

SECTION 01335

SUSTAINABLE DESIGN AND DEVELOPMENT

09/04

NOTE: This guide specification includes tailoring options for SPiRiT and LEED. Selection or deselection of a tailoring option will include or exclude that option in the section, but editing the resulting section to fit the project is still required.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. GREEN BUILDING COUNCIL

LEED (Leadership in Energy and Environmental Design) Reference Guide, Version 2.1
Version 2.0

U.S. GOVERNMENT

ETL 1110-3-491 Sustainable Design for Military Facilities

SPiRiT 1.4.1 Sustainable Project Rating Tool

<http://www.usace.army.mil/inet/usace-docs/eng-tech-ltrs/etl1110-3-491/a-c.pdf>

NOTE: Provide credit summary table for each facility/facility type as needed. Obtain blank table (in either LEED or SPiRiT format) at <http://en.sas.usace.army.mil> "Engineering Criteria." Select from list "Sustainable Design Spreadsheets". Edit each table as follows:

1. At view command, edit custom header for project, building.
2. At "Applicable to this Facility" column indicate applicable points.
3. Verify next three columns are correct for your contract documents.
4. Add specification or drawing references and remarks to help Contractor locate requirements in

contract documents.

1.2 DESCRIPTION

This project has been designed for, and shall be developed for a sustainable rating of [bronze] [silver] [gold] [platinum] in accordance with SPiRiT 1.4.1 [silver] [gold] [platinum] in accordance with the Leadership in Energy and Environmental Design (LEED) Rating System, version 2.1. Table 1 [through Table X] identifies the SPiRiTLEED credit items that are designed into or otherwise required for this project. No variations or substitutions to the SPiRiTLEED credits identified for this contract shall be allowed without written consent from the Contracting Officer. Should there be a case where there is any problem meeting the full requirements of a SPiRiTLEED credit identified for this project in Table 1 [through Table X], the Contractor must bring this to the attention of the Contracting Officer immediately.

The Contractor shall provide and assemble under separate cover documentation verifying compliance with SPiRiTLEED requirements as listed in this specification and as otherwise identified within the Technical Specifications. Some SPiRiTLEED credits are inherent in the design provided and require no further submittal or documentation. For these credits, the Contractor shall familiarize himself with the project features that relate to them so that no action contrary to the design intent is inadvertently taken during construction. Some SPiRiTLEED credits involve material selection and are generally identified within the Technical Specification with the notation "SDD", though not specifically identified in all occurrences. Some SPiRiTLEED credits are dependent on construction practices.

All SPiRiTLEED credits identified in Table 1 [through Table X] under the columns "Material Selection" and "Construction Practices" shall be documented by the Contractor. Table 1 [through Table X] provide[s] a general summary of types of action, submittals required and specification references. Detailed documentation on submittal requirements is contained in the Technical Specifications and paragraph 1.4 below. Some of the SPiRiTLEED points may have common traits between items inherent in the design and those involving material selection or construction practices. In this case, the Contractor shall only document those items pertaining to material selection or construction practices.

In all cases where a material, product or execution requirement is identified as a sustainable feature ("SDD") elsewhere in the contract documents, additional data or certificates shall be submitted with the individual component or process validating the material or component to the respective SPiRiTLEED credit item. This additional data or certificates shall be separable from the other submitted data and a copy shall be included in the SPiRiTLEED Documentation Notebook in addition to the distribution indicated in the submittal register.

Note to Designer: Identify all sustainable requirements throughout the technical specifications with the marking "SDD". This will generally be within the submittal requirements portion of the technical specification; however, the products portion or the execution portion may also require

some notation to differentiate those pieces of equipment/product out of many listed that relate to sustainable design. Where additional data is required to validate a SPiRiT/LEED point (IE VOC content of paint or glue), an additional submittal requirement will need to be added to the technical spec.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with [Section 01330 SUBMITTAL PROCEDURES](#):

SD-01 Preconstruction Submittals

[SPiRiTLEED Compliance Plan](#); [_____]

A detailed plan identifying all construction practices, procurement data or cumulative calculations of components required for [SPiRiTLEED](#) credit that must be identified and tracked during the course of construction. Plan shall indicate the [SPiRiTLEED](#) credit being tracked or documented, individual components of the [SPiRiTLEED](#) credit related items, dates of submittal of individual components of the [SPiRiTLEED](#) credit related items, and proposed method of tracking in accordance with [SPiRiT 1.4.1](#) and the [LEED Reference Guide](#).

SD-05 Design Data

[SPiRiTLEED Calculations](#); [_____]

Calculations showing compliance with a required [SPiRiTLEED](#) credit where identified in Table 1 [through Table X] or within the [SPiRiT LEED Compliance Plan](#). Calculations shall be current and available for review monthly. Final calculations should be included in the [SPiRiTLEED](#) Documentation Notebook under the appropriate tab.

SD-11 Closeout Submittals

[SPiRiTLEED Documentation Notebook](#); [_____]

The Contractor shall prepare a comprehensive notebook documenting compliance for each [SPiRiTLEED](#) credit identified in Table 1 [through Table X]. [A separate notebook shall be developed to correspond to each Table. Where the documentation for a point is the same for more than one notebook, Contractor may provide the documentation in one notebook and refer to it in other notebooks as necessary.] Notebook shall include product data for material selection where "SDD" is indicated, final calculations, certifications for construction practices, procurement data, cumulative calculations of components of materials throughout the project, and other items as identified in the [SPiRiTLEED](#)

Compliance Plan. Notebook must contain all required data to support full compliance with the indicated SPiRiTLEED credit. SPiRiTLEED credits that are indicated as inherent to the design will be documented by the designer of record.

SPiRiTLEED Documentation Notebooks shall be formatted to match SPiRiTLEED numbering system and tabbed for each point. Notebooks shall be kept current on a weekly basis and at least one set shall be available on the jobsite at all times. If the Contractor fails to maintain the SPiRiTLEED Documentation Notebooks as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining these Notebooks. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of the Notebooks.

The original and one copy [[_____] copies] of each notebook shall be submitted at project closeout.

Note to designer: The following paragraphs deal with specific credits that may be in the contract and restrictions or instructions placed on the Contractor with respect to those credits. Edit out those credits not intended to be in the contract.

1.4 DOCUMENTATION REQUIREMENTS

SPiRiTLEED credits as identified in Table 1 [through Table X] shall be incorporated and documented as required by the Technical Specifications and in full compliance with the SPiRiT 1.4.1 and the LEED Reference Guide. SPiRiTLEED Credits not identified elsewhere in the Technical Specifications, or those requiring further instruction are listed below.

1.4.1 SPiRiT credit 1.C5 Reduced Site DisturbanceLEED, Sustainable Sites, Credit 5.2, Reduced Site Disturbance

Limits of disturbance and/or site restoration requirements are identified in the Contract Documents. The Contractor shall identify in his SPiRiTLEED Compliance Plan controls that will be put in place to ensure compliance with the identified limits.

1.4.2 SPiRiT credit 3.R1 Fundamental Building System CommissioningLEED, Energy and Atmosphere, Prerequisite 1, Fundamental Building Systems Commissioning

Individual component commissioning requirements are specified in the Technical Specifications where required. The Contractor shall group all reports and results of commissioning into this requirement for Building Systems Commissioning. Refer to the SPiRiT 1.4.1, Sustainable Rating Tool and the LEED Reference GuideLEED Reference Guide.

1.4.3 SPiRiT credit 4.C2 Construction Waste ManagementLEED, Materials and Resources, Credit 2, Construction Waste Management

Note to Specifier: For projects with multiple facilities, leave in the last bracketed sentence and mark the points for this credit the same way on the spreadsheets for each facility/facility type unless there is a need to have the cumulative calculations split by facility/facility type or by site.

Notwithstanding the requirements of Section 01572 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT, the Contractor shall include in his SPiRiTLEED Compliance Plan a waste management plan that complies with the requirements of SPiRiT credit 4.C2LEED, Materials and Resources, credit 2, Construction Waste Management to the point level listed in Table 1 [through Table X] for recycling and/or salvage of at least 50 percent (by weight) of construction, demolition and land clearing waste. [An additional 25 percent (75 percent total by weight) requirement for recycling and/or salvage of construction, demolition and land clearing waste is required to gain the second point in this credit.] The plan should include proposed worksheets for tracking the value used and record keeping requirements for documentation to validate the final value. Refer to SPiRiT 1.4.1, Sustainable Rating Tool and the LEED Reference GuideLEED Reference Guide for definitions and requirements. [For this credit performance is measured for the entire project and is not measured separately for each facility/facility type.]

1.4.4 SPiRiT credit 4.C3 Resource Reuse LEED, Materials and Resources, credit 3, Resource Reuse

The Contractor shall include in his SPiRiTLEED Compliance Plan a Resource Reuse plan that complies with the requirements of SPiRiT credit 4.C3LEED, Materials and Resources, credit 3, Resource Reuse to the point level listed in Table 1 [through Table X] for utilizing a minimum of 5 percent salvaged or refurbished materials (by dollar value) in the construction of this project. [An additional 5 percent (10 percent total by dollar value) requirement on the use of salvaged or refurbished materials (by dollar value) in the construction of this project is required to gain the second point in this credit.] The plan should include proposed worksheets for tracking the value used and record keeping requirements for documentation to validate the final value. Refer to the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide for definitions, exclusions and requirements.

1.4.5 SPiRiT credit 4.C4 Recycled ContentLEED, Materials and Resources, credit 4, Recycled Content

Note to Specifier: For projects with multiple facilities, leave in the last bracketed sentence and mark the points for this credit the same way on the spreadsheets for each facility/facility type unless there is a need to have the cumulative calculations split by facility/facility type.

Notwithstanding the requirements of Section 01670 RECYCLED/RECOVERED MATERIALS promoting the use of recycled or recovered materials, the

Contractor shall include in his SPiRiTLEED Compliance Plan a method of tracking, record keeping and validation that a minimum of 25 percent (by dollar value) of building materials that contain in aggregate a minimum weighted average of 20 percent post-consumer recycled content material OR a minimum weighted average of 40 percent post-industrial recycled content material is used within this project. post-consumer recycled content constitutes at least 5 percent (by dollar value) of the materials in the project OR combined post-consumer and one-half post-industrial recycled content constitutes at least 10 percent (by dollar value) of the materials in the project. [An additional 25 percent (50 percent total by dollar value) of building materials that contain in aggregate a minimum weighted average of 20 percent post-consumer recycled content material, OR, a minimum weighted average of 40 percent post-industrial recycled content material is required to gain the second point in this credit. An additional 5 percent (by dollar value) post-consumer recycled content (total 10 percent) of the materials in the project OR an additional 10 percent (by dollar value) combined post-consumer and one-half post-industrial recycled content (20 percent total) of the materials in the project is required to gain the second point in this credit.] The plan should include proposed worksheets for tracking the value used and record keeping requirements for documentation to validate the final value. Recycled content worksheet at http://en.sas.usace.army.mil/ae/spreadsheet/4_C4%20Recycle%20Content%20Worksheet.xls may be used. Refer to the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide for definitions, exclusions and requirements. [For this point performance is measured for the entire project and is not measured separately for each facility/facility type.]

1.4.6 SPiRiT credit 4.C5 Local/Regional Materials LEED, Materials and Resources, credit 5, Local/Regional Materials

Note to Specifier: For projects with multiple facilities, leave in the last bracketed sentence and mark the points for this credit the same way on the spreadsheets for each facility/facility type unless there is a need to have the cumulative calculations split by facility/facility type.

The Contractor shall include in his SPiRiTLEED Compliance Plan a method of tracking, record keeping and validation that a minimum of 20 percent (by dollar value) of building products are manufactured regionally within a radius of 500 miles from the project site. [Of these regionally manufactured materials, a minimum of 50 percent shall have been extracted, harvested or recovered within 500 miles.] The plan should include proposed worksheets for tracking the value used and record keeping requirements for documentation to validate the final value. Regional Material worksheet at <http://en.sas.usace.army.mil> "Engineering Criteria" may be used. Refer to the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide for definitions, exclusions and requirements. [For this point performance is measured for the entire project and is not measured separately for each facility/facility type.]

1.4.7 SPiRiT credit 4.C6 Rapidly Renewable MaterialsLEED, Materials and Resources, credit 6, Rapidly Renewable Materials

The Contractor shall include in his SPiRiTLEED Compliance Plan a method of tracking, record keeping and validation that a minimum of 5 percent (by dollar value) of building products come from rapidly renewable resources. The plan should include proposed worksheets for tracking the value used and record keeping requirements for documentation to validate the final value. Certified Wood worksheet at <http://en.sas.usace.army.mil> "Engineering Criteria" may be used. Refer to the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide for definitions, exclusions and requirements.

1.4.8 SPiRiT credit 4.C7 Certified WoodLEED, Materials and Resources, credit 7, Certified Wood

The Contractor shall include in his SPiRiTLEED Compliance Plan a method of tracking, record keeping and validation that a minimum of 50 percent of wood-based materials are certified in accordance with the Forest Stewardship Council guidelines for wood building components including but not limited to framing, flooring, finishes, furnishings, and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers. Refer to the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide for definitions and requirements.

1.4.9 SPiRiT credit 5.C3 Construction IAQ Management PlanLEED, Indoor Environmental Quality, credit 3, Construction IAQ Management Plan

Note to Specifier: If baseline IAQ testing is selected, indicate the number of testing locations (recommend minimum one per floor per building, more as needed based on building configuration).

The Contractor shall included in his SPiRiTLEED Compliance Plan a Construction Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building that, during construction, meets or exceeds the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, AND protects stored on-site or installed absorptive materials from moisture damage, AND replaces all filtration media immediately prior to occupancy [Additionally, the plan shall provide for a minimum 2-week building flushout period with new filtration media at 100 percent outside air after construction ends and prior to occupancy.] [Additionally, the plan shall provide for conducting baseline indoor air quality testing in accordance with paragraph 1.4.9.1, "Baseline IAQ Testing Requirements", with testing done in [_____] different locations.] [Additionally, the plan shall provide for a minimum 2-week building flushout period with new filtration media at 100 percent outside air after construction ends and prior to occupancy, OR, at Contractor's option, conducting baseline indoor air quality testing in accordance with paragraph 1.4.9.1, "Baseline IAQ Testing Requirements", with testing done in [_____] different locations.] Refer to the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide for definitions and requirements.

1.4.9.1 Baseline IAQ Testing Requirements

Note: These requirements are extracted from EPA

Research Triangle Park Specification 01445.

A. HVAC System Verification: To assure compliance with recognized standards for indoor air quality including ASHRAE Standard 62-1989 or latest version, the Contractor's independent testing and balancing agency shall verify the performance of each HVAC system including space temperature and space humidity uniformity, outside air quantity, filter installation, drain pan operation and any obvious contamination sources.

B. Indoor Air Quality Testing: Upon verification of HVAC system operation, the Contractor shall hire an independent Contractor, subject to the approval by the Contracting Officer's Representative, with a minimum of 5 years' experience in performing the types of testing specified herein, to test levels of indoor air contaminants for compliance with specified requirements.

1. A test plan shall be submitted for approval of the Contracting Officer's Representative. The plan shall specify procedures, times, instrumentation and sampling methods that will be employed.

2. Contaminant levels shall be measured in areas agreed upon by the Contractor and the Contracting Officer's Representative. Areas with very high outside air ventilation rates such as laboratories are excluded from these testing requirements. The Contracting Officer's Representative is the sole judge of areas exempt from testing.

3. Collect air samples on three consecutive days during normal business hours (between the hours of 8:00 am and 5:00 pm) with building operating at normal HVAC rates. Average the results of each three-day test cycle to determine compliance or non-compliance of indoor air quality for each air handling zone tested.

4. Sample and record outside air levels of formaldehyde and TVOC contaminants at outside air intake of each respective air handling unit simultaneously with indoor tests to establish basis of comparison for these contaminant levels. Indoor testing will be done in the breathing zone; between 4 feet and 7 feet from the floor.

5. Acceptance of respective portions of buildings by the Government is subject to compliance with specified limits of indoor air quality contaminant levels.

C. Compliance: Indoor air quality shall conform to the following standards and limits:

1. Carbon Monoxide: Not to exceed 9 ppm.

2. Carbon Dioxide: Not to exceed 800 ppm.

3. Airborne Mold and Mildew: Simultaneous indoor and outdoor readings.

4. Maximum Air Concentration Standards: Indoor room air concentration levels, emission rates and qualities of the listed contaminants shall not exceed the limits specified in Maximum Indoor Air Concentration Standards Table below.

D. Test Reports: Prepare test reports showing the results and location of each test, a summary of the HVAC operating conditions, a listing of any discrepancies and recommendations for corrective actions, if required.

1. Include certification of test equipment calibration with each test report.

E. If any test fails the standard, the Contractor is responsible to ventilate the building with 100 percent outside air until the building passes both air quality tests and duct inspections. Retesting shall be performed at no expense to the Government.

MAXIMUM INDOOR AIR CONCENTRATION STANDARDS TABLE

<u>Indoor Contaminants</u>	<u>Allowable Air Concentration Levels*</u>
Formaldehyde	<20 micrograms per cubic meter**
Total Volatile Organic Compound (TVOC)	< 200 micrograms per cubic meter**
4-Phenylcyclohexene (4~PC)***	<3 micrograms per cubic meter
Total Particulates (PM)	< 20 micrograms per cubic meter
Regulated Pollutants	<NAAQS

* All levels must be achieved prior to acceptance of the building.
 ** Above outside air concentrations.
 *** 4-phenylcyclohexene is an odorous contaminant constituent in carpets with styrene-butadienelatex rubber (SBR).

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

SPiRiTLEED credits as identified in Table 1 [through Table X] below are contract requirements and shall be incorporated in full compliance with the SPiRiT 1.4.1 and the LEED Reference GuideLEED Reference Guide.

Note to Designer: Fill in the appropriate columns in Table 1 to indicate the points that are to be obtained on the project and the applicable technical specifications and remarks. Where the project has more than one building or building type, provide one table for each.

-- End of Section --