

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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OPEN SPACE - CREDIT

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LEARNING OBJECTIVES



Intent of Open Space - Credit

Behind the intent

Step by Step Guidance

Requirements

Required Documentation

Connection to Ongoing Performance

Terms and Definitions

SS- CR(1) - DESIGN

INTENT

To create exterior open space that encourages interaction with the environment, social interaction, passive recreation, and physical activities.

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.

OPEN SPACE

REQUIREMENTS

Provide outdoor space greater than or equal to 30% of the total site area (including building footprint). At least 25% of the calculated outdoor open space must be vegetated space planted with two or more types of vegetation or have overhead vegetated canopy.

IMPLEMENTATION

REQUIRED DOCUMENTATION

Documentation	All Projects	Projects with Vegetated Roofs
Standard that indicates project boundaries and campus or master plan boundaries if applicable. Highlight the location and size of any open spaces, vegetated areas, and spaces intended to be vegetated (see requirements for all open spaces that are required to be vegetated).	X	
Open space and vegetated area calculation	X	
Description of how open space is physically accessible and includes any floor plans	X	
Four-acre ratio		X

BEHIND THE INTENT

When building occupants have opportunities to connect with the outdoors, they exhibit improved well-being and productivity.* Open spaces also provide many positive environmental benefits—habitat creation, linked habitat corridors in urban areas, increased rainwater infiltration, and reduced heat island effect.

An open space's features can influence both its use by people and its environmental benefits. For example, turf and paved plazas can encourage group activities that foster social interaction, and including vegetation in at least some portion of the open space offers direct benefits to the environment. Open spaces with qualities that support environmental goals could include community gardens, vegetated roofs, preserved habitats with learning opportunities, and gardens that provide visual interest all year long.

✓ Updates clarify requirements about the percentage of outdoor space and vegetated space to qualify as open space. Projects must provide outdoor space greater than or equal to 30% of the total site area. Of the total outdoor open space calculated, a minimum of 25% must be vegetated or have overhead vegetated canopy. Minimal changes to verbiage regarding vegetation have also been made to clarify types of vegetation that meet the requirements.

STEP-BY-STEP GUIDANCE

STEP 1. DETERMINE TOTAL AREA WITHIN PROJECT BOUNDARY

Calculate the total site area within the project's boundary.

STEP 2. CALCULATE OPEN SPACE AND VEGETATED AREA REQUIRED

Use Equation 1 to determine the amount of required open space, and Equation 2 to determine the amount of open space that must be vegetated (see Further Explanation, Example 1).

EQUATION 1: Required open space

Required open space = 30% X Total site area

EQUATION 2: Vegetated open space

Vegetated open space = 25% X Required open space

STEP 3. PROGRAM SITE

Identify and designate open space features early in the planning and programming of the site to optimize building placement and landscape design. Ensure that open and vegetated spaces meet or exceed the minimum required areas. Consider the following strategies to optimize open space use:

Coordinate open space features early in the planning and programming phase to optimize building placement and landscape design. Feature planning occurs long before the conceptual design phase of the building development. Facilitating a charrette with the future building occupants, design team, and community members may help in planning for open space that meets the needs of the users.

Design a compact parking and road footprint layout to preserve open land and provide connections to adjacent neighborhoods.

Tighten program needs and stack floor plans to reduce the building footprint.

Maximize floor area ratio (FAR) and accessibility for the greatest range of open space credit options, as outlined in the credit requirements (see Getting Started, Density, for an example FAR calculation).

STEP 4. DESIGN OPEN SPACE AREAS

Design each open space area to comply with one or more of the criteria listed in the credit requirements. All open space must be physically accessible and encourage use by occupants of the building and site, but it does not have to be active space (see Further Explanation, Example 2).

STEP-BY-STEP GUIDANCE +

Turf areas, including areas of turf grass under overhead tree canopies, can be counted in total open space but do not qualify as vegetated open space.

- Extensive or intensive vegetated roofs can be used toward the minimum 25% vegetation requirement. Vegetated roof area can also be counted as open space if it is accessible to the building occupants and the project has a density of 1.5 FAR or greater. Roofs can be either extensive or intensive systems. Maintenance will be needed to keep plants healthy and the structure in good condition. Artificial turf is not an acceptable strategy for vegetated roofs.
- Design open spaces for the specific project location. For example, a xeriscape area might be appropriate in arid locations.
- Open spaces must be usable; a small strip of turf in a parking lot does not meet the intent of the credit. Artificial turf does not count as vegetation or hardscape.
- Determine where overhead vegetation (trees and shrubs), rather than ground cover, would be appropriate.
- Projects may count ponds or wetlands that occur naturally or are designed to function similarly to natural site hydrology and land cover, provided they meet the credit requirements.
- Consider encouraging human interaction with wetlands and natural areas through features such as educational signage, walking trails, and observation stations.

REQUIREMENTS

NC, CS, SCHOOLS, RETAIL, DATA CENTERS, WAREHOUSES & DISTRIBUTION CENTERS, HOSPITALITY, HEALTHCARE

Provide outdoor space greater than or equal to 30% of the total site area (including building footprint).

At least 25% of the calculated outdoor open space must be vegetated space planted with two or more types of vegetation or have *overhead vegetated canopy*.

The outdoor space must be physically accessible and be one or more of the following:

- social area: a pedestrian-oriented paving or landscape area that accommodate outdoor social activities;
- recreational area: a recreation-oriented paving or landscape area that encourage physical activity;
- diverse green space: a landscape area with two or more types of vegetation that provide opportunities for year-round visual interest;
- garden: a garden space dedicated to community gardens or urban food production; or
- habitat area: preserved or created habitat that meets the criteria of SS Credit Protect or Restore Habitat and also includes elements of human interaction. These areas automatically meet the vegetation criteria of this credit.

Extensive or intensive vegetated roofs that are physically accessible can be used toward the minimum vegetation requirement, and qualifying roof-based physically accessible paving areas can be used toward credit compliance.

Wetlands or naturally designed ponds may count as open space if the side slope gradients average 1:4 (vertical:horizontal) or less and are vegetated.

CONNECTION TO ONGOING PERFORMANCE

LEED O+M SS credit Rainwater Management : Vegetated landscape areas with native or adapted vegetation will help provide applicable strategies to earn the related credit.

LEED O+M SS credit Heat Island Reduction : Vegetated roofs can be counted for both credits.

REQUIRED DOCUMENTATION

Documentation	All Projects	Projects with Vegetated Roofs
Site plan that indicates project boundary and campus or master plan boundary (if applicable), highlighting location and size of any open spaces, vegetated areas, plant species, wetlands or naturalistic man-made ponds (with side slopes noted), and vegetated roofs	X	
Open space and vegetated area calculations	X	
Description of how open space is physically accessible and meets area type criteria	X	
Floor-area ratio		X

EXEMPLARY PERFORMANCE

Not Applicable

REFERENCED STANDARDS

None

TERMS AND DEFINITIONS

Extensive vegetated roof a roof that is covered with plants and typically not designed for general access. Usually an extensive system is a rugged green roof that requires little maintenance once established. The planting medium in extensive vegetated roofs ranges from 1 to 6 inches in depth. (Adapted from U.S. Environmental Protection Agency)

Site master plan an overall design or development concept for the project and associated (or potentially associated) buildings and sites. The plan considers future sustainable use, expansion, and contraction. The site master plan is typically illustrated, with building plans (if applicable), site drawings of planned phased development, and narrative descriptions.



THANK YOU

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