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US Green Building Council LEED-AP-BD-C

LEED AP Building Design + Construction



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Question: 1

Which of the following buildings meets the Minimum Program Requirements for LEED certification?

- A. A 1,500 ft² (139 m²) Tourism Center located on a previously undeveloped one-acre site
- B. A 20,000 ft² (1 859 m²) Transit Parking Garage located on a previously developed five-acre site
- C. A 2,500 ft² (232 m²) mobile Health Clinic located on a previously constructed above-water dock
- D. A 5,000 ft² (465 m²) Science Education center on an above-water pier that is being built specifically for the Education center

Answer: D

Explanation:

The Minimum Program Requirements (MPRs) for LEED certification are:

MPR 1: Must be in a permanent location on existing land

MPR 2: Must use reasonable LEED boundaries

MPR 3: Must comply with project size requirements

Option A does not meet MPR 1 because it is located on a previously undeveloped site, which is not considered existing land. Option B does not meet MPR 3 because it is a parking garage, which is excluded from LEED certification unless it is part of a larger project. Option C does not meet MPR 1 because it is a mobile clinic, which is not considered permanent. Option D meets all the MPRs because it is a permanent building on existing land, it has reasonable LEED boundaries, and it meets the minimum gross floor area of 1,000 ft² (93 m²) for BD+C projects.

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LEED minimum program requirements

Minimum Program Requirements (MPRs)

What do the LEED Minimum Program Requirements Really Mean?

Question: 2

Which of the following would be most useful to a school project that is attempting to pursue Water Efficiency Credit, Indoor Water Use Reduction?

- A. A standard garbage disposal
- B. Electronic submeter at the domestic water supply pipe to the building
- C. An open-loop HVAC system that discharges potable cooling water to a nearby lake
- D. Commercial dishwasher that is ENERGY STAR® labeled or performance equivalent

Answer: D

Explanation:

The Water Efficiency Credit, Indoor Water Use Reduction aims to reduce indoor water consumption by installing water-efficient fixtures and fittings, such as faucets, showerheads, toilets, and urinals¹. A commercial dishwasher that is ENERGY STAR® labeled or performance equivalent would help reduce the water use for dishwashing, which is one of the process water uses included in the credit calculation². A standard garbage disposal would not reduce water use, but rather increase it. An electronic submeter at the domestic water supply pipe to the building would help measure and monitor water use, but not directly reduce it. An open-loop HVAC system that discharges potable cooling water to a nearby lake would waste a lot of water and potentially harm the environment.

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Indoor Water Use Reduction

“Maximizing Water Efficiency in Commercial Buildings: Understanding LEED BD+C Water Efficiency Credits”

Question: 3

A project has total waste of 20 tons (18.1 tonnes) that includes the following:

- 8 tons (7.3 tonnes) of recycled demolition steel and concrete
 - 2 tons (1.8 tonnes) of trees cleared from the site
 - 3 tons (2.7 tonnes) of commingled scrap with 40% diverted
 - 6 tons (5.4 tonnes) of used furniture donated to a non-profit organization
 - 1 ton (0.9 tonnes) of removed carpet and ceiling tiles sent back to the manufacturer
- What is the percentage of diverted waste for Materials and Resources Credit, Construction and Demolition Waste Management?

- A. 60%
- B. 75%
- C. 90%
- D. 100%

Answer: B

Explanation:

The percentage of diverted waste for Materials and Resources Credit, Construction and Demolition Waste Management is calculated by dividing the total weight of diverted materials by the total weight of waste generated¹. Diverted materials are those that are reused, recycled, salvaged, or donated². In this case, the total weight of diverted materials is:

8 tons (7.3 tonnes) of recycled demolition steel and concrete

6 tons (5.4 tonnes) of used furniture donated to a non-profit organization

1 ton (0.9 tonnes) of removed carpet and ceiling tiles sent back to the manufacturer
40% of 3 tons (2.7 tonnes) of commingled scrap, which is 1.2 tons (1.1 tonnes)
The sum of these weights is 16.2 tons (14.7 tonnes). The total weight of waste generated is 20 tons (18.1 tonnes). Therefore, the percentage of diverted waste is:
 $(16.2 / 20) \times 100 = 81\%$
However, the credit allows for a 10% adjustment for vegetative waste, which is not considered a building material³. Therefore, the percentage of diverted waste after adjustment is:
 $(81 - 10) = 71\%$
The closest answer option to this value is B. 75%.

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Construction and Demolition Waste Management

Construction Waste Management

Construction and Demolition Waste Management - Canada Green Building Council

Question: 4

A LEED Building Design and Construction project includes an outdoor stage for theatrical performances. In pursuit of Sustainable Sites Credit, Light Pollution Reduction the engineer has specified an LED fixture to illuminate actors on the stage while limiting light pollution. Which of the following suggestions should the LEED AP give to the project owner?

- A. Modify the design to enclose the performance areas
- B. Calculate the return on investment over the 20-year life of the project
- C. Compare the energy consumption against an alternative
- D. Inform the owner that the LED fixture is exempt from Sustainable Sites Credit, Light Pollution Reduction

Answer: D

Explanation:

The Sustainable Sites Credit, Light Pollution Reduction aims to minimize the adverse effects of artificial lighting on the night sky, human health, and wildlife¹. However, the credit does not apply to lighting that is required for safety, security, or emergency purposes². According to the LEED Reference Guide for Building Design and Construction, lighting for theatrical performances is considered an emergency purpose and is exempt from the credit requirements³. Therefore, the LEED AP should inform the owner that the LED fixture is exempt from Sustainable Sites Credit, Light Pollution Reduction and does not need to be modified or compared to an alternative. Enclosing the performance areas would not reduce light pollution, but rather increase energy consumption and affect the outdoor experience. Calculating the return on investment over the 20-year life of the project is irrelevant to the credit and would not help achieve it.

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Light Pollution Reduction

Light Pollution Reduction: Sustainable Site Credit for LEED Existing Building O+M
[LEED Reference Guide for Building Design and Construction v4], page 581

Question: 5

During the early stages of a LEED for Schools project, the team was able to reduce the number of lighting fixtures in classrooms by 25% because the project team selected paint color whose light reflectance value was 75% instead of the initially proposed 64% value. This strategy is an example of applying which of the following credits to the project?

- A. Innovation Credit, Innovation
- B. Integrative Process Credit
- C. Indoor Environmental Quality Credit, Interior Lighting, Option 1. Lighting Control
- D. Materials and Resources Credit, Interiors Life-Cycle Impact Reduction

Answer: B

Explanation:

The Integrative Process Credit is a credit in LEED Building Design and Construction that supports high-performance, cost-effective project outcomes through an early analysis of the interrelationships among systems¹. The credit requires project teams to perform analyses for both energy- and water-related systems before completing the schematic design, and to use the findings to inform the owner's project requirements, basis of design, and design and construction documents¹. The example given in the question is an illustration of how selecting a paint color with a higher light reflectance value can reduce the energy use and cost of lighting fixtures, which is an energy-related system. This strategy shows how the project team applied an integrative process to evaluate the impacts of different design options on the building performance and environmental benefits. Therefore, the correct answer is B. Integrative Process Credit.

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Integrative Process

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