BEYOND
SMART CITIES
SUSTAINABLE SITES - GREEN BUILDING TECHNOLOGY
TRAINING PROGRAM
FOR GREEN BUILDING AND SUSTAINABILITY SPECIALISTS
KRISHNAJI PAWAR,LEED AP BD+C,GSAS CGP,ISO 14001:2015,GCP
GREEN BUILDING SPECIALIST CURRICULUM

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SITE ASSESSMENT CREDIT
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LEARNING OBJECTIVES
Intent of Site Assessment - Credit
Behind the intent
Step by Step Guidance
Requirements
Required Documentation
Connection to Ongoing Performance
Terms and Definitions

SS- CR(1) - DESIGN

SITE ASSESSMENT

INTENT

To assess site conditions, environmental justice concerns, and cultural and social factors, before design to evaluate sustainable options and inform related decisions about site design.

REQUIREMENTS

Complete and document a site survey or assessment that includes the following information: Topography,Hydrology,climate,Vegetation, soils, human use and human health benefits.

POTENTIAL TECHNOLOGIES & STRATEGIES

Performing a site assessment is part of an integrative design process that incorporates a site's ecological and historical contexts. A site assessment informs good design decisions, such as locating community gardens in areas with fertile soils, placing outdoor gathering spaces near large trees or desirable water features, orienting buildings to take advantage of prevailing winds and solar access, and optimizing the location of rainwater management features. A well-developed assessment conducted before or during the conceptual design phase may reduce project costs and risks, promote occupants' health, and honor a site's unique characteristics

IMPLEMENTATION

REQUIRED DOCUMENTATION

Documentation	All Projects
Site survey or assessment plan or map	X
Site assessment worksheet or equivalent narrative	X

BEHIND THE INTENT

A site assessment evaluates environmental features that the design of a sustainable site and building should take into consideration. It identifies assets, such as favorable climate conditions, good solar access, and healthy plant populations, as well as liabilities, such as unhealthy soils, blighted structures, pollution sources, steep slopes, and extreme climate patterns.

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Understanding a site's topography, climate, soil types, water availability, and ambient air quality is important because such features can significantly influence a project's design and its ultimate performance.

The removal of a U.S.-specific standard, TR-55, from the required considerations and broadening of this concept to account for all impervious and pervious surfaces on site has made this updated credit more approachable to most project teams. The credit now requires projects to describe their EPA Level III Ecoregion (or local equivalent) in order to understand what native and adapted vegetation is appropriate for their site, integrative information that better contextualizes the credit intent.

STEP-BY-STEP GUIDANCE

STEP 1. PREPARE FOR ASSESSMENT

Identify the team that will do the assessment.

- Typically, the team consists of the landscape architect, land planner, and architect. Team members should begin by collecting a wide range of information, such as climate data, topographical maps, nearby building types, and soil survey data.
- Engage local experts and specialists to help inventory any items listed in the credit requirements that extend beyond the core team's expertise (see *Further Explanation, Features to Include in the Site Assessment*).
- Plan to complete the assessment before conceptual design starts because the findings will inform the location and orientation of major program elements. A previous site assessment can be used (including an assessment completed for a campus in which the project is located), provided it accurately reflects the current site and surrounding property conditions.

STEP 2. CONDUCT SITE INVENTORY

Using a variety of data sources, site visits, and local experts, survey and inventory the existing site conditions and surroundings, according to the credit requirements, and compile the information for the site assessment.

- It may be useful to record site elements in a single document as the inventory progresses. See USGBC's site assessment worksheet, a spreadsheet that teams can use to fulfill a portion of the documentation requirements.
- Consider preparing a list of credits that could be influenced by a site assessment, and indicate which site elements are applicable to each credit. For example, SS Credit Rainwater Management may be influenced by topography and the location of existing water bodies on the site.
- Document the site and ecological features (and relevant associated details) that will be important for the design team to understand to meet the project goals. For example, in addition to documenting the location of existing vegetation, consider also collecting information on the size, species, health, root structure, and shade potential of trees so that their attributes can be integrated with planned program elements.
- Consider the proposed initial design to ensure that appropriate features are analyzed (see *Further Explanation, Design Opportunities*).
- If a feature listed in the credit requirements is not relevant for the site, explain why it has been excluded.
- Include such man-made features as buildings, roads, pathways, and existing infrastructure.
- Consider talking to local experts and visiting regional historical societies to collect site information that may not be visible or obvious. For example, Chapman School in Portland, Oregon, has an abandoned

STEP-BY-STEP GUIDANCE

chimney that provides shelter for tens of thousands of migratory birds every fall.[1] A design team renovating the school would not know this from property drawings or soil studies but could learn about the chimney's environmental importance from a neighborhood group or community organization.

STEP 3. CONDUCT SITE ANALYSIS

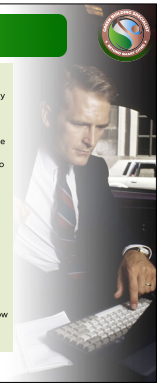
Prepare a site plan that includes the required information gathered during the site inventory. Analyze the effect of the site features on the project design.

- Overlaying the site information on a map will allow the features to be seen in relation to each other so that a site assessment can be conducted (see *Further Explanation, Example*).
- Various types of information can be differentiated by color, line type, line weight, contrast, icons, and imagery to make the analysis clear and understandable.
- Highlight important relationships between site features and elements that may influence the project design.
- If regional context outside the items listed in the credit requirements is important for understanding the site and evaluating sustainable design options, it may be helpful to develop an assessment at multiple scales.

STEP 4. COMPLETE SITE ASSESSMENT WORKSHEET OR PREPARE SITE ASSESSMENT NARRATIVE

Complete the USGBC site assessment worksheet, or develop a narrative.

- The worksheet or narrative must indicate which site features were evaluated, what was found, and how the findings influenced the project design.
- If certain features were not assessed, describe why they were excluded.



REQUIREMENTS

Complete and document a site survey or assessment[2] that includes the following information:

Topography.
- Contour mapping
- Unique topographic features
- Slope stability risks

Hydrology.
- Special Flood Hazard Areas (SPFHA) as determined by FEMA's Flood Insurance Rate Map (FIRM) (or local equivalent for projects outside the U.S.)
- Delineated natural water bodies wetlands, lakes, streams, and shorelines (refer to U.S. EPA's Clean Water Act or local equivalent for projects outside the U.S.)
- Rainwater collection and reuse opportunities
- Impervious and pervious surfaces within the site boundary

Climate.
- Solar exposure and shading opportunities
- Heat island effect potential
- Seasonal sun angles
- Prevailing winds
- Average monthly precipitation and temperature ranges

Vegetation.
- Primary vegetation types
- Greenfield area
- Significant tree mapping
- Federal or state threatened or endangered species lists; for projects outside the U.S., International Union for Conservation of Nature (IUCN) Red List of Threatened Species
- Invasive plant species listed by regional, state, or federal entities
- EPA Level III ecoregion description (or local equivalent)

REQUIREMENTS

Soils.
- Natural Resources Conservation Service soils delineation (or local equivalent for projects outside the U.S.)
- U.S. Natural Resources Conservation Service (or local equivalent for projects outside the United States) prime farmland, unique farmland, farmland of statewide importance, or farmland of local importance
- Healthy soils
- Previous development
- Disturbed soils

Human use.
- Views
- Adjacent transportation infrastructure, bicycle network, and bicycle storage
- Adjacent diverse uses
- Construction materials with existing recycle or reuse potential

Human health effects.
- Proximity of vulnerable populations
- Adjacent physical activity opportunities
- Proximity to major sources of air and water pollution

The survey or assessment should demonstrate the relationships between the site features and topics listed above and how these features influenced the project design; give the reasons for not addressing any of those topics.

CONNECTION TO ONGOING PERFORMANCE

LEED O+M SS credit Site Management : Conducting a site assessment and identifying natural areas providing habitat will fulfil the related credit's site assessment requirements.

LEED O+M LT credit Transportation Performance : Analyzing the surrounding sites and diverse uses, transportation infrastructure, bicycle network, as well as assessing existing bicycle facilities and potential future facility needs, may help inform and influence the improvement of a project's transportation performance score.

LEED O+M SS credit Rainwater Management : Studying the climate. , rainfall ,and hydrology of the site and watershed will help determine applicable strategies to earn the related performance- based credit.

LEED O+M SS credit Heat Island Reduction: Site assessment can lead to identification of paving, shading, or roofing materials that can contribute to requirements of the related performance- based credit.

LEED O+M EA credit Energy Performance : An analysis of the climate , including solar access, temperatures, diurnal swings, wind patterns, humidity, and rainfall will support more effective passive and active energy efficiency strategies.

REQUIRED DOCUMENTATION

Documentation	All Projects
Site survey or assessment plan or map	X
Site assessment worksheet or equivalent narrative	X

REFERENCED STANDARDS

- ☑Natural Resources Conservation Service, Soils: soils.usda.gov
- ☑TR-55 initial water storage capacity: nrcs.usda.gov

TERMS AND DEFINITIONS

Greenfield area that has not been graded, compacted, cleared, or disturbed and that supports (or could support) open space, habitat, or natural hydrology.

Natural Resources Conservation Service (NRCS) soils delineation a U.S.-based soil survey that shows the boundaries of different soil types and special soil features on the site

Previously disturbed areas that have been graded, compacted, cleared, previously developed, or disturbed in any way. These are areas that do not qualify as 'Greenfield.'

Prime farmland land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses, as determined by the U.S. Department
of Agriculture's Natural Resources Conservation Service (a U.S.-based methodology that sets criteria for highly productive soil). For a complete description of what qualifies as prime farmland, see U.S. Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5.

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