the building project; and
- Must be compared against a baseline building that both complies with Appendix G to Standard 90.1-2004 (without amendments). The default process energy cost is 25% of the total energy cost for the baseline building. For buildings where the process energy cost is less than 25% of the baseline building energy cost, the LEED submittal must include supporting documentation substantiating that process energy inputs are appropriate.

For the purpose of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g., lighting integral to medical equipment) and other (e.g., waterfall pumps). Regulated (non-process) energy includes lighting (such as for the interior, parking garage, surface parking, façade, or building grounds, except as noted above), HVAC (such as for space heating, space

cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), and service water heating for domestic or space heating purposes.

For EA Credit 1, process loads shall be identical for both the baseline building performance rating and for the proposed building performance rating. However, project teams may follow the Exceptional Calculation Method (ASHRAE 90.1-2004 G2.5) to document measures that reduce process loads. Documentation of process load energy savings shall include a list of the assumptions made for both the base and proposed design, and theoretical or empirical information supporting these assumptions.

OR

OPTION 2 – PRESCRIPTIVE COMPLIANCE PATH (4 Points) Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004. The following restrictions apply:

- Buildings must be under 20,000 SF
- Buildings must be office occupancy
- Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located

OR

OPTION 3 – PRESCRIPTIVE COMPLIANCE PATH (1 Point)

Comply with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Benchmark™ Version 1.1 with the exception of the following sections: 1.7 Monitoring and Trend-logging, 1.11 Indoor Air Quality, and 1.14 Networked Computer Monitor Control. The following restrictions apply:

- Project teams must fully comply with all applicable criteria as established in Advanced Buildings Benchmark for the climate zone in which the building is located.

Submittals

- Complete the LEED-NC Letter Template incorporating a quantitative summary table that specifically lists each of the energy saving strategies incorporated in the proposed building design and shows how they compare with the baseline building (e.g., window U-factors and SHGC, installed lighting W/ ft², HVAC equipment efficiencies, etc.).
- Demonstrate via summary printout from energy simulation model the percentage by which the proposed building performance rating is less than the baseline building performance rating as defined in ASHRAE/IESNA 90.1-2004, Appendix G for the total energy consumption within and associated with the building project. All energy loads (both process and otherwise) must be included in the energy simulation model. For energy loads that are not interactive (e.g., parking garage ventilation), input each of these separately into the simulation model as a peak load accompanied by a schedule of operation so that the entire energy consumption and energy cost of the building project is shown in one printout from the simulation model.

Potential Technologies & Strategies

Design the building envelope and systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

EA Credit 1: Optimize Energy Performance**1-10 Points****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language

All Army facilities shall be designed to achieve energy consumption levels that are at least 30 percent below the levels established under ASHRAE Standard 90.1-2004 if determined to be life-cycle cost-effective in accordance with the Federal Energy Policy Act of 2005.

Applications Guidance

Optional—General guidance provided in SPiRiT is adequately provided in UFC and IDS materials, and the WBDG remains an excellent resource. If additional guidance is desired, it may be incorporated in the IDS or Facility Design Standards.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Drawings: Highlight on appropriate Civil, Landscape, Architectural, Structural, Plumbing, Mechanical and/or Electrical Plans energy saving features.

Design Analysis: Provide narrative and tables describing each of the energy saving measures incorporated in the project and showing how each compares with the baseline case. Provide a copy of the report from energy simulation software models showing the percentage that the project's performance rating is below the baseline performance rating as defined in ASHRAE/IESNA 90.1-2004, Appendix G for the total energy consumption within and associated with the building project.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT both changed the method by which points were scored for energy performance and lowered the threshold for achievement of each point. In addition, it offered general guidance on energy performance modeling, references, and promoted the use of EMCS. LEED-NC v2.2 which will be replacing v2.1 later in 2005, while still more stringent than SPiRiT, has a lower performance threshold than LEED-NC v2.0 and v2.1.

The current SPiRiT requirement "1.C9, Optimize Site Features" promotes optimization of site features; "use of free site energy" is addressed through effective energy modeling under "Optimize Energy Performance."

References***Regulated Under***

- 2005 Federal Energy Policy Act
- 10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings
- 10 CFR Part 435 Energy Conservation Voluntary Performance Standards for New Buildings; Mandatory for Federal Buildings

AR 420-1 Army Energy Program (Final pending)

Army Energy Campaign Plan (pending)

UFC 3-400-1 Design: Energy Conservation

Supplementary Guidance Under

UFC 3-401-01FA Utility Monitoring Control Systems

WBDG (Design Guidance – Design Objectives – Sustainable – Minimize Energy Consumption,
available through URL

http://www.wbdg.org/design/minimize_consumption.php

UFC 2-600-01 Installation Design

Army IDS Installation Design Standards

UFC 3-440-03N Design – Passive Solar Buildings

DOD Instruction 4170.11 Installation Energy Management

AR 11-27 Army Programs: Army Energy Program

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ASHRAE/IESNA Standard 90.1-2004

ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004

EA Credit 2: On Site Renewable Energy**1-3 Points****Intent**

Encourage and recognize increasing levels of on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use.

Requirements

Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building annual energy cost and using the table below to determine the number of points achieved.

Use the building annual energy cost calculated in EA credit 1 or use the Department of Energy (DOE) [Commercial Buildings Energy Consumption Survey \(CBECS\)](#) database to determine the estimated electricity use. (The table of use for different building types is provided in the Reference Guide.)

% Renewable Energy	Points
2.5%	1
7.5%	2
12.5%	3

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, owner or responsible party, declaring that at least 5% of the building's energy is provided by on-site renewable energy. Include a narrative describing on-site renewable energy systems installed in the building and calculations demonstrating that at least 5% of total energy costs are supplied by the renewable energy system(s).

Potential Technologies & Strategies

Assess the project for non-polluting and renewable energy potential including solar, wind, geothermal, low-impact hydro, biomass and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.

EA Credit 2: On Site Renewable Energy**1-3 Points****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language

All Army facilities shall be designed to employ renewable energy resources in support of the Federal target of 7.5 percent by 2013 to the extent economically feasible and technically practicable, in accordance with the Federal Energy Policy Act of 2005

Applications Guidance – None**Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Drawings: Highlight the location of renewable energy systems on the Civil, Architectural, Mechanical and/or Electrical Plans where appropriate.

Design Analysis: Provide calculations showing the percentage of building energy provided by on-site renewable energy systems. Include a narrative describing project performance in terms of annual energy cost savings.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

LEED®-NC v2.0 granted 1 point each for 5%, 10%, and 20% facility renewable energy contribution for a possible total of 3 points. LEED®-NC v2.1 and the 1st public comment draft of v2.2 were identical. SPiRiT changed the method by which points were scored granting 1 point each for 5%, 10%, 15%, and 20% renewable energy contribution for a possible total of 4 points. Otherwise, SPiRiT v1.4.1 and LEED-NC v2.0 are identical. The 2nd public comment draft of LEED®-NC v2.2 has lowered the performance threshold allowing 1 point each for 2.5%, 7.5%, and 12.5. The threshold was considered too high and was not having the desired effect of promoting the use of on site renewable power technologies.

The Federal Energy Policy Act of 2005 requires that of the total amount of electric energy that the Federal Government consumes, during any fiscal year, 7.5% must come from renewable energy resources by 2013 to the extent economically feasible and technically practicable. To support the achievement of this goal for total consumption, Army facilities should be designed to incorporate renewable energy resources to the maximum extent possible. LEED®-NC will grant 2 points for 7.5%, and 3 points for 12.5% under “On Site Renewable Energy.” Above 12.5%, additional points are possible under “Innovation in Design.”

References***Supplementary Guidance Under***

UFC 3-440-01 Design – Active Solar Preheat Systems

UFC 3-440-03N Design – Passive Solar Buildings

UFC 3-440-04N Design – Solar Heating of Buildings and Domestic Hot Water

DOD Instruction 4170.11 Installation Energy Management

AR 11-27 Army Programs: Army Energy Program

LEED®-NC 2.2

Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS)

EA Credit 3: Enhanced Commissioning

1 Point

Intent

Begin the commissioning process early during the design process and execute additional activities after systems performance verification is completed.

Requirements

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA prerequisite 1 and in accordance with the LEED-NC 2.2 Reference Guide:

1. Prior to the start of the construction documents phase, designate an independent Commissioning Authority (CA) to lead, review, and oversee the completion of all commissioning process activities. The CA shall, at a minimum, perform Tasks 2, 3, and 6. Other team members may perform Tasks 4 and 5.
 - a. The CA shall have documented commissioning authority experience in at least two building projects with similar technical and managerial complexity as this project.
 - b. The individual serving as the CA shall be:
 - c. Independent of the design and construction process,
 - d. Not an employee of the design team, though they may be contracted through them, and
 - (1) Not an employee of, or contracted through, a contractor or construction manager holding construction contracts.
 - iv. The CA may be a qualified employee or consultant of the Owner.
 - e. The CA shall report directly to the Owner.
 - f. This requirement has no deviation for project size.
2. The CA shall conduct, at a minimum, one commissioning design review of the Owner's Project Requirements (OPR), Basis of Design (BOD), and design documents prior to mid-construction documents phase and back-check the review comments following design submission.
3. The CA shall review contractor submittals applicable to systems being commissioned for compliance with the OPR and BOD. This review shall be concurrent with A/E reviews and submitted to the design team and the Owner.
4. Develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
5. Verify that the requirements for training operating personnel and building occupants are completed.
6. Assure the involvement by the CA in reviewing building operation within 10 months after substantial completion with O&M staff and occupants. Include a plan for resolution of outstanding commissioning-related issues.

Submittals

- Provide the LEED-NC Letter Template, signed by the owner and independent commissioning authority confirming that the required enhanced commissioning process requirements 1 and 2 have been successfully executed and that a contract for completing requirements 3 and 4 is in place.

Potential Technologies & Strategies

Although it is preferable that the CA be contracted direct to the Owner, for the enhanced commissioning credit, the CA may also be contracted through the design firms or construction management firms not holding construction contracts.

The LEED-NC 2.2 Reference Guide provides detailed guidance on the rigor expected for following process activities:

- Commissioning design review
- Commissioning submittal review
- Systems manual

EA Credit 3: Enhanced Commissioning**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements**

Standard MILCON project documentation describing how projects executed in accordance with ER 1110-345-723 and UFGS 15995A meet or exceed LEED®-NC Enhanced Commissioning requirements should be developed for application to all MILCON projects.

Suggested Project Documentation

Specifications: UFGS 15950N HVAC Testing/Adjusting/Balancing; 15990A Testing, Adjusting, and Balancing of HVAC Systems; and 15995A Commissioning of HVAC Systems.

Design Analysis: Provide a copy of the commissioning plan highlighting the required additional commissioning tasks.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

LEED supplements the prerequisite “Fundamental Commissioning of the Building Energy Systems” with additional commissioning process activities including: designation of a commissioning authority early in design development, reviewing energy related systems in contractor submittals, development of an energy related systems re-commissioning manual, and verifying completion of required operating and occupant training.

Commissioning processes meeting this requirement are highly recommended for large, unique, complex, critical, process oriented Army projects requiring systems operation and maintenance documentation, executed by the Corps of Engineers. Commissioning guidance for projects of this nature is provided under ER 1110-345-723, Systems Commissioning Procedures. Commissioning processes for HVAC Systems meeting this prerequisite are mandatory for Army projects executed by the Corps of Engineers, by policy issued under CEMP-ED Memorandum, 24 July 2000, Heating, Ventilating, and Air Conditioning (HVAC) Systems Design. Commissioning guidance is provided under ER 1110-345-723 and UFGS 15995A Commissioning of HVAC Systems. Additional commissioning guidance is available in the WBDG.

References***Regulated Under***

IBC – International Building Code

ER 1110-345-723, Systems Commissioning Procedures

UFGS 15995A Commissioning of HVAC Systems

ECB 2005-14 Building Commissioning Versus Corps of Engineers Military Design/Construction Process.

Supplementary Guidance Under

AR 415-15 MCA Program Development & Execution

WBDG (Project Management – Project Planning & Development – Building Commissioning, available through URL: <http://www.wbdg.org/project/buildingcomm.php>)

WBDG (Design Guidance – Design Objectives – Sustainable – Optimize Operational and Maintenance Practices), available through URL: http://www.wbdg.org/design/optimize_om.php)

UFC 3-400-01 Design Energy Conservation

CEMP-ED Memorandum, 24 July 2000, Heating, Ventilating, and Air Conditioning (HVAC) Systems Design

EA Credit 4: Enhanced Refrigerant Management**1 Point****Intent**

Select refrigerants that reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global warming.

Select fire suppression systems that reduce ozone depletion and support early compliance with the Montreal Protocol.

Requirements

Do not use refrigerants.

OR

Install base building HVAC&R equipment that complies with the following formula:

$$LCGWP + LCODP \times 105 \leq 100$$

Where:

$$LCODP = [ODPr \times (Lr \times Life + Mr) \times Rc] / Life$$

$$LCGWP = [GWPr \times (Lr \times Life + Mr) \times Rc] / Life$$

LCODP: Lifecycle Ozone Depletion Potential (lbCFC11/Ton-Year)

LCGWP: Lifecycle Direct Global Warming Potential (lbCO₂/Ton-Year)

GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lb CO₂/lbr)

ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 lbCFC11/lbr)

Lr: Refrigerant Leakage Rate (0.5% to 2.0%; default of 2% unless otherwise demonstrated)

Mr: End-of-life Refrigerant Loss (2% to 10%; default of 10% unless otherwise demonstrated)

Rc: Refrigerant Charge (0.5 to 5.0 lbs of refrigerant per ton of cooling capacity)

Life: Equipment Life (10 to 35 years; default based on equipment type, unless otherwise demonstrated)

For multiple types of equipment, a weighted average of all base building level HVAC&R equipment shall be applied using the following formula:

$$[\sum (LCGWP + LCODP \times 105) \times Q_{unit}] / Q_{total} \leq 100$$

Where:

Q_{unit} = Cooling capacity of an individual HVAC or refrigeration unit (Tons)

Q_{total} = Total cooling capacity of all HVAC or refrigeration.

Small HVAC units, which can include CRAC's and DSS's, that are used to cool equipment support rooms, such as computer, telephone and data rooms, are not considered part of the "base building" system and are not subject to the requirements of this credit.

AND

Do not install fire suppression systems that contain ozone depleting substances (CFCs, HCFCs, or Halons).

Submittals

- Provide the LEED-NC Letter Template demonstrating that the building HVAC and refrigeration systems use refrigerants that comply with the formula: $LCGMP + LCODP \times 105 \leq 100$ and listing the fire suppression systems installed and declaring that all fire suppression systems are free of ozone depleting substances.
- To complete the letter template, the refrigerant charge per Ton of cooling capacity and refrigerant type will be needed. The letter template will use default values of 1% leakage per year (L_r) with an end-of-life loss of charge of 3% (M_r) over an assumed 30 year life ($Life$). Alternative figures may exceptionally be used, provided the project can justify the assumptions made. The LEED-NC v2.2 Reference Guide includes typical values for L_r , M_r , and $Life$ for various common types of HVAC and refrigeration equipment, along with $ODPr$ and $GWPr$ for many common refrigerants.

Potential Technologies & Strategies

Utilize base building HVAC and refrigeration systems for the refrigeration cycle that are both low or non-ozone damaging and low or non-contributing to global warming. Refer to the LEED-NC v2.2 Reference Guide for qualifying alternatives. Utilize fire suppression systems that do not contain HCFC's or Halons.

EA Credit 4: Enhanced Refrigerant Management**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 15601N Central Refrigeration Equipment for Air Conditioning; 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems; and 15995A Commissioning of HVAC Systems.

Drawings: Mechanical Schedules

Design Analysis: Provide a narrative demonstrating how project HVAC, refrigeration and fire suppression systems meet LEED lifecycle ozone depletion and direct global warming potential.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 deleted “Refrigerant Selection” (previously titled “Elimination of HCFC’s and Halons”) from LEED-NC v2.0 and did not allow scoring for this credit. This is not a prerequisite. If the Army chooses to take the same approach with the adoption of LEED-NC, projects will just not garner this point.

References***Regulated Under***

FAR Part 23 – 52.223-11 Ozone-Depleting Substances.

Supplementary Guidance Under

UFC 4-826-10 Refrigeration Systems for Cold Storage

DOE/GO-102001-1165 Greening Federal Facilities, An Energy, Environmental, and Economic Resource Guide for Federal Facility Managers and Designers 2nd Edition, available through URL: <http://www.eere.energy.gov/femp/pdfs/29267.pdf>

EA Credit 5: Measurement and Verification**1 Point****Intent**

Provide for the ongoing accountability of building energy consumption over time.

Requirements

- Develop and implement a Measurement and Verification plan consistent with Option D: Calibrated Simulation (Savings Estimation Method 2), or Option B: ECM Isolation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003.
- The M&V period shall cover a period of no less than 1 year of post-construction occupancy.

Submittals

- Provide a copy of the M&V Plan following IPMVP Volume III, April, 2003, or IPMVP Volume 1, 2001.
- Provide the LEED-NC Letter Template, signed by the licensed engineer or other responsible party, indicating that all necessary metering equipment has been installed as per the M&V Plan and that a contract or commitment is in place for the professional services necessary to implement the M&V program.

Potential Technologies & Strategies

Model the building and/or energy systems to predict savings. Install the necessary metering and sub-metering equipment to measure and track energy use. Develop and implement a Measurement & Verification Plan that compares predicted savings to actual energy performance.

While the IPMVP describes specific actions for verifying savings associated with energy conservation measures, LEED requirements go slightly beyond typical IPMVP requirements. The intent of LEED M&V requirements is to provide for the ability to quantify and optimize building energy consumption over time. This intent indicates that M&V activities are not to be confined to energy systems where ECMs have been installed. The IPMVP provides detailed guidance as to the appropriate application of M&V strategies for LEED projects – these strategies should be applied to all energy systems such that monitoring and trend logging can be used to ensure performance of energy systems over the life of the building. The continuous metering requirement has been interpreted for LEED credit compliance purposes to include regularly occurring spot metering planned as part of on-going M&V activities. Regularly occurring spot metering should only be applied in context for appropriate energy systems.

EA Credit 5: Measurement and Verification**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance**

Optional—General guidance provided in SPiRiT is adequately provided in UFC materials, and the WBDG remains an excellent resource. If additional guidance is desired, it may be incorporated in the IDS or Facility Design Standards.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Specifications: UFGS 13801 Utility Monitoring and Control System (UMCS); 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems; 15910N Direct Digital Control Systems, 15951 Direct Digital Control for HVAC and Other Local Building Systems; 15990A Testing, Adjusting, and Balancing of HVAC Systems; and 15995A Commissioning of HVAC Systems.

Drawings: Highlight the equipments installed in the building for purposes of monitoring on Mechanical and Electrical Plans.

Design Analysis: Include a list of all measurement devices installed in the building. Also provide a copy of the measurement and verification plan with a summary schedule of instruments and controls related to each monitoring category.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0, v.2.1 & v.2.2 are virtually identical for this requirement with the exception that SPiRiT promoted the use of EMCS.

References***Regulated Under***

AR 420-1 Army Energy Program (Final pending)
 Army Energy Campaign Plan (pending)
 UFC 3-401-01FA Utility Monitoring Control Systems
 UFGS 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems

Supplementary Guidance Under

DOD Instruction 4170.11 Installation Energy Management

LEED®-NC 2.2

International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003

EA Credit 6: Green Power**1 Point****Intent**

Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.

Requirements

Provide at least 50% of the building's electricity from renewable sources by engaging in at least a 2-year renewable energy contract. Renewable sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements.

Use the annual electricity consumption from the results of EA credit 1

OR

For projects that do not pursue EA credit 1, use the Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database to determine the estimated electricity use.

Submittals

- Provide the LEED-NC Letter Template, signed by the owner or other responsible party, documenting that the supplied renewable power is equal to 50% of the project's energy consumption and the sources meet the Green-e definition of renewable energy.
- Provide a copy of the 2-year electric utility purchase contract for power generated from renewable sources.

Potential Technologies & Strategies

Determine the energy needs of the building and investigate opportunities to engage in a green power contract. Green power is derived from solar, wind, geothermal, biomass or low-impact hydro sources. Visit www.green-e.org for details about the Green-e program. The power product purchased to comply with credit requirements need not be Green-e certified. Other sources of green power are eligible if they satisfy the Green-e program's technical requirements. Renewable energy certificates (RECs), tradable renewable certificates (TRCs), green TAGs and other forms of green power that comply with Greene's technical requirements can be used to document compliance with EAc6 requirements.

EA Credit 6: Green Power**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide calculations for the expected building power consumption. Include a copy of a minimum 2-year contract to purchase power equal to at least 50% of the projected building consumption

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

Center for Resource Solutions (CRS) Green-e products certification requirements

Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS)

Materials and Resources				
LEED®-NC 2.2 Credit	Points	Recommendation	Special Implementing Language	Supplemental Guidance
MR Prerequisite 1: Storage & Collection of Recyclables	Required	Accept	Yes	Yes
MR Credit 1.1: Building Reuse – Maintain 75% of Existing Walls, Floors, and Roof	1 Point	Accept	No	No
MR Credit 1.2: Building Reuse – Maintain 95% of Existing Walls, Floors, and Roof	1 Point in addition to MR 1.1	Accept	No	No
MR Credit 1.3: Building Reuse – Maintain 50% of Interior Non-Structural Elements	1 Point	Accept	No	No
MR Credit 2.1: Construction Waste Management – Divert 50% From Disposal	1 Point	Accept	Yes	Optional
MR Credit 2.2: Construction Waste Management – Divert 75% From Disposal	1 Point in addition to MR 2.1	Accept	Yes	Optional
MR Credit 3.1: Materials Reuse – 5%	1 Point	Accept	Yes	Yes
MR Credit 3.2: Materials Reuse – 10%	1 Point	Accept	Yes	Yes
MR Credit 4.1: Recycled Content – 10% (post-consumer + ½ pre-consumer)	1 Point	Accept	No	No
MR Credit 4.2: Recycled Content – 20% (post-consumer + ½ pre-consumer)	1 Point in addition to MR 4.1	Accept	No	No
MR Credit 5.1: Regional Materials – 10% extracted, processed and manufactured regionally	1 Point	Accept	No	No
MR Credit 5.2: Regional Materials – 20% extracted, processed and manufactured regionally	1 Point in addition to MR 5.1	Accept	No	No
MR Credit 6: Rapidly Renewable Materials	1 Point	Accept	No	No
MR Credit 7: Certified Wood	1 Point	Accept	No	No

MR Prerequisite 1: Storage & Collection of Recyclables**Required****Intent**

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirements

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Provide an easily accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals. The size of this collection and storage area and the provision of any localized collection areas shall be evaluated based on the anticipated recyclable collection services available to the project.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or owner, declaring that the area dedicated to recycling is easily accessible and accommodates the building's recycling needs.
- Provide a plan showing the area(s) dedicated to recycled material collection and storage.

Potential Technologies & Strategies

Identify local waste handlers and buyers for glass, plastic, office paper, newspaper, cardboard and organic wastes. Consider employing cardboard balers, aluminum can crushers, recycling chutes and collection bins at individual workstations to further enhance the recycling program.

MR Prerequisite 1: Storage & Collection of Recyclables**Required****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on coordination of the design of building recycling areas with the ISWMP should be included in the IDS, DA Standard Designs and ISWMP.

Special Implementation Language

Project recyclables storage & collection areas shall be planned and sized in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). Collection shall include as a minimum paper, corrugated cardboard, glass, plastics and metals.

Applications Guidance

Recommended—IDS Addenda:

IDS CHAPTER 3 – BUILDING DESIGN STANDARDS 3.XX (New Section)

“Building Recycling Area. Provide each facility with an area easily accessible by occupants dedicated to the collection and storage of non-hazardous materials for recycling. The size shall be determined based on anticipated recyclables in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). Collection shall include as a minimum paper, corrugated cardboard, glass, plastics and metals.”

IDS CHAPTER 3 – BUILDING DESIGN STANDARDS 3.7.XX (New Section)

“Central Recycling Area. Central sorting and collection facilities serving multiple buildings may also be provided for occupant convenience in addition to provisions are made for the collection of the recyclable materials within each building. The size shall be determined based on anticipated recyclables in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). Collection shall include as a minimum paper, corrugated cardboard, glass, plastics and metals.”

IDS CHAPTER 6 – SITE ELEMENTS DESIGN STANDARDS 6.3.8.1 (Revision)

Add language for sharing recycling collection, “Central sorting and collection facilities serving multiple buildings may also be provided for occupant convenience in addition to provisions are made for the collection of the recyclable materials within each building. The size shall be determined based on anticipated recyclables in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). Collection shall include as a minimum paper, corrugated cardboard, glass, plastics and metals.”

IDS CHAPTER 6 – SITE ELEMENTS DESIGN STANDARDS 6.3.8.3.1 (Revision)

Add language for sharing recycling collection, “Central sorting and collection facilities serving multiple buildings may also be provided for occupant convenience in addition to provisions are made for the collection of the recyclable materials within each building. The size shall be determined based on anticipated recyclables in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). Collection shall include as a minimum paper, corrugated cardboard, glass, plastics and metals.”

Optional—Project specific guidance may be incorporated in project documentation.

Standard MILCON Project Documentation Requirements – None

Suggested Project Documentation

Drawings: Highlight the area for collection of recyclables on Architectural floor plans. Also highlight locations of waste collection chutes and receptacle areas.

Design Analysis: Provide a narrative substantiating that the space allotted for collection of recyclables is adequate for the facility. Include pertinent portions of the Installation Integrated Solid Waste Management Plan (ISWMP)

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0, v.2.1 & v.2.2 are virtually identical for this requirement with the exception that SPiRiT promoted development of recycling facilities in concert with the Installation Integrated Solid Waste Management Plan (ISWMP). ISWMPs are currently installation best management practices and typically address materials to be recycled on the installation. The ISWMP, however, does not always translate into facility design requirements. It is recommended that general guidance on coordination of the design of building recycling areas with the ISWMP be contained in the IDS and DA Standard Designs; and that similar guidance be contained in the ISWMP.

References

Regulated Under

DA Pam 200-1 Environmental Protection and Enhancement 2002

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

Installation Solid Waste Management Plan

Supplementary Guidance Under

Army IDS Installation Design Standards

MR Credit 1.1: Building Reuse – Maintain 75% of Existing Walls, Floors, and Roof**1 Point****Intent**

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain at least 75% (based on area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material). Hazardous materials that are remediated as a part of the project scope AND elements requiring replacement due to unsound material condition shall be excluded from the calculation of the percent maintained. If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.

Submittals

- Provide the LEED-NC Letter Template, signed by the responsible party, listing the retained elements and declaring that the credit requirements have been met.

Potential Technologies & Strategies

Consider reuse of existing, previously occupied buildings, including structure, envelope and elements. Remove elements that pose contamination risk to building occupants and upgrade components that would improve energy and water efficiency such as windows, mechanical systems and plumbing fixtures.

**MR Credit 1.1: Building Reuse -
Maintain 75% of Existing Walls, Floors, and Roof****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 01670 Recycled / Recovered Materials; and 02226 Removal and Salvage of Historic Building Materials.

Drawings: Note and highlight on the Demolition Plans the structural elements which are to be preserved. On the Elevations, note and highlight the shell elements to be preserved.

Design Analysis: Provide calculations substantiating that at least 75% of the existing building structure and shell are being preserved.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

**MR Credit 1.2: Building Reuse – Maintain
95% of Existing Walls, Floors, and Roof****1 Point in addition to MR 1.1****Intent**

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain an additional 20% (95% total, based on area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material). Hazardous materials that are remediated as a part of the project scope AND elements requiring replacement due to unsound material condition shall be excluded from the calculation of the percent maintained. If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, owner or other responsible party, demonstrating the retained elements and declaring that the credit requirements have been met.

Potential Technologies & Strategies

Consider reuse of existing buildings, including structure, envelope and elements. Remove elements that pose contamination risk to building occupants and upgrade components that would improve energy and water efficiency such as windows, mechanical systems and plumbing fixtures.

**MR Credit 1.2: Building Reuse –
Maintain 95% of Existing Walls, Floors, and Roof****1 Point in addition to MR 1.1****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 01670 Recycled / Recovered Materials; and 02226 Removal and Salvage of Historic Building Materials.

Drawings: Note and highlight on the Demolition Plans the structural elements which are to be preserved. On the Elevations, note and highlight the shell elements to be preserved.

Design Analysis: Provide calculations substantiating that at least 95% of the existing building structure and shell are being preserved.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

**MR Credit 1.3: Building Reuse – Maintain
50% of Interior Non-Structural Elements****1 Point****Intent**

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Use existing interior non-structural elements (interior walls, doors, floor coverings, and ceiling systems) in at least 50% (by area) of the completed building (including additions). If the project includes an addition to an existing building, this credit is not applicable if the square footage of the addition is more than 2 times the square footage of the existing building.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, owner or other responsible party, demonstrating the retained elements and declaring that the credit requirements have been met.

Potential Technologies & Strategies

Consider reuse of existing buildings, including structure, envelope and interior non-structural elements. Remove elements that pose contamination risk to building occupants and upgrade components that would improve energy and water efficiency such as, mechanical systems and plumbing fixtures. Quantify the extent of building reuse.

**MR Credit 1.3: Building Reuse -
Maintain 50% of Interior Non-Structural Elements****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 01670 Recycled / Recovered Materials; and 02226 Removal and Salvage of Historic Building Materials.

Drawings: Note and highlight on the Demolition Plans the structural and non-structural elements which are to be preserved. On the Elevations, note and highlight the shell elements to be preserved.

Design Analysis: Provide calculations substantiating that 100% of the existing building structure and shell are being preserved AND 50% of the non-shell components.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

**MR Credit 2.1: Construction Waste
Management – Divert 50% From Disposal****1 Point****Intent**

Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements

Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or commingled. Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Land clearing debris and excavated soil do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.

Submittals

Provide the LEED-NC Letter Template, signed by the architect, owner or other responsible party, tabulating the total non-hazardous waste material, quantities diverted and the means by which diverted, and declaring that the credit requirements have been met.

Potential Technologies & Strategies

Establish goals for diversion from disposal in landfills and incinerators and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area(s) on the construction site for segregated or commingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that diversion may include donation of materials to charitable organizations and salvage of materials on-site.

MR Credit 2.1: Construction Waste Management - Divert 50% From Disposal

1 Point

Recommendation

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on design coordination with the ISWMP concerning construction waste management should be included in the IDS, DA Standard Designs and ISWMP.

Special Implementation Language

Project construction waste management activities must be planned and executed in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP).

Applications Guidance

Optional—Project specific guidance may be incorporated in project documentation.

Standard MILCON Project Documentation Requirements

Standard MILCON project documentation describing how projects executed in accordance with AR 420–49 – Facilities Engineering: Utility Services, and with DAIM-FD Memorandum – Requirements for Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities (Pending 2005) should be developed for application to all MILCON projects.

Suggested Project Documentation

Specifications: UFGS 01572 Construction and Demolition Waste Management

Design Analysis: Include a Construction Waste Management Plan with a tabulation of total waste material generated along with quantities diverted (by weight) at the end of the project demonstrating at least a 50% diversion rate.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0, v.2.1 & v.2.2 are virtually identical (LEED v2.2 Draft deletes land clearing debris as a recyclable material) for this requirement with the exception that SPiRiT requires that the construction waste management plan be developed in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). ISWMPs are currently installation best management practices and include construction waste management requirements, however, the ISWMP does not always translate into facility design requirements. It is recommended that general guidance on construction waste management and coordination with the ISWMP be contained in the IDS and DA Standard Designs; and that similar guidance be contained in the ISWMP.

Guidance mandating a 50% diversion rate for construction, renovation, and demolition building material waste by weight, when compared with traditional practices of C&D waste management is pending (EO FY05). When issued, Army policy and LEED requirements for this credit will be equal.

References

Regulated Under

- AR 420-49 – Facilities Engineering: Utility Services
- DAIM-FD Memorandum – Management of Construction & Demolition (C&D) Wastes, 31 August 2001
- DAIM-FD Memorandum – Requirements for Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005
- DAIM-ZA Memorandum – Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005
- Federal Acquisition Regulation (FAR). FAR Part 23 – Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace – Provisions and Contract Clauses 52.223-10 Waste Reduction Program.

Supplementary Guidance Under

- AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)
- DA Pam 200-1 Environmental Protection and Enhancement 2002
- Army IDS Installation Design Standards
- PWTB 200-1-17, Recycling Interior Finish Materials – Carpet and Ceiling Tiles
- PWTB 200-1-21, Applicability of Constructed Wetlands for Army Installations
- PWTB 200-1-23, Guidance for the Reduction of Demolition Waste Through Reuse and Recycling
- PWTB 200-1-24, Quantifying Waste Generated From Building Remodeling
- PWTB 200-1-27, Reuse of Concrete Materials From Building Demolition
- PWTB 420-49-30, Alternatives to Demolition for Facility Reduction
- PWTB 420-49-32, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste
- UFC 1-900-01 Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste

MR Credit 2.2: Construction Waste Management – Divert 75% From Disposal**1 Point in addition to MR 2.1****Intent**

Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements

Recycle and/or salvage an additional 25% beyond MR credit 2.1 (75% total) of non-hazardous construction and demolition debris. Land clearing debris and excavated soil do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.

Submittals

Provide the LEED-NC Letter Template, signed by the architect, owner or other responsible party, tabulating the total non-hazardous waste material, quantities diverted and the means by which diverted, and declaring that the credit requirements have been met.

Potential Technologies & Strategies

Establish goals for diversion from disposal in landfills and incinerators and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area(s) on the construction site for segregated or commingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that diversion may include donation of materials to charitable organizations and salvage of materials on-site.

MR Credit 2.2: Construction Waste Management – 1 Point in addition to MR 2.1 Divert 75% From Disposal

Recommendation

Accept LEED Credit without Supplemental DA Requirements or Guidance. General guidance on design coordination with the ISWMP concerning construction waste management should be included in the IDS, DA Standard Designs and ISWMP.

Special Implementation Language

Project construction waste management activities must be planned and executed in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP).

Applications Guidance

Optional—Project specific guidance may be incorporated in project documentation.

Standard MILCON Project Documentation Requirements – None

Suggested Project Documentation

Specifications: UFGS 01572 Construction and Demolition Waste Management

Design Analysis: Include a Construction Waste Management Plan with a tabulation of total waste material generated along with quantities diverted (by weight) at the end of the project demonstrating at least a 75% diversion rate.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0, v.2.1 & v.2.2 are virtually identical (LEED v2.2 Draft deletes land clearing debris as a recyclable material) for this requirement with the exception that SPiRiT requires that the construction waste management plan be developed in accordance with the Installation Integrated Solid Waste Management Plan (ISWMP). ISWMPs are currently installation best management practices and include construction waste management requirements, however, the ISWMP does not always translate into facility design requirements. It is recommended that general guidance on construction waste management and coordination with the ISWMP be contained in the IDS and DA Standard Designs; and that similar guidance be contained in the ISWMP.

References

Regulated Under

AR 420–49 – Facilities Engineering: Utility Services

DAIM-FD Memorandum – Management of Construction & Demolition (C&D) Wastes, 31 August 2001

DAIM-FD Memorandum – Requirements for Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005

DAIM-ZA Memorandum – Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005

FAR Part 23 – 52.223-4 52.223-10 Waste Reduction Program

Supplementary Guidance Under

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement 2002

Army IDS Installation Design Standards

PWTB 200-1-17, Recycling Interior Finish Materials – Carpet and Ceiling Tiles

PWTB 200-1-21, Applicability of Constructed Wetlands for Army Installations

PWTB 200-1-23, Guidance for the Reduction of Demolition Waste Through Reuse and Recycling

PWTB 200-1-24, Quantifying Waste Generated From Building Remodeling

PWTB 200-1-27, Reuse of Concrete Materials From Building Demolition

PWTB 420-49-30, Alternatives to Demolition for Facility Reduction

PWTB 420-49-32, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste

UFC 1-900-01 Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste

MR Credit 3.1: Materials Reuse – 5%**1 Point****Intent**

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use salvaged, refurbished or reused materials for at least 5% (based on cost) of building materials. Calculations shall be based on the cost of the materials as if purchased new compared to the total cost of all materials.

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Furniture may be included, providing it is included consistently in MRc3-7. Formwork is included in the total materials cost only if it is purchased for the project and not used elsewhere; formwork that is reused can be counted as equipment and excluded from the calculation. Formwork must be included or excluded consistently in MRc3-7.

Submittals

Provide the LEED-NC Letter Template, signed by the architect, owner or other responsible party, declaring that the credit requirements have been met and listing each material or product used to meet the credit. Include details demonstrating that the project incorporates the required percentage of reused materials and products and showing their costs and the total cost of materials for the project.

Potential Technologies & Strategies

Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.

MR Credit 3.1: Materials Reuse – 5%**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. Implementation guidance needs to address consideration for the use of installation stockpiled salvaged or refurbished materials from demolition or deconstruction in new construction and renovation. General guidance on salvaged or refurbished materials should be developed and included in the IDS.

Special Implementation Language

Projects should consider the use of installation stockpiled salvaged or refurbished materials from demolition or deconstruction in new construction and renovation. Use of these materials shall be included in calculations for this credit in addition to materials that are salvaged on-site where an existing building is being demolished or deconstructed.

Applications Guidance***Recommended – IDS Addendum:***

IDS Appendix D – “Projects shall be designed to include both materials that are salvaged or refurbished either on-site where an existing building is being demolished or deconstructed, or that have been stockpiled from other installation demolition or deconstruction activities. Salvaged materials that can no longer serve in their original function must be applied to LEED MR C.3, Materials Reuse; and materials that will be reinstalled to serve in their original function must be applied to MR Credit 1.3, Building Reuse. All salvaged or refurbished materials diverted from landfill may be additionally included in calculations for MR Credit 2, Construction Waste Management.”

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Design Analysis: Provide a table listing all sections of the specifications where salvaged or refurbished material have been specified including the respective estimated dollar values of these materials. Demonstrate that this accounts for 5% of the building materials used.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

LEED allows the inclusion of materials that are salvaged on-site where an existing building is being demolished or deconstructed in calculations for this credit. Materials that will be reinstalled to serve in their original function must be applied to MR Credit 1.3, Building Reuse. All salvaged or refurbished materials may be additionally included in calculations for MR Credit 2, Construction Waste Management. Where those salvaged or refurbished materials are available at “no cost” or are below market value, replacement cost is used to estimate the material value. LEED makes no explicit exception for the use of salvaged or refurbished materials off-site, for example, materials stockpiled from other installation demolition or deconstruction activities; neither do any Credit Interpretation Rulings (CIRs). Further, no guidance is offered in the LEED®-NC Application Guide for Multiple and Campus Building Projects (draft).

References

Regulated Under

AR 420-49 – Facilities Engineering: Utility Services

DAIM-FD Memorandum – Management of Construction & Demolition (C&D) Wastes, 31 August 2001

DAIM-FD Memorandum – Requirements for Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005

DAIM-ZA Memorandum – Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, Pending 2005

Supplementary Guidance Under

AR 200-1 Environmental Protection and Enhancement (to be replaced by AR 200-1 Environmental Sustainability and Stewardship)

DA Pam 200-1 Environmental Protection and Enhancement 2002

Army IDS Installation Design Standards

PWTB 200-1-17, Recycling Interior Finish Materials – Carpet and Ceiling Tiles

PWTB 200-1-23, Guidance for the Reduction of Demolition Waste Through Reuse and Recycling

PWTB 200-1-27, Reuse of Concrete Materials From Building Demolition

PWTB 420-49-30, Alternatives to Demolition for Facility Reduction

PWTB 420-49-32, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste

UFC 1-900-01 Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste

MR Credit 3.2: Materials Reuse – 10%**1 Point****Intent**

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use salvaged, refurbished or reused materials for an additional 5% beyond MR credit 3.1 (10% total, based on cost) of building materials. Calculations shall be based on the cost of the materials as if purchased new compared to the total cost of all materials.

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Furniture may be included, providing it is included consistently in MRc3-7. Formwork is included in the total materials cost only if it is purchased for the project and not used elsewhere; formwork that is reused can be counted as equipment and excluded from the calculation. Formwork must be included or excluded consistently in MRc3-7.

Submittals

Provide the LEED-NC Letter Template, signed by the architect, owner or other responsible party, declaring that the credit requirements have been met and listing each material or product used to meet the credit. Include details demonstrating that the project incorporates the required percentage of reused materials and products and showing their costs and the total cost of materials for the project.

Potential Technologies & Strategies

Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.

MR Credit 3.2: Materials Reuse – 10%**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide a table listing all sections of the specifications where salvaged or refurbished material have been specified including the respective estimated dollar values of these materials. Demonstrate that this accounts for 10% of the building materials used.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Supplementary Guidance***

- PWTB 200-1-17, Recycling Interior Finish Materials – Carpet and Ceiling Tiles
- PWTB 200-1-21, Applicability of Constructed Wetlands for Army Installations
- PWTB 200-1-23, Guidance for the Reduction of Demolition Waste Through Reuse and Recycling
- PWTB 200-1-24, Quantifying Waste Generated From Building Remodeling
- PWTB 200-1-27, Reuse of Concrete Materials From Building Demolition
- PWTB 420-49-30, Alternatives to Demolition for Facility Reduction
- PWTB 420-49-32, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste

**MR Credit 4.1: Recycled Content -
10% (post-consumer + ½ pre-consumer)****1 Point****Intent**

Increase demand for building products that incorporate recycled content materials, therefore reducing impacts resulting from extraction and processing of new virgin materials.

Requirements

Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project.

Mechanical, electrical, and plumbing components and specialty items such as elevators shall not be included in this calculation. Furniture may be included, providing it is included consistently in MRc3-7.

Recycled content materials shall be defined in accordance with the International Organization of Standards document, ISO 14021 – Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling.)

Post-consumer material is defined as material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of materials from the distribution chain (Source: ISO 14021). Examples of this category include construction and demolition debris, materials collected through curbside and drop-off recycling programs, broken pallets (if from a pallet refurbishing company, not a pallet making company), discarded products (e.g., furniture, cabinetry and decking) and urban maintenance waste (leaves, grass clippings, tree trimmings, etc).

Pre-Consumer material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it (Source ISO 14021). Examples in this category include planer shavings, plytrim, sawdust, chips, bagasse, sunflower seed hulls, walnut shells, culls, trimmed materials, print overruns, overissue publications, and obsolete inventories.

Submittals

Provide the LEED-NC letter Template, signed by the architect, owner or other responsible party, declaring that the credit requirements have been met and listing the recycled content products used. Include details demonstrating that the project incorporates the required percentage of recycled content materials and products and showing their cost and percentage(s) of post-consumer and/or pre-consumer content, and the total cost of all materials for the project.

Potential Technologies & Strategies

Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

MR Credit 4.1: Recycled Content - 10% (post-consumer + ½ pre-consumer)

1 Point

Recommendation

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None

Applications Guidance – None

Standard MILCON Project Documentation Requirements – None

Suggested Project Documentation

Specifications: 01670 Recycled / Recovered Materials; 02220 Demolition; 02722 Graded Crushed Aggregate Base Course for Flexible Pavement; 02870A Site Furnishings; 03200A Concrete Reinforcement; 03300N Cast-In-Place Concrete; 03330 Cast-In-Place Architectural Concrete; 04200 Masonry; 04810 Nonbearing Masonry Veneer/Steel Stud Walls; 05120 Structural Steel; 05210 Steel Joists; 05310 Steel Decks; 05400 Cold-formed Metal Framing; 07212N Mineral Fiber Blanket Insulation; 07220 Roof and Deck Insulation; 07240 Exterior Insulation and Finish Systems; 08110 Steel Doors and Frames; 08120 Aluminum Doors and Frames; 08520A Aluminum and Environmental Control Aluminum Windows; 09100N Metal Support Assemblies; 09250 Gypsum Board; 09310 Ceramic Tile, Quarry Tile, and Paver Tile; and 09510 Acoustical Ceilings.

Design Analysis: Provide a table listing all sections of the specifications where recycled materials or materials with recycled content are available. List the percentage of recycled content per material, the estimated quantity, the cost, and the total estimated project cost. Provide calculations showing the total recycled content as a percentage.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0, v.2.1 & v.2.2 are virtually identical for this requirement with the exception that SPiRiT suggested means for designers to select building materials and products based on various environmental criteria. This added guidance is no longer needed: first, it was included as a “suggested” technology/strategy, not mandatory in the rating tool, and second, many good sources for the selection of appropriate materials are now available, specifically EPA and WBDG resources.

SPiRiT “7.C1, Operation & Maintenance,” supplements LEED®-NC 2.0 by requiring the selection of materials that are durable, perform appropriately and are environmentally sound. This is a current design “best practice” and adequately covered in UFC, IDS, and LEED Reference materials.

Other Legal Requirements

General—By regulation, there are designated construction-related products Federal agencies must procure with recycled content. The EPA publishes the Comprehensive Procurement Guidelines (CPGs), found in 40 CFR 247, that provide a list of products that must contain recovered material. Recommendations for the percentages of recovered materials are published in a companion document titled the Recovered Materials Advisory Notice (RMAN). Additional products are added every 2-3 years. The CPGs currently include 15 construction products (such as latex paint, floor tiles, and roofing materials) and five landscaping products (such as lawn and garden

edging and landscaping timbers and posts). Note that procurement of USDA-designated bio-based items will be mandatory 1 year after the USDA item list is published as final (currently proposed). The USDA-designated items will include materials used in the construction industry.

Regulations—The requirements for Federal agency procurement of recycled-content products are set forth in Section 6002 of the Resource Conservation and Recovery Act, Executive Order 13101, and Part 23.4 of the Federal Acquisition Regulations. All Federal contracts that involve the use or purchase of EPA- or USDA- designated products must specify that the associated procurement requirements be met and must include applicable FAR provisions and clauses.

Applicability—These requirements apply to all “procuring agencies.” The regulations allow exceptions to the requirements based on at least one of three conditions. Those conditions are that the recycled content or biobased product is (1) unreasonably priced compared to a comparable product made of virgin or non-biobased material, (2) will not perform adequately or meet the user’s need, or (3) is not available within a reasonable timeframe or at a sufficient level of competition (for contract actions).

Additional Information—To view the CPGs and RMANS and learn more about the applicability of these requirements (including using exceptions), go the web sites of the Office of the Federal Environmental Executive and the EPA at (respectively) URLs

www.ofee.gov

www.epa.gov/cpg.

References

Regulated Under

Section 6002 of the Resource Conservation and Recovery Act

Executive Order 13101 Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition

Recovered Materials Advisory Notice (RMAN)

FAR Part 23.4 – Use of Recovered Materials

FAR Part 23 – 52.223-4 Recovered Material Certification.

FAR Part 23 – 52.223-9 Estimate of Percentage of Recovered Material Content for EPA-Designated Products.

Supplementary Guidance Under

WBDG (Design Guidance – Design Objectives – Sustainable – Use Environmentally Preferable Products, available through URL:

http://www.wbdg.org/design/env_preferable_products.php

EPA Environmentally Preferable Purchasing (EPP) Program, available through URL:

<http://www.epa.gov/oppt/epp/>

EPA Comprehensive Procurement Guidelines, available through URL:

<http://www.epa.gov/cpg/index.htm>

LEED®-NC 2.2

ISO 14021 – Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling)

**MR Credit 4.2: Recycled Content –
20% (post-consumer + ½ pre-consumer)****1 Point in addition to MR 4.1****Intent**

Increase demand for building products that incorporate recycled content materials, therefore reducing the impacts resulting from extraction and processing of new virgin materials.

Requirements

Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes and additional 10% beyond MR credit 4.1 (Total of 20%, based on cost) of the total value of the materials in the project.

Submittals

Provide the LEED-NC letter Template, signed by the architect, owner or other responsible party, declaring that the credit requirements have been met and listing the recycled content products used. Include details demonstrating that the project incorporates the required percentage of recycled content materials and products and showing their cost and percentage(s) of post-consumer and/or pre-consumer content, and the total cost of all materials for the project.

Potential Technologies & Strategies

Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

MR Credit 4.2: Recycled Content – 20% (post-consumer + ½ pre-consumer)

1 Point in addition to MR 4.1

Recommendation

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None

Applications Guidance – None

Standard MILCON Project Documentation Requirements – None

Suggested Project Documentation

Specifications: 01670 Recycled / Recovered Materials; 02220 Demolition; 02722 Graded Crushed Aggregate Base Course for Flexible Pavement; 02870A Site Furnishings; 03200A Concrete Reinforcement; 03300N Cast-In-Place Concrete; 03330 Cast-In-Place Architectural Concrete; 04200 Masonry; 04810 Nonbearing Masonry Veneer/Steel Stud Walls; 05120 Structural Steel; 05210 Steel Joists; 05310 Steel Decks; 05400 Cold-formed Metal Framing; 07212N Mineral Fiber Blanket Insulation; 07220 Roof and Deck Insulation; 07240 Exterior Insulation and Finish Systems; 08110 Steel Doors and Frames; 08120 Aluminum Doors and Frames; 08520A Aluminum and Environmental Control Aluminum Windows; 09100N Metal Support Assemblies; 09250 Gypsum Board; 09310 Ceramic Tile, Quarry Tile, and Paver Tile; and 09510 Acoustical Ceilings.

Design Analysis: Provide a table listing all sections of the specifications where recycled materials or materials with recycled content are available. List the percentage of recycled content per material, the estimated quantity, the cost, and the total estimated project cost. Provide calculations showing the total recycled content as a percentage.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0, v.2.1 & v.2.2 are virtually identical for this requirement with the exception that SPiRiT suggested means for designers to select building materials and products based on various environmental criteria. This added guidance is no longer needed: first, it was included as a “suggested” technology/strategy, not mandatory in the rating tool, and second, many good sources for the selection of appropriate materials are now available, specifically EPA and WBDG resources.

SPiRiT “7.C1, Operation & Maintenance,” supplements LEED®-NC 2.0 by requiring the selection of materials that are durable, perform appropriately and are environmentally sound. This is a current design “best practice” and adequately covered in UFC, IDS, and LEED Reference materials.

Other Legal Requirements

General—By regulation, there are designated construction-related products Federal agencies must procure with recycled content. The EPA publishes the Comprehensive Procurement Guidelines (CPGs), found in 40 CFR 247, that provide a list of products that must contain recovered material. Recommendations for the percentages of recovered materials are published in a companion document titled the Recovered Materials Advisory Notice (RMAN). Additional products are added every 2-3 years. The CPGs currently include 15 construction products (such as latex paint, floor tiles, and roofing materials) and five landscaping products (such as lawn and garden

edging and landscaping timbers and posts). Note that procurement of USDA-designated bio-based items will be mandatory 1 year after the USDA item list is published as final (currently proposed). The USDA-designated items will include materials used in the construction industry.

Regulations—The requirements for Federal agency procurement of recycled-content products are set forth in Section 6002 of the Resource Conservation and Recovery Act, Executive Order 13101, and Part 23.4 of the Federal Acquisition Regulations. All Federal contracts that involve the use or purchase of EPA- or USDA- designated products must specify that the associated procurement requirements be met and must include applicable FAR provisions and clauses.

Applicability—These requirements apply to all “procuring agencies.” The regulations allow exceptions to the requirements based on at least one of three conditions. Those conditions are that the recycled content or biobased product is (1) unreasonably priced compared to a comparable product made of virgin or non-biobased material, (2) will not perform adequately or meet the user's need, or (3) is not available within a reasonable timeframe or at a sufficient level of competition (for contract actions).

Additional Information—To view the CPGs and RMANS and learn more about the applicability of these requirements (including using exceptions), go the web sites of the Office of the Federal Environmental Executive at www.ofee.gov and the EPA at www.epa.gov/cpg.

References

Regulated Under

FAR Part 23 – 52.223-4 Recovered Material Certification.

FAR Part 23 – 52.223-9 Estimate of Percentage of Recovered Material Content for EPA- Designated Products.

Supplementary Guidance Under

WBDG (Design Guidance – Design Objectives – Sustainable – Use Environmentally Preferable Products, available through URL:
http://www.wbdg.org/design/env_preferable_products.php

EPA Environmentally Preferable Purchasing (EPP) Program, available through URL:
<http://www.epa.gov/oppt/epp/>

EPA Comprehensive Procurement Guidelines, available through URL:
<http://www.epa.gov/cpg/index.htm>

MR Credit 5.1: Regional Materials – 10% extracted, processed and manufactured regionally**1 Point****Intent**

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

Requirements

Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on weight) of the total materials value. If only a fraction of the material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the total value. Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculation. Furniture may be included, providing it is included consistently in MRc3-7. Formwork is included in the total materials cost only if it is purchased for the project and not used elsewhere; formwork that is reused can be counted as equipment and excluded from the calculation. Formwork must be included or excluded consistently in MRc3-7.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, declaring that the credit requirements have been met. Include evidence of transportation service by rail or water if applicable, and calculations demonstrating that the project incorporates the required percentage of regional materials/products and showing their cost, distance from the project site to the furthest point of extraction or manufacture for the qualifying components (i.e., the components comprising at least 80% of the mass), and the total cost of all materials for the project.

Potential Technologies & Strategies

Establish a project goal for locally sourced materials, and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

**MR Credit 5.1: Regional Materials -
10% extracted, processed and
manufactured regionally****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide a table listing all sections of the specifications for which regionally manufactured materials are available, demonstrating that 10% are extracted, processed & manufactured within specified distances. List the estimated quantity, unit cost, and the total estimated project cost.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

SPiRiT "7.C1, Operation & Maintenance," supplements LEED®-NC 2.0 by requiring the selection of materials that are durable, perform appropriately and are environmentally sound. This is a current design "best practice" and adequately covered in UFC, IDS, and LEED Reference materials.

References – None

**MR Credit 5.2: Regional Materials – 20%
extracted, processed and manufactured
regionally****1 Point in addition to MR 5.1****Intent**

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

Requirements

Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for an additional 10% beyond MR credit 5.1 (Total of 20%, based on weight) of the total materials value. If only a fraction of the material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the total value.

Submittals

Provide the LEED-NC Letter Template, signed by the architect or responsible party, declaring that the credit requirements have been met. Include evidence of transportation service by rail or water if applicable, and calculations demonstrating that the project incorporates the required percentage of regional materials/products and showing their cost, distance from project site to the furthest point of extraction or manufacture for the qualifying components (i.e., the components comprising at least 80% of the mass), and the total cost of all materials for the project.

Potential Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

**MR Credit 5.2: Regional Materials -
20% extracted, processed and
manufactured regionally****1 Point in addition to MR 5.1****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance** – None**Standard MILCON Project Documentation Requirements** – None**Suggested Project Documentation**

Design Analysis: Provide a table listing all sections of the specifications for which regionally manufactured materials are available, demonstrating that 20% are extracted, processed & manufactured within specified distances. List the estimated quantity, unit cost, and the total estimated project cost.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

SPiRiT "7.C1, Operation & Maintenance," supplements LEED®-NC 2.0 by requiring the selection of materials that are durable, perform appropriately and are environmentally sound. This is a current design "best practice" and adequately covered in UFC, IDS, and LEED Reference materials.

References – None

MR Credit 6: Rapidly Renewable Materials**1 Point****Intent**

Reduce the use and depletion of finite raw materials by replacing them with rapidly renewable materials and residues from the processing of bio-based materials.

Requirements

Use rapidly renewable materials and/or residues from the processing of bio-based raw materials for 2.5% (based on cost) of the total materials value.

Excluded from the calculation are materials such as formwork, shoring, temporary partitions and other elements that are not a permanent part of the finished building.

Submittals

Provide the LEED-NC Letter Template, signed by the responsible party, declaring that the credit requirements have been met and including calculations demonstrating that the project incorporates the required percentage of qualifying products.

Potential Technologies & Strategies

Establish a project goal for renewable, bio-based materials and identify products and suppliers that can support achievement of this goal. Consider rapidly renewable materials such as bamboo, wool, cotton, and cork. Also consider bio-based residue products such as agriboard.

MR Credit 6: Rapidly Renewable Materials**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Drawings: Note on appropriate Civil, Landscape, Architectural, Structural, or Plans where rapidly renewable materials are required.

Design Analysis: Provide a table listing sections of the specifications that call for rapidly renewable materials. Show calculations that demonstrate that rapidly renewable materials account for 2.5% of total building materials.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

SPiRiT “7.C1, Operation & Maintenance,” supplements LEED®-NC 2.0 by requiring the selection of materials that are durable, perform appropriately and are environmentally sound. This is a current design “best practice” and adequately covered in UFC, IDS, and LEED Reference materials.

References – None

MR Credit 7: Certified Wood**1 Point****Intent**

Encourage environmentally responsible forest management.

Requirements

Use a minimum of 50% of wood-based materials and products, certified in accordance with the Forest Stewardship Council's Principles and Criteria, for wood building components including, but not limited to, structural framing and general dimensional framing, flooring, finishes, furnishings, and non-rented temporary construction applications such as bracing, concrete formwork and pedestrian barriers.

Submittals

- Provide the LEED-NC Letter Template, signed by the responsible party, declaring that the credit requirements have been met and including calculations demonstrating that the project incorporates the required percentage of qualifying materials.
- For each product used to meet these requirements, provide the applicable vendor's or manufacturer's certification documentation (e.g., FSC chain-of-custody certificate).

Potential Technologies & Strategies

Establish a project goal for FSC-certified wood products and identify suppliers that can achieve this goal. During construction, ensure that the FSC-certified wood products are installed and quantify the total percentage of FSC-certified wood products installed.

MR Credit 7: Certified Wood**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 03100A Structural Concrete Formwork; 03101A Formwork for Concrete; 04200 Masonry; 06100 Rough Carpentry; 06200 Finish Carpentry; 06410A Laminate Clad Architectural Casework; 08210 Wood Doors; 08550 Wood Windows; 09640 Wood Strip Flooring; 09641 Wood Athletic Flooring; and 09645 Wood Parquet Flooring.

Drawings: Note on applicable Architectural Plans and Schedules, and Structural Plans where certified wood is to be used.

Design Analysis: Provide a list of all wood-based products used and their costs. Highlight those that are certified wood and demonstrate that certified wood accounts for 50% of the costs for all wood-based products used for the project. Supply copies of chain of custody certification documentation from the supplier.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

Forest Stewardship Council (FSC) Principles and Criteria

Table 11. Indoor Environmental Quality.

LEED®-NC 2.2 Credit	Points	Recommendation	Special Implementing Language	Supplemental Guidance
EQ Prerequisite 1: Minimum IAQ Performance	Required	Accept	No	No
EQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control	Required	Accept	No	Optional
EQ Credit 1: Outdoor Air Delivery Monitoring	1 Point	Accept	No	Optional
EQ Credit 2: Increased Ventilation	1 Point	Accept	No	No
EQ Credit 3.1: Construction IAQ Management Plan – During Construction	1 Point	Accept	No	No
EQ Credit 3.2: Construction IAQ Management Plan – Before Occupancy	1 Point	Accept	No	No
EQ Credit 4.1: Low-Emitting Materials – Adhesives & Sealants	1 Point	Accept	No	No
EQ Credit 4.2: Low-Emitting Materials – Paints and Coatings	1 Point	Accept	No	No
EQ Credit 4.3: Low-Emitting Materials – Carpet Systems	1 Point	Accept	No	No
EQ Credit 4.4: Low-Emitting Materials – Composite Wood and Agrifiber Products	1 Point	Accept	No	No
EQ Credit 5: Indoor Chemical & Pollutant Source Control	1 Point	Accept	No	No
EQ Credit 6.1: Controllability of Systems – Lighting	1 Point	Accept	No	No
EQ Credit 6.2: Controllability of Systems – Thermal Comfort	1 Point	Accept	No	No
EQ Credit 7.1: Thermal Comfort – Compliance	1 Point	Accept	No	No
EQ Credit 7.2: Thermal Comfort – Validation	1 Point	Accept	No	No
EQ Credit 8.1: Daylight and Views – Daylight 75% of Spaces	1 Point	Accept	No	No
EQ Credit 8.2: Daylight and Views – Views for 90% of Spaces	1 Point	Accept	No	No

EQ Prerequisite 1: Minimum IAQ Performance**Required****Intent**

Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.

Requirements

Meet the minimum requirements of voluntary consensus standard ASHRAE 62.1-2004, Ventilation for Acceptable Indoor Air Quality. Mechanical ventilation systems shall be designed using the Ventilation Rate Procedure.

Naturally ventilated buildings shall comply with ASHRAE 62.1-2004, paragraph 5.1.

Submittals

- Provide the LEED-NC Letter Template, signed by the responsible design professional, declaring that the project is fully compliant with Sections 4, 5, 6, and 7 of ASHRAE 62.1-2004.
- Provide a summary of calculations used to determine outdoor air ventilation rates, documenting all assumptions including occupancy type, occupant density, zone air distribution effectiveness, and ventilation system efficiency.

Potential Technologies & Strategies

Design and construct the building to meet the requirements of Sections 4, 5, 6, and 7 of the referenced standard.

EQ Prerequisite 1: Minimum IAQ Performance**Required****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems; and 15990A Testing, Adjusting, and Balancing of HVAC Systems.

Design Analysis: Provide a narrative indicating compliance with ASHRAE Standard 62.1-2004 for mechanically ventilated buildings and ASHRAE Standard 62.1-2004, paragraph 5.1 for naturally ventilated buildings. Documenting design assumptions and include calculations used to determine outdoor air ventilation rates.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

Guidance provided in SPIRiT 1.4.1 to clarify and supplement LEED-NC v2.0 requirements is addressed in LEED-NC v2.1, v2.2 and the LEED Reference Guide; Minimum IAQ design is to ASHRAE Standards.

References***Regulated Under***

10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings

ASHRAE Standard 62.1 – 2004 Ventilation for Acceptable Indoor Air Quality

UFC 3-440-06 Cooling Buildings by Natural Ventilation

UFC 3-410-01FA Design – Heating, Ventilating, and Air Conditioning

Supplementary Guidance Under

UFC 3-120-02AN Design Guide-Interiors (by reference DG 1110-3-122 Design Guide for Interiors)

WBDG (Design Guidance – Design Objectives – Sustainable – Enhance Indoor Environmental Quality (IEQ), available through URL: <http://www.wbdg.org/design/ieq.php>)

ER 1110-345-723, Systems Commissioning Procedures

LEED®-NC 2.2

Forest Stewardship Council (FSC) Principles and Criteria

EQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control

Required

Intent

Minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to Environmental Tobacco Smoke (ETS).

Requirements

Option 1. Prohibit smoking in the building.

- Prohibit smoking in the building
- Locate any exterior designated smoking areas at least 25 ft away from entries, outdoor air intakes and operable windows.

OR

Option 2. Establish negative pressure in the rooms with smoking.

- Prohibit smoking in the building except in designated smoking areas
- Locate any exterior designated smoking areas at least 25 ft away from entries, outdoor air intakes and operable windows.
- Provide one or more designated smoking rooms designed to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room must be directly exhausted to the outdoors with no re-circulation of ETS-containing air to the non-smoking area of the building, and enclosed with impermeable deck-to-deck partitions and operated at a negative pressure compared with the surrounding spaces of at least an average of 5 Pa (0.02 inches of water gauge) and with a minimum of 1 Pa (0.004 inches of water) when the door(s) to the smoking room are closed.
- Performance of the smoking room differential air pressures shall be verified by conducting 15 minutes of measurement, with a minimum of one measurement every 10 seconds, of the differential pressure in the smoking room with respect to each adjacent area and in each adjacent vertical chase with the doors to the smoking room closed. The testing will be conducted with each space configured for worst case conditions of transport of air from the smoking rooms to adjacent spaces.

OR

Option 3. Reduce air leakage between rooms with smoking and non-smoking areas in residential buildings. Note that Option 3 is for residential buildings only.

- Prohibit smoking in all common areas of the building
- Locate any exterior designated smoking areas at least 25 ft away from entries, outdoor air intakes and operable windows opening to common areas.
- Minimize uncontrolled pathways for ETS transfer between individual residential units by sealing penetrations in walls, ceilings, and floors in the residential units, and by sealing vertical chases adjacent to the units. In addition, all doors in the residential units leading to common hallways shall be weather-stripped to minimize air leakage into the hallway. If the common hallways are pressurized with respect to the residential units then doors in the residential units leading to the common hallways need not be weather-stripped provided that the positive differ-

ential pressure is demonstrated as in Option 2 above. Acceptable sealing of residential units shall be demonstrated by a blower door test conducted in accordance with ANSI/ASTM-779-03, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization, AND use the progressive sampling methodology defined in Chapter 4 (Compliance Through Quality Construction) of the Residential Manual for Compliance with California's 2001 Energy Efficiency Standards (available through URL: http://www.energy.ca.gov/title24/residential_manual). Residential units must demonstrate less than 1.25 square inches leakage area per 100 SF of enclosure area (i.e., sum of all wall, ceiling, and floor areas).

Submittals

- Provide the LEED-NC Letter Template, signed by the building owner or responsible party, declaring that the building will be operated under a policy prohibiting smoking, and the exterior designated smoking areas are at least 25 ft away from entries and operable windows.

OR

- Provide the LEED-NC Letter Template, signed by the tenant or responsible party, declaring and demonstrating that smoking is prohibited in that portion of the tenant space not designated as a smoking space and all other areas of the building serviced by the same HVAC system, plus common areas used by tenant occupants. If the tenant's occupants are permitted to smoke, declare and demonstrate that designated smoking rooms met the design criteria described in the credit requirements and performance has been verified using the method described in the credit requirements.

OR

- Provide the LEED-NC Letter Template, signed by the tenant or responsible party, declaring and demonstrating that the credit requirements or ETS transfer between individual residential units have been satisfied.

Potential Technologies & Strategies

Prohibit smoking in commercial buildings or effectively control the ventilation air in smoking rooms. For residential buildings, prohibit smoking in common areas, design building envelope and systems to minimize ETS transfer among dwelling units.

EQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control**Required****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance**

Optional—If there are facility type specific requirements, they may be incorporated in the DA Standard Designs as desired.

Standard MILCON Project Documentation Requirements

Standard MILCON project documentation describing Federal Environmental Tobacco Smoke (ETS) Control policy should be developed for application to all MILCON projects.

Suggested Project Documentation

Specifications: UFGS 15990A Testing, Adjusting, and Balancing of HVAC Systems.

Drawings: Indicate designated indoor smoking areas on Site Plans; indoor areas on Architectural Plans, and highlight elements designed to control ETS on appropriate Architectural, Structural, Mechanical and/or Electrical Plans and Sections as applicable.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

Smoking is already prohibited in DOD facilities, except in designated smoking areas enclosed and exhausted directly to the outside, maintained under negative pressure sufficient to contain tobacco smoke in the designated area, and located away from air intakes; with the exception of residential accommodations. If there are facility type specific requirements, they may be incorporated in the DA Standard Designs as desired.

References***Regulated Under***

EO 13058 Protecting Federal Employees and the Public From Exposure to Tobacco Smoke in the Federal Workplace

DOD Instruction 1010.15 Smoke-Free DOD Facilities 02 Jan 2001

LEED®-NC 2.2

ANSI/ASTM-779-03, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization

Residential Manual for Compliance with California's 2001 Energy Efficiency Standards

EQ Credit 1: Outdoor Air Delivery Monitoring**1 Point****Intent**

Provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being.

Requirements

Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements. Configure all monitoring equipment to generate an alarm if under-ventilation is detected, via either a building automation system alarm to the building operator or via an alarm that alerts building occupants.

FOR MECHANICALLY VENTILATED SPACES

- Monitor carbon dioxide concentrations within all densely occupied spaces (those with a design occupant density greater than or equal to 25 people per 1000 ft²). CO₂ monitoring locations shall be between 3 ft and 6 ft above the floor.
- For mechanical ventilation systems serving non-densely occupied spaces, provide a direct outdoor airflow measurement device capable of measuring the outdoor airflow rate at all expected system operating conditions within 15% of the design minimum outdoor air rate.

FOR NATURALLY VENTILATED SPACES

Monitor CO₂ concentrations within all naturally ventilated spaces. CO₂ monitoring shall be located within the room between 1 ft and 6 ft above the floor. One CO₂ sensor may be used to represent multiple spaces if the natural ventilation design uses passive stack(s) or other means to induce airflow through those spaces equally and simultaneously without intervention by building occupants.

Submittals

- Provide the LEED-NC Letter Template, signed by the responsible design professional, declaring and summarizing the installation, operational design and controls/zones for the carbon dioxide or outdoor airflow monitoring system.

Potential Technologies & Strategies

Install carbon dioxide and airflow measurement equipment and feed the information to the Building Automation System (BAS), if applicable, or to alarms that alert building operators or occupants to a possible deficiency in outdoor air delivery.

EQ Credit 1: Outdoor Air Delivery Monitoring**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance**

Optional—if additional guidance concerning “Increase Ventilation Effectiveness” is desired, it should be incorporated in Facility Design Standards or project specific design requirements. If AT/FP requirements mandate Outdoor Air Delivery Monitoring, these requirements should be included in Facility Design Standards or as project specific design requirements.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Specifications: UFGS 15990A Testing, Adjusting, and Balancing of HVAC Systems.

Drawings: Highlight the location of CO₂ monitoring equipment in the Mechanical Plans.

Design Analysis: Provide a Narrative describing initial operation set point parameters and the sequence of operation and control of building ventilation systems.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

“Potential Technologies / Strategies” were provided in SPiRiT v1.4.1 to clarify and supplement LEED-NC v2.0 requirements. These and other “best practices” are included in LEED-NC v2.1, v2.2, the LEED Reference Guide and supplementary ASHRAE publications. No supplementary guidance is needed.

References***Supplementary Guidance Under***

UFC 3-410-01FA Design – Heating, Ventilating, and Air Conditioning

UFC 3-120-02AN Design Guide-Interiors (by reference DG 1110-3-122 Design Guide for Interiors)

WBDG (Design Guidance – Design Objectives – Sustainable – Enhance Indoor Environmental Quality), available through URL: <http://www.wbdg.org/design/ieq.php>

WBDG (Design Guidance – Design Objectives – Sustainable – Provide Security for Building Occupants and Assets), available through URL: http://www.wbdg.org/design/provide_security.php

WBDG (Design Guidance – Design Objectives – Ensure Occupants Safety and Health), available through URL: http://www.wbdg.org/design/ensure_health.php

LEED®-NC 2.2

ASHRAE Standard 62.1-2004

Carbon Trust “Good Practice Guide 237” [1998]

Chartered Institution of Building Services Engineers (CIBSE) “Applications Manual 10: 2005, Natural Ventilation in Non-Domestic Buildings.”

EQ Credit 2: Increased Ventilation**1 Point****Intent**

Provide additional outdoor air ventilation to improve indoor air quality for improved occupant comfort, well-being and productivity.

Requirements

FOR MECHANICALLY VENTILATED SPACES:

- Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1-2004 as determined by EQ Prerequisite 1.

FOR NATURALLY VENTILATED SPACES:

- Design natural ventilation systems for occupied spaces to meet the recommendations set forth in the Carbon Trust “Good Practice Guide 237” [1998]. Determine that natural ventilation is an effective strategy for the project by following the flow diagram process shown in Figure 1.18 of the Chartered Institution of Building Services Engineers (CIBSE) “Applications Manual 10: 2005, Natural ventilation in non-domestic buildings.”
- And either of the following;
- Use diagrams and calculations to show that the design of the natural ventilation systems meets the recommendations set forth in the CIBSE Applications Manual 10: 2005, “Natural ventilation in non-domestic buildings.”
- Use a macroscopic, multi-zone, analytic model to predict that room-by-room air-flows will effectively naturally ventilate at least 90% of occupied spaces.

Submittals

- For mechanical ventilation systems, provide calculations demonstrating that design breathing zone ventilation rates exceed the minimum rates required by Standard 62.1 by at least 30%.
- For natural ventilation systems:
- Provide documentation that natural ventilation is an effective strategy for the project and follows the design recommendations established by CIBSE.

And either of the following;

- Provide diagrams and calculations based on CIBSE Applications Manual 10.
- Provide diagrams and calculations based on results provided by a multi-zone analytical model.

Potential Technologies & Strategies

For Mechanically Ventilated Spaces: Design ventilation systems to provide breathing zone ventilation rates at least 30% larger than the minimum rates prescribed by the referenced standard.

For Naturally Ventilated Spaces, follow the eight design steps described in CIBSE “Good Practice Guide 237”:

1. Develop design requirements.
2. Plan airflow paths.
3. Identify building uses and features that might require special attention.
4. Determine ventilation requirements.
5. Estimate external driving pressures.
6. Select types of ventilation devices.
7. Size ventilation devices.
8. Analyze the design. Use public domain software such as NIST’s CONTAM, Multizone Modeling Software, along with LoopDA, Natural Ventilation Sizing Tool, to analytically predict room-by-room airflows.

EQ Credit 2: Increased Ventilation**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems; and 15990A Testing, Adjusting, and Balancing of HVAC Systems.

Drawings: Highlight ventilation systems and capacities on Mechanical Plans.

Design Analysis: Provide calculations and/or simulation data showing how the design achieves required air change effectiveness for both mechanical and natural ventilation for each zone. Provide Architectural Plans and Sections including furniture for each major room type, graphically depicting how airflow patterns for each zone are designed to meet the requirements of this credit. Include a specification table of all the terminal vents, grills and registers cross-referenced in the drawings.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3

ASHRAE Standard 52.2-1999

EQ Credit 3.1: Construction IAQ Management Plan – During Construction 1 Point

Intent

Reduce indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

- During construction meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.
- Protect stored on-site or installed absorptive materials from moisture damage.
- If air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 shall be used at each return air grill, as determined by ASHRAE 52.2-1999. Replace all filtration media immediately prior to occupancy.

Submittals

- Provide the LEED-NC Letter Template, signed by the general contractor or responsible party, declaring that a Construction IAQ Management Plan has been developed and implemented, and listing each air filter used during construction and at the end of construction. Include the MERV value, manufacturer name and model number.

AND EITHER

- Provide 18 photographs—six photographs taken on three different occasions during construction—along with identification of the SMACNA approach featured by each photograph, in order to show consistent adherence to the credit requirements

OR

- Declare the five Design Approaches of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3, which were used during building construction. Include a brief description of some of the important design approaches employed.

Potential Technologies & Strategies

Accept an IAQ management plan to protect the HVAC system during construction, control pollutant sources and interrupt contamination pathways. Sequence the installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile and gypsum wall board when possible. Coordinate with Indoor Environmental Quality Credits 3.2 and 5 and install only a single set of final filtration media.

**EQ Credit 3.1: Construction IAQ Management Plan –
During Construction****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide a copy of the Construction IAQ Management Plan to be implemented during construction and before occupancy. Highlight areas that demonstrate how the SMACNA IAQ guideline for Occupied Buildings under Construction (1995, Chapter 3) have been met or exceeded. Describe in a narrative the techniques used to protect absorptive materials from moisture damage. When air handlers are used during construction, include cut sheets of filtration media and installed immediately prior to occupancy, including MERV value; and photographs showing consistent adherence to credit requirements during construction.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

EQ Credit 3.2: Construction IAQ Management Plan – Before Occupancy¹ Point

Intent

Reduce indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:

- After construction ends, prior to occupancy and with all interior finishes installed, install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 ft³ of outdoor air per ft² of floor area while maintaining an internal temperature of at least 60 degrees F and, where mechanical cooling is operated, relative humidity no higher than 60%.

OR

- If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 ft³ of outdoor air per ft² of floor area to the space, and provided the space is ventilated at a minimum rate of 0.30 cfm/ ft² of outside air or the design minimum outside air rate, whichever is greater, a minimum of three hours prior to occupancy and during occupancy, until a total of 14,000 ft³/ ft² of outside air has been delivered to the space.

OR

- Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the United States Environmental Protection Agency “Compendium of Methods for the Determination of Air Pollutants in Indoor Air” and as additionally detailed in the Reference Guide.
- Demonstrate that the contaminant maximum concentrations listed below are not exceeded:

Contaminant	Maximum Concentration
Formaldehyde	50 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
* 4-Phenylcyclohexene (4-PCH)	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels

This test is only required only if carpets and fabrics with Styrene Butadiene (SB) latex backing material are installed as part of the base building systems.

- For each sampling point where the maximum concentration limits are exceeded conduct additional flush-out with outside air and retest the specific parameter(s) that were exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.
- The air sample testing shall be conducted as follows:
- All measurements shall be conducted prior to occupancy, but during normal occupied hours, and with the building ventilation system starting at the normal daily

start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.

- The building shall have all interior finishes installed, including but not limited to 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 the testing.
- The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 ft², or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.
- Air samples are shall be collected between 3 ft and 6 ft from the floor to represent the breathing zone of occupants and over a minimum 4 hour period.
- Copies of the IAQ testing results should describe the contaminant sampling and analytical methods, the locations and duration of contaminant samples, the field sampling log sheets and laboratory analytical data and the methods and results utilized to determine that the ventilation system was started at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode through the duration of the air testing.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect, general contractor or responsible party, describing the building flush-out procedures and dates. Provide calculations to demonstrate that the required total air volumes and minimum ventilation volumes and rates have been delivered.

OR

- Provide the LEED-NC Letter Template, signed by the environmental consultant or responsible party, declaring that the air quality testing procedure has been conducted and that all areas tested are do not exceed the maximum allowable concentration limits.
- Provide a copy of the IAQ testing results that includes documentation of the results and the identifying the EPA testing method used. If alternative testing protocols are used, provide documentation and rationale justifying that the measured results meet the intent of the EPA testing methods.

Potential Technologies & Strategies

Prior to occupancy, perform a building flush-out or test the air contaminant levels in the building. Coordinate with Indoor Environmental Quality Credits 3.1 and 5 and install only a single set of final filtration media. For IAQ testing consider using a recognized measurement protocol similar to the EPA "Compendium of Methods for the Determination of air Pollutants in Indoor Air." If alternative testing protocols are used, provide justification that the measured test results meet the intent of the EPA testing methods.

**EQ Credit 3.2: Construction IAQ Management Plan –
Before Occupancy****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide a narrative describing the building flush-out procedures including calculations demonstrating that the required air and minimum ventilation volumes and rates have been delivered or provide a letter specifying how, and who is responsible for the performance of an indoor air quality test. Provide a copy of the IAQ testing results identifying the EPA or alternative testing method used. If alternative testing protocols are used, provide documentation and rationale justifying that the measured results meet the intent of the EPA testing methods. Supplement the Design Analysis with a copy of the testing results.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

United States Environmental Protection Agency (EPA), "Compendium of Methods for the Determination of Air Pollutants in Indoor Air"

EQ Credit 4.1: Low-Emitting Materials – Adhesives & Sealants **1 Point****Intent**

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

All adhesives and sealants that are used indoors (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of the following reference standards:

- Adhesives, Sealants and Sealant Primers: South Coast Air Quality Management District (SCAQMD) Rule #1168 requirements in effect on January 1, 2003 and rule amendment date of October 3, 2003.
- Aerosol Adhesives: Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, the adhesives, sealants, sealant primers and aerosol adhesives used in the building declaring that they meet the noted requirements. For each product in the listing, state VOC level, the applicable standard, the classification of material and the VOC limit.

Potential Technologies & Strategies

Specify Low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where adhesives and sealants are addressed. Common products to evaluate include: flooring adhesives, firestopping sealants, caulking, duct sealants, and cove base adhesives.

EQ Credit 4.1: Low-Emitting Materials – Adhesives & Sealants**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: Ensure that VOC limits are clearly stated in specifications. UFGS 06410A Laminate Clad Architectural Casework; 06650 Solid Polymer (Solid Surfacing) Fabrications; 07920 Joint Sealants; 09250 Gypsum Board; 09310 Ceramic Tile, Quarry Tile, and Paver Tile; 09620 Resilient Athletic Flooring; 09650 Resilient Flooring; 09660 Conductive Vinyl Flooring; 09670 Fluid-Applied Flooring; 09720 Wall Coverings; and 09840 Acoustical Wall Treatment.

Drawings: List products in Architectural Schedules clearly indicating for each the applicable standard, classification of material and the VOC limit.

Design Analyses: Provide cut sheets or other product documentation for listed products.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References**LEED®-NC 2.2**

South Coast Air Quality Management District (SCAQMD) Rule #1168, October 3, 2003

Green Seal Standard for Commercial Adhesives GS-36, October 19, 2000

EQ Credit 4.2: Low-Emitting Materials – Paints and Coatings**1 Point****Intent**

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following standards:

- Topcoat Paints: Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.
- Anti-Corrosive and Anti-Rust Paints: Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
- All other Architectural Coatings, Primers and Undercoats: South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, listing all the interior paints and coatings used in the building that are addressed by the referenced standards. State that they comply with the current VOC and chemical component limits and/or chemical component restrictions of each standard. For each product in the listing, state the VOC level, the applicable standard, the classification of material and the VOC limit.

Potential Technologies & Strategies

Specify Low-VOC paints and coatings in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where paints and coatings are addressed. Provide product cut sheets, MSD sheets, signed attestations or other official literature from the manufacturer clearly stating that VOC limits and restricted chemicals identified in the referenced standards are not present.

EQ Credit 4.2: Low-Emitting Materials – Paints and Coatings**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: Ensure that VOC limits and Green Seal requirements are clearly stated in specifications. UFGS 06410A Laminate Clad Architectural Casework; and 09900 Paints and Coatings.

Drawings: List products in Architectural Schedules clearly indicating for each the applicable standard, classification of material and the VOC limit.

Design Analyses: Provide cut sheets or other product documentation for listed products.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

Green Seal Standard GS-11, Paints, First Edition, May 20, 1993

Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997

SCAQMD Rule 1113, Architectural Coatings, January 1, 2004

EQ Credit 4.3: Low-Emitting Materials – Carpet Systems**1 Point****Intent**

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

All carpet installed in the project shall meet the testing and product requirements of the Carpet and Rug Institute's Green Label Plus program (also published as Section 01350 Section 9 [dated 2004] by the Collaborative for High Performance Schools (available through URL: www.chps.net).

All carpet cushion installed in the building shall meet the requirements of the Carpet and Rug Institute Green Label program.

All carpet adhesive shall meet the requirements of EQ credit 4.1.

Submittals

- Provide the LEED Letter Template, signed by the architect or responsible party, listing all the carpets, carpet cushions and carpet adhesives installed in the building and stating that they do not exceed the referenced emissions factors and VOC content, and have been tested according to the requirements. Include the Green Label Plus and Green Label CIR certification numbers in the list.
- Provide a copy of the test report from the testing facility, signed and dated by authorized laboratory personnel for each type of carpet, carpet cushion and carpet adhesive installed in the building. In the test report clearly indicate the emissions test results and compare them to the requirements, and state that the test requirements have been met.

Potential Technologies & Strategies

Specify requirements for maximum contaminant emissions clearly in the construction specifications where carpet and carpet cushion are addressed.

The "Green Label Plus" program for carpets and its associated VOC emission criteria in micrograms per square meter per hour, along with information on testing method and sample collection developed by the Carpet & Rug Institute (CRI) in coordination with California's Sustainable Building Task Force and the California Department of Health Services (DHS), are described in Section 9, "Acceptable Emissions Testing for Carpet," DHS document CA/DHS/EHLB/R-174, dated 07/15/04. This document is available through URL:

http://www.dhs.ca.gov/ps/deodc/ehlb/iaq/VOCS/Section01350_7_15_2004_FINAL_WITH_A_DDENDUM-2004-01.doc.

EQ Credit 4.3: Low-Emitting Materials – Carpet Systems**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: Ensure that VOC limits and that the Green Label Plus or Green Label CIR certifications are clearly stated in specifications. UFGS 09680 Carpet.

Drawings: List products in Architectural Schedules clearly indicating for each the applicable standard, classification of material and the VOC limit.

Design Analyses: Provide cut sheets or other product documentation for listed products.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

Carpet and Rug Institute Green Label Plus

EQ Credit 4.4: Low-Emitting Materials – Composite Wood and Agrifiber Products

1 Point

Intent

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Composite wood and agrifiber products, including core materials, shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied assemblies shall contain no added urea-formaldehyde resins.

Common products included in this credit include: particleboard, MDF, plywood, wheatboard, strawboard, and door cores. Not included are products such as OSB and laminated beams/columns.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, listing all the composite wood products used in the building and stating that they contain no added urea-formaldehyde resins, and listing all the laminating adhesives used in the building and stating that they contain no urea-formaldehyde.
- Provide documentation for all core and adhesive products used on the project indicating that products used contained no added urea-formaldehyde.

Potential Technologies & Strategies

Specify wood and agrifiber products that contain no added urea-formaldehyde resins. Specify laminating adhesives for field and shop applied assemblies that contain no added urea-formaldehyde resins.

**EQ Credit 4.4: Low-Emitting Materials –
Composite Wood and Agrifiber Products****1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: Ensure that specifications clearly state that composite wood, agrifiber products, and adhesive products must contain no added urea-formaldehyde. UFGS 06100 Rough Carpentry; 06200 Finish Carpentry; 06410A Laminate Clad Architectural Casework; 08210 Wood Doors; 08550 Wood Windows; 09640 Wood Strip Flooring; 09641 Wood Athletic Flooring; and 09645 Wood Parquet Flooring.

Drawings: List products in Architectural Schedules clearly indicating for each the applicable standard, classification of material and the VOC limit.

Design Analyses: Provide cut sheets or other product documentation for listed products.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

EQ Credit 5: Indoor Chemical & Pollutant Source Control**1 Point****Intent**

Minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants.

Requirements

Design to minimize and control pollutant entry into buildings and later cross-contamination of regularly occupied areas:

- Employ permanent entryway systems at least 6 ft long in the primary direction of travel to capture dirt, particulates, etc. from entering the building at all entryways that are directly connected to the outdoors. Acceptable entryway systems include permanently installed grates, grilles, or slotted systems that allow for cleaning underneath. Roll-out mats are only acceptable when maintained on a weekly basis by a contracted service organization. Qualifying entryways are those that serve as regular entry points for building users.
- Where hazardous gases or chemicals may be present or used (including garages, housekeeping/laundry areas, and copying/printing rooms), exhaust each space sufficiently to create negative pressure. For each of these spaces, provide deck to deck partitions or a hard lid ceiling and self-closing doors with outside exhaust at a rate of at least 0.50 CF per minute per SF, no air re-circulation, and operated at a negative pressure compared with the surrounding spaces of at least an average of 5 Pa (0.02 inches of water gauge) and with a minimum of 1 Pa (0.004 inches of water) when the doors to the rooms are closed.
- In mechanically ventilated buildings, provide regularly occupied areas of the building with new air filtration media prior to occupancy that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better. Filtration should be applied to process both return and outside air that is to be delivered as supply air.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, declaring that:
- Permanent entryway systems (grilles, grates, etc.) to capture dirt, particulates, etc. are provided at all high volume entryways.
- Chemical use areas and copy rooms have been physically separated with deck-to-deck partitions; independent exhaust ventilation has been installed at the required exhaust rate and negative pressure differential.
- Drains in facility cleaning and maintenance areas are plumbed for environmentally appropriate disposal of hazardous liquid wastes.
- Filters used meet the MERV requirements with new media installed prior to occupancy. Provide a listing of each filter installed including the MERV value, manufacturer name and model number.

Potential Technologies & Strategies

Design facility cleaning and maintenance areas with isolated exhaust and plumbing drainage systems for contaminants. Maintain physical isolation from the rest of the regularly occupied areas of the building. Install permanent architectural entryway systems such as grills or grates to prevent occupant-borne contaminants from entering the building. Install high-level filtration systems in air handling units processing both return air and outside supply air. Ensure that air handling units can accommodate required filter sizes.

EQ Credit 5: Indoor Chemical & Pollutant Source Control**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Drawings: Note permanent entryway systems such as grills, grates, etc., at all exterior entrances on the Architectural Plans. Cross-reference and highlight positive pressure systems for entryways with Mechanical Plans. Also highlight the exhaust air systems used in chemical use areas (housekeeping and copy/print rooms). Highlight drainage systems for rooms where chemical and water mixing may occur in Plumbing Plans and Plumbing Schematics.

Design Analysis: Provide narratives and cut sheets for each element describing how each meets the requirements.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

“Potential Technologies / Strategies” were provided in SPiRiT v1.4.1 to clarify and supplement LEED-NC v2.0 requirements. These and other “best practices” are included in LEED-NC v2.1, v2.2 and the LEED Reference Guide, supplementary ASHRAE publications and other commercially available standards.

References***Supplementary Guidance Under***

UFC 3-410-01FA Design – Heating, Ventilating, and Air Conditioning

UFC 3-120-02AN Design Guide-Interiors (by reference DG 1110-3-122 Design Guide for Interiors)

WBDG (Design Guidance – Design Objectives – Sustainable – Enhance Indoor Environmental Quality), available through URL: <http://www.wbdg.org/design/ieq.php>

EQ Credit 6.1: Controllability of Systems – Lighting**1 Point****Intent**

Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces (i.e., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

Requirements

Provide individual lighting controls for 90% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences.

AND

Provide lighting system controllability for all shared multi-occupant spaces to enable lighting adjustment that meets group needs and preferences.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, demonstrating and declaring that the required lighting controls are provided.

Potential Technologies & Strategies

Design the building with occupant controls for lighting. Strategies to consider include lighting controls and task lighting. Integrate lighting systems controllability into the overall lighting design, providing ambient and task lighting while managing the overall energy use of the building.

EQ Credit 6.1: Controllability of Systems – Lighting**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 16510 Interior Lighting.

Drawings: Highlight on Architectural Plans the occupancy and spaces covered by lighting controls and highlight the location lighting controls on the Electrical Lighting Plan.

Design Analysis: Demonstrate with calculations that individual lighting controls which enable adjustments to suit individual task needs and preferences are provided for 90% of the building occupants, in individual offices and shared multi-occupant spaces. Provide cut sheets for specified control systems.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPIRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

EQ Credit 6.2: Controllability of Systems – Thermal Comfort**1 Point****Intent**

Provide a high level of thermal comfort system control by individual occupants or by specific groups in multi-occupant spaces (i.e., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

Requirements

Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences. Operable windows can be used in lieu of comfort controls for occupants of areas that are 20 ft inside of and 10 ft to either side of the operable part of the window. The areas of operable window must meet the requirements of ASHRAE 62.1-2004 paragraph 5.1 Natural Ventilation.

AND

Provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences.

Conditions for thermal comfort are described in ASHRAE Standard 55-2004 to include the primary factors: air temperature, radiant temperature, air speed, and humidity. Comfort system control for the purposes of this credit is defined as the provision of control over at least one of these primary factors in the occupant's local environment.

Submittals

- Provide the LEED-NC Letter Template, signed by the architect or responsible party, demonstrating and declaring that the required ventilation and temperature controls are provided.

Potential Technologies & Strategies

Design the building and systems with comfort controls to allow adjustments to suit individual needs or those of groups in shared spaces. ASHRAE Standard 55-2004 identifies the factors of thermal comfort and a process for developing comfort criteria for building spaces that suit the needs of the occupants involved in their daily activities. Control strategies can be developed to expand on the comfort criteria to allow adjustments to suit individual needs and preferences. These may involve system designs incorporating operable windows, hybrid systems integrating operable windows and mechanical systems, or mechanical systems alone. Individual adjustments may involve individual thermostat controls, local diffusers at floor, desk or overhead levels, or control of individual radiant panels, or other means integrated into the overall building, thermal comfort systems, and energy systems design.

EQ Credit 6.2: Controllability of Systems – Thermal Comfort**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 08510 Steel Windows; 08520A Aluminum and Environmental Control Aluminum Windows; 08550 Wood Windows; 15895 Air Supply, Distribution, Ventilation, and Exhaust Systems; 15901N Space Temperature Control Systems; and 15910N Direct Digital Control Systems.

Drawings: Highlight temperature and airflow controls on the Mechanical Plan, or Air Distribution Plan. Indicate the expected occupancy of each non-perimeter room on the Floor Plan.

Design Analysis: Provide calculations, tables or diagrams demonstrating that the required ventilation and temperature controls have been provided for 50% of the building occupants to enable adjustments to suit individual task needs and preferences. Provide Architectural Plans and Sections graphically depicting controls and natural ventilation airflow patterns; and drawings and cut sheets that highlighting operable windows.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Regulated Under***

10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings

ASHRAE Standard 62.1 – 2004, Ventilation for Acceptable Indoor Air Quality

ASHRAE Standard 55 – 2004 Thermal Environmental Conditions for Human Occupancy

AR 420-1 Army Energy Program (Final pending)

Army Energy Campaign Plan (pending)

LEED®-NC 2.2

ASHRAE Standard 62.1-2004

ASHRAE Standard 55-2004 Thermal Environmental Conditions for Human Occupancy

EQ Credit 7.1: Thermal Comfort – Compliance**1 Point****Intent**

Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

Requirements

Demonstrate that the project design complies with ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy. Demonstrate design compliance in accordance with the Section 6.1.1 Documentation.

Submittals

- Provide the LEED-NC Letter Template, signed by the engineer or responsible party, declaring that the project design complies with ASHRAE Standard 55-2004 and that design compliance documentation and performance validation per Section 6 of the standard has been successfully been completed or will be provided under existing contracts.

Potential Technologies & Strategies

Establish comfort criteria per ASHRAE Standard 55-2004 that support the desired quality and occupant satisfaction with building performance. Design building envelope and systems with the capability to deliver performance to the comfort criteria under expected environmental and use conditions.

EQ Credit 7.1: Thermal Comfort – Compliance**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 13801 Utility Monitoring and Control System (UMCS); 15901N Space Temperature Control Systems; 15910N Direct Digital Control Systems; and 15951 Direct Digital Control for HVAC and Other Local Building Systems. Specifications should clearly indicate the requirement to comply with ASHRAE Standard 55-2004.

Drawings: Highlight the location of temperature and humidity monitoring systems on the Mechanical or Air Distribution Plans.

Design Analysis: Provide a narrative from the mechanical engineer, calculations, tables or diagrams demonstrating compliance with 55-2004. Include design criteria and assumptions for thermal comfort including temperature, humidity, and air movement ranges. Reference appropriate plan sheets where the equipment discussed is shown, and include cut sheets for installed systems.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***Regulated Under***

10 CFR Part 434 Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings

ASHRAE Standard 55-2004 Thermal Environmental Conditions for Human Occupancy

UFGS 13801 Utility Monitoring And Control System (UMCS)

UFGS 15901N Space Temperature Control Systems

UFGS 15910N Direct Digital Control Systems

UFGS 15951 Direct Digital Control For HVAC and Other Local Building Systems

LEED®-NC 2.2

ASHRAE Standard 55-2004

EQ Credit 7.2: Thermal Comfort – Validation**1 Point****Intent**

Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

Requirements

Provide validation of the desired comfort criteria as determined by EQ Credit 7.1 using either of the two methods described by ASHRAE Standard 55-2004 (analysis of environmental variables or occupant survey).

Submittals

- Provide the LEED-NC Letter Template, signed by the engineer or responsible party, that identifies the comfort criteria, strategy for ensuring performance to the comfort criteria, description of the permanent monitoring system implemented, and process for corrective action.

Potential Technologies & Strategies

ASHRAE Standard 55-2004 provides guidance for establishing thermal comfort criteria and the documentation and validation of building performance to the criteria. While the standard is not intended for purposes of continuous monitoring and maintenance of the thermal environment, the principles expressed in the standard provide a basis for design of monitoring and corrective action systems.

EQ Credit 7.2: Thermal Comfort – Validation**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 13801 Utility Monitoring and Control System (UMCS); 15901N Space Temperature Control Systems; 15910N Direct Digital Control Systems; and 15951 Direct Digital Control for HVAC and Other Local Building Systems. Specifications should clearly indicate the requirement to comply with ASHRAE Standard 55-2004.

Drawings: Highlight the location of temperature and humidity monitoring systems on the Mechanical or Air Distribution Plans.

Design Analysis: Provide a narrative from the mechanical engineer, calculations, tables or diagrams demonstrating compliance with 55-2004. Include design criteria and assumptions for thermal comfort including temperature, humidity, and air movement ranges. Reference appropriate plan sheets where the equipment discussed is shown, and include cut sheets for installed systems.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References***LEED®-NC 2.2***

ASHRAE Standard 55-2004

EQ Credit 8.1: Daylight and Views – Daylight 75% of Spaces**1 Point****Intent**

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Requirements

Achieve a minimum glazing factor of 2% in a minimum of 75% of all regularly occupied areas. The glazing factor is calculated as follows:

Glazing Factor	=	$\frac{\text{Window Area [SF]}}{\text{Floor Area [SF]}}$	x	$\frac{\text{Window Geometry Factor}}{\text{Minimum T}_{vis}}$	x	$\frac{\text{Actual T}_{vis}}{\text{Minimum T}_{vis}}$	x	$\frac{\text{Window Height Factor}}{\text{Minimum T}_{vis}}$

OR

Demonstrate, through computer simulation, that a minimum daylight illumination level of 25 footcandles has been achieved in a minimum of 75% of all regularly occupied areas. Modeling must demonstrate 25 horizontal footcandles under clear sky conditions, at noon, on the equinox, at 30 inches above the floor.

OR

Demonstrate, through records of indoor light measurements, that a minimum daylight illumination level of 25 footcandles has been achieved in at least 75% of all regularly occupied areas. Measurements must be taken on a 5-ft grid for all occupied spaces and must be recorded on building floor plans.

In all cases, only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be applied towards the 75% of total area calculation required to qualify for this credit.

In all cases, provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks. Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

Submittals

- Provide the LEED-NC Letter Template signed by the responsible party. Provide area calculations that define the daylight zones and provide a summary of daylight factor prediction calculations through manual methods or a summary of computer simulations illustrating that the footcandle levels have been achieved.

Potential Technologies & Strategies

Design the building to maximize interior daylighting. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior permanent shading devices, high performance glazing and photo-integrated light sensors. Predict daylight factors via manual calculations or model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved.

EQ Credit 8.1: Daylight and Views – Daylight 75% of Spaces**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Specifications: UFGS 08510 Steel Windows; 08520A Aluminum and Environmental Control Aluminum Windows; 08550 Wood Windows; 08600 Skylights; and 08800 Glazing.

Drawings: Highlight daylighting zones and features on Architectural Floor, Reflected Ceiling and/or Furniture Plans. Highlight daylighting features (glazing, sun control, etc.) on Architectural Elevations and/or Sections as appropriate.

Design Analysis: Provide calculations and diagrams defining daylight zones, and a summary of daylight factor prediction calculations made through manual or by computer simulation illustrating levels achieved. Provide cut sheets for glazing highlighting visible transmittance values, and other daylighting features.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

EQ Credit 8.2: Daylight and Views – Views for 90% of Spaces**1 Point****Intent**

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Requirements

Achieve direct line of sight to the outdoor environment via vision glazing between 2'6" and 7'6" for building occupants in 90% of all regularly occupied areas. Determine the area with direct line of sight by totaling the regularly occupied square footage that meets the following criteria:

- In plan view, the area is within sight lines drawn from perimeter vision glazing.
- In section view, a direct sight line can be drawn from the area to perimeter vision glazing.

Line of sight may be drawn through interior glazing. For private offices, the entire square footage of the office can be counted if 75% or more of the area has direct line of sight to perimeter vision glazing. For multi-occupant spaces, the actual square footage with direct line of sight to perimeter vision glazing is counted.

Submittals

- Provide the LEED-NC Letter Template and calculations describing, demonstrating and declaring that the building occupants in regularly occupied areas will have direct lines of sight to perimeter glazing and noting the actual glazing-to-floor area ratios for perimeter windows. Provide drawings highlighting the direct line of sight zones and the critical horizontal view angles.

Potential Technologies & Strategies

Design the space to maximize daylighting and view opportunities. Strategies to consider include lower partition heights, interior shading devices, interior glazing, and photo integrated light sensors.

EQ Credit 8.2: Daylight and Views – Views for 90% of Spaces**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance.

Special Implementation Language – None**Applications Guidance – None****Standard MILCON Project Documentation Requirements – None****Suggested Project Documentation**

Design Analysis: Provide calculations with supporting floor plan diagrams indicating the lines of sight and access to views for 90% of occupied spaces.

SDD Documentation Notebook Evaluation Narrative / Spreadsheet.

Discussion – None

SPiRiT v1.4.1 and LEED-NC v2.0 are identical for this requirement.

References – None

Innovation & Design Process				
LEED®-NC 2.2 Credit	Points	Recommendation	Special Implementing Language	Supplemental Guidance
ID Credit 1: Innovation in Design	1-4 Points	Accept	Yes	No
ID Credit 1.1: Holistic Delivery of Facility	1	NA	Yes	No
ID Credit 1.2: Acoustic Environment / Noise Control	1	NA	Yes	No
ID Credit 1.3: Distributed Generation	1	NA	Yes	No
ID Credit 1.4	1	NA		No
ID Credit 2: LEED Accredited Professional	1-Point	Accept	Yes	No

ID Credit 1: Innovation in Design**1-4 Points****Intent**

To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED-NC Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED-NC Green Building Rating System.

Requirements

Credit 1.1 (1 point). In writing, identify the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements.

Credit 1.2 (1 point). Same as Credit 1.1

Credit 1.3 (1 point). Same as Credit 1.1

Credit 1.4 (1 point). Same as Credit 1.1

Submittals

- Provide the proposal(s) within the LEED-NC Letter Template (including intent, requirement, submittals and possible strategies) and relevant evidence of performance achieved.

Potential Technologies & Strategies

Substantially exceed a LEED-NC performance credit such as energy performance or water efficiency. Apply strategies or measures that are not covered by LEED-NC such as acoustic performance, education of occupants, community development or lifecycle analysis of material choices.

ID Credit 1: Innovation in Design**1-4 Points****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. However, implementation guidance will be necessary as how this will be applied to MILCON projects.

Special Implementation Language

Each project shall pursue "Innovation in Design" credits to optimize project scoring potential.

Applications Guidance

—None

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Specifications: As Required

Drawings: As Required

Design Analysis: As Required

Discussion

There is no allowance in SPiRiT for "Innovation in Design." Innovative design solutions can add value to the project; however, solutions must be evaluated on a project by project basis. Innovative solutions must support the overall mission of the facility. Potential innovative solutions may be found on the USGBC website.

References

USGBC Website (<http://www.usgbc.org/>) Credit Interpretations – [From the USGBC Website main page, click on "My USGBC" on the lower (RH Side) menu bar; Log-In with your Army user profile "E-mail Address" and "Password"; click on CIRs (Credit Interpretation Rulings) on the left menu bar (under "Workshops") and under "Browse Credit Interpretations," choose "Innovation & Design Process."] Potential Innovation in Design Credits

ID Credit 1.1: Holistic Delivery of Facility (SPiRiT 6.C1)**1 Point****Intent**

Encourage a facility delivery process that actively engages all stakeholders in the design process to deliver a facility that meets all functional requirements while effectively optimizing tradeoffs among sustainability, first costs, life cycle costs and mission requirements.

Requirements

Choose team leaders that are experienced in holistic delivery of facilities; AND

Train the entire team in the holistic delivery process. The team must include all stakeholders in the facility delivery, including the users, the contracting staff, the construction representatives, project manager, and design/engineering team members; AND

Identify project goals and metrics; AND

Plan and execute a project programming and design charrettes with team members; AND

Identify and resolve tradeoffs among sustainability, first costs, life cycle costs, and mission requirements through charrettes and other collaborative processes; AND

Document required results for each phase of project deliverables that achieve the project goals and are measurable throughout the facility life span. Plan and execute SPiRiT Self-Assessment Scoring Charrettes with team members at final design and beneficial occupancy.

Submittals

- Provide the proposal(s) within the LEED-NC Letter Template (including intent, requirement, submittals and possible strategies) and relevant evidence of performance achieved.

Potential Technologies & Strategies

Develop performance specifications or choose competitive range of products that meet environmental criteria. Follow the suggested design and project management guidelines provided in the SPiRiT Scoring Through Self-Assessment Charrettes Guide.

Use automated modeling and analysis tools to assess site and facility design alternatives.

Conduct life-cycle cost analysis (LCCA) in the design process according to the Federal Facilities Council Technical Report, Sustainable Federal Facilities: A Guide To Integrating Value Engineering, Life Cycle Costing, and Sustainable Development, FFC # 142, 2001.

Conduct a full ecological assessment to include soil quality, water resources and flows, vegetation and trees, wildlife habitats and corridors, wetlands, and ecologically sensitive areas to identify the least sensitive site areas for development. Evaluate space utilization/functions to reduce overall space requirements, considering networking, flextime, flexi-place, dual-use, and other strategies to reduce space requirements/optimize facility size.

ID Credit 1.1 Holistic Delivery of Facility (SPiRiT 6.C1)**1-Point****Recommendation**

Consider SPiRiT Credit “Holistic Delivery of Facility” as a LEED®-NC “Innovation in Design” credit. Policies governing the use of holistic design practices for minor construction or renovation projects at the installation level need to be established. Similar policy needs to be established and issued for minor construction projects.

Special Implementation Language – None**Applications Guidance**

Optional—If there are facility type or project specific acoustic requirements, they may be incorporated in the DA Standard Designs or as project specific design requirements as desired.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Design Analysis: Provide a list of team leaders with a brief biographical synopsis stating qualifications and previous experience with projects where holistic delivery was a prime objective.

Provide a list of all stakeholders as well as training meeting dates and agendas for the meetings. Also submit a statement of qualifications for the person(s) performing the training. Training should include discussion of the LEED Green Building Rating Systems, the importance of integrated design, and sample projects and methods used to meet the rating systems.

Provide a list goals and objectives for the project. Discuss in a narrative how these goals will be measured.

Include a section on the charrettes, summarizing the results and indicating how it influenced the planning process.

Include a section on the ecological design charrette, summarizing the results and indicating how it influenced the design process. Also enclose the preliminary LEED scoring sheet indicating the planned LEED Certification Level and credits to be attained.

Provide a list of the life-cycle cost critical facility elements determined during the charrette process. For each, show which tradeoffs were made and how the project benefited over the life-cycle from the decisions reached. Relate each to the mission.

Discussion

While holistic design practices are not solely within the purview of the U.S. Army Corps of Engineers, few others are practicing holistic design to the extent that the Corps is for MILCON projects. SPiRiT, under "6.C1, Holistic Delivery of Facility," considers the execution of projects by Project Delivery Teams using charrettes at critical project phases to be essential in the holistic approach to the delivery of facilities. The Corps has adopted a Project Delivery Team approach using charrettes as a primary element of their PMBP (Project Management Business Practice). As a standard business practice, therefore, for MILCON, rating for holistic design is mainly a moot point. Current engineer charrette guidance, however, does not mention training of the Project Delivery Team in holistic and sustainable design; neither does it discuss the identification and resolution of tradeoffs among sustainability, first costs, life cycle costs and mission, therefore charrette guidance will have to be revised.

Minor construction projects, are another matter. There is no policy governing use of holistic design practices for minor construction or renovation projects at the installation level. Recommend policy governing holistic design for minor construction be developed and issued.

References

Supplementary Guidance Under

ECB 2002-13 Design Charrette Guidance for Army MILCON Programs

ECB 2003-8 DD Form 1391 Preparation Planning Charrette Process

DASA (ASAIE) Memorandum – Planning Charrettes Process for Military Construction, Army (MCA) Projects

WBDG (Project Management, available through URL: <http://www.wbdg.org/project/index.php>)

WBDG (News Events & Training – The "Whole Building" Design Approach, available through URL: http://www.wbdg.org/newsevents/news_wbdg_approach.php)

AR 420–10 Management of Installation Directorates of Public Works

DOD Instruction 4170.11 Installation Energy Management

ID Credit 1.2 Acoustic Environment / Noise Control (SPiRiT 5.C9) 1 Point**Intent**

Provide appropriate interior acoustic conditions that avoid deleterious noise effects and produce a basis for a positive soundscape acceptable to occupants and appropriate to their tasks.

Requirements

Meet the following criteria to minimize environmental noise through appropriate use of insulation, sound-absorbing materials and noise source isolation:

- Recurrent background noise from external and internal sources shall not exceed 70db.
- All continuously occupied office space shall meet a NCC (Noise Criterion Curve) of no greater than NC-50.
- All classroom space shall meet an NCC of no greater than NC-45.
- Reverberation time for all continuously occupied space shall be no less than 0.4 seconds and no greater than 0.8 seconds.
- Speech Interference Level (SIL) for continuously occupied office spaces shall not be greater than 55db, OR Articulation Index shall not be < 0.55.

Submittals

- Provide the proposal(s) within the LEED-NC Letter Template (including intent, requirement, submittals and possible strategies) and relevant evidence of performance achieved.

Potential Technologies & Strategies

Evaluate each occupied environment and determine the appropriate layout, materials and furnishings design. Consult [U.S. Army Corps of Engineers Design Guide for Interiors DG 1110-3-122](#).

ID Credit 1.2 Acoustic Environment / Noise Control (SPiRiT 5.C9)**1-Point****Recommendation**

Consider SPiRiT Credit “Acoustic Environment / Noise Control” as a LEED®-NC “Innovation in Design” credit.

Special Implementation Language – None**Applications Guidance**

Optional—If there are facility type or project specific acoustic requirements, they may be incorporated in the DA Standard Designs or as project specific design requirements as desired.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Design Analysis: Provide a narrative detailing the existing environmental noise issues and describe the measures employed to mitigate the environmental noise issues.

Discussion

SPiRiT supplemented LEED v2.0 IEQ requirements by adding noise criteria, considered an important element of IEQ. Although the USGBC considered the inclusion of similar criteria in LEED, none are included in LEED-NC v2.1 or the current draft LEED-NC v2.2. While interior noise control remains important in design, it need not be a green building rating element. Rather, design for noise control in Army facilities is adequately addressed in available guidance and criteria, and is current “best practice.”

References***Supplementary Guidance Under***

UFC 3-450-01 Design – Noise and Vibration Control (by reference TM 5-805-4 Noise and Vibration Control)

UFC 3-120-02AN Design Guide-Interiors (by reference DG 1110-3-122 Design Guide for Interiors)

WBDG (Design Guidance – Products & Systems – Specifications – DRAFT Federal Guide for Green Construction Specs, available through URL: <http://www.wbdg.org/design/greenspec.php>)

WBDG (Design Guidance – Design Objectives – Sustainable – Enhance Indoor Environmental Quality (IEQ), available through URL: <http://www.wbdg.org/design/ieq.php>)

ID Credit 1.3 Distributed Generation (SPiRiT 3.C7)**1 Point****Intent**

Encourage the development and use of distributed generation technologies, which are less polluting than grid-source energy.

Requirements

Reduce total energy usage and emissions by considering source energy implications and local cogeneration and direct energy conversion. Generate at least 50% of the building's projected annual consumption by on-site distributed generation sources.

Submittals

- Provide the proposal(s) within the LEED-NC Letter Template (including intent, requirement, submittals and possible strategies) and relevant evidence of performance achieved.

Potential Technologies & Strategies

Investigate the use of integrated generation and delivery systems, such as co-generation, fuel cells, micro-turbines and off-peak thermal storage.

ID Credit 1.3 Distributed Generation (SPiRiT 3.C7)**1-Point****Recommendation**

Consider SPiRiT Credit “Distributed Generation” as a LEED®-NC “Innovation in Design” credit.

Special Implementation Language – None**Applications Guidance – None**

Optional—If the Army chooses to promote this and/or other strategies for consideration, separate guidance will be required.

Standard MILCON Project Documentation Requirements – None**Suggested Project Documentation**

Specifications: 01800 Facility Operation, 13600 Solar and Wind Energy Equipment, and 16200 Electrical Power.

Drawings: Highlight the location of generation equipment/facilities on the Site Plan.

Design Analysis: Provide narrative including calculations demonstrating that the on-site energy generation system is capable of supplying 50% of the building energy requirements. Include a section in the Commissioning Plan to ensure that the percentage of power provided by renewable systems is maintained throughout the facility life cycle.

Discussion

SPiRiT included “3.C7, Distributed Generation” as a ratable energy requirement, however, it only ratable in LEED as an “Innovation in Design” credit. “Innovation in Design” points are arguably justifiable for the use of distributed generation systems, as are many other innovative technologies and strategies. It is entirely up to the Project Delivery Team which strategies if any are pursued under this credit. Regardless, the USGBC publishes information on successful “Innovation in Design” credits at their website as credit interpretation rulings (CIR).

References***Supplementary Guidance Under***

DOD Instruction 4170.11 Installation Energy Management

ID Credit 2: LEED Accredited Professional**1 Point****Intent**

To support and encourage the design integration required by a LEED-NC Green Building project and to streamline the application and certification process.

Requirements

At least one principal participant of the project team that has successfully completed the LEED Accredited Professional exam

Potential Technologies & Strategies

Attending a LEED Accredited Professional Training Workshop is recommended but not required. Study the LEED-NC Reference Guide. Successfully pass the LEED accreditation exam.

ID Credit 2: LEED Accredited Professional**1 Point****Recommendation**

Accept LEED Credit without Supplemental DA Requirements or Guidance. However, implementation guidance will be necessary as how this will be applied to MILCON projects.

Special Implementation Language

All Army Project Delivery Teams shall include a LEED Accredited Professional.

Applications Guidance – None**Standard MILCON Project Documentation Requirements – None**

Include Roster of Project Team members, their project roles/responsibilities with complete contact information in the project files; specify team members having LEED Accredited Professional status.

Suggested Project Documentation**Discussion – None****References – None**

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 01-2006		2. REPORT TYPE Final		3. DATES COVERED (From – To)	
4. TITLE AND SUBTITLE Implementation of the U. S. Green Building Council's LEED® as the Army's Green Building Rating System				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Richard L. Schneider and Annette L. Stumpf				5d. PROJECT NUMBER Reimbursable Order No.	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory (CERL) PO Box 9005 Champaign, IL 61826-9005				8. PERFORMING ORGANIZATION REPORT NUMBER ERDC/CERL TR-06-1	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Assistant Chief of Staff, Installation Management (ACSIM) 2511 Jefferson Davis Highway Presidential Towers, Rm 8801 Arlington, VA 22202				10. SPONSOR/MONITOR'S ACRONYM(S) DAIM-FDF-FE	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The United States has more than 76 million residential and nearly 5 million commercial buildings, and the number of Army facilities is also significant. Construction, renovation, and operation of these facilities consumes enormous quantities of raw materials and energy. In 2000, the Deputy Assistant Secretary of the Army established the Army's policy of incorporating Sustainable Design and Development (SDD) principles into installation planning and infrastructure projects, including development of technical guidance for policy implementation to better enable facilities to minimize non-renewable energy use, pollution, and wastes, while increasing occupants' comfort, health, and safety. The U.S. Army Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory (CERL), in coordination with the Office of the Assistant Chief of Staff for Installation Management (OACSIM), published the Sustainable Project Rating Tool (SPiRiT), a self-assessment tool that helps quantify and measure the sustainability of infrastructure plans and projects. OACSIM directed the use of SPiRiT to evaluate facility construction and repair projects, and is currently considering whether to continue to use SPiRiT, or to adopt the Leadership in Energy and Environmental Design (LEED) Green Building Rating System®. This work compares and evaluates the two rating systems, and makes recommendations regarding further development and implementation.					
15. SUBJECT TERMS LEED Sustainable Design and Development (SDD) green construction SPiRiT energy efficient					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 426	19a. NAME OF RESPONSIBLE PERSON
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (in- clude area code)