

What is Facade Design?

Worksheet

Facade design is the process of engineering a building's exterior enclosure - cladding, glazing, insulation and structural support - to control light, heat, air and water while expressing the building's architectural identity.

Questions

1. Which facade system uses a drained and ventilated cavity to manage water?
 - A) Curtain wall
 - B) Rainscreen
 - C) Structural glazing
 - D) Load-bearing masonry
2. What is the main benefit of a double-skin facade?
 - A) Lower material cost
 - B) Thermal buffering and natural ventilation potential
 - C) No maintenance required
 - D) Structural load-bearing capacity
3. A curtain wall is typically:
 - A) A structural, load-bearing wall
 - B) A non-structural cladding system hung on the building frame
 - C) Only used in historic masonry buildings
 - D) Impermeable to any water
4. Which factor is NOT a primary function of facade design?
 - A) Thermal control
 - B) Structural foundation support
 - C) Water management
 - D) Daylight and glare control
5. A design team must choose a facade system for a 40-story office tower in a hot climate with high solar gain.
6. A renovation project needs to upgrade an aging masonry facade without changing the historic street-facing appearance.
7. A coastal building needs a facade system resistant to wind-driven rain and salt corrosion.
8. Define: What is a curtain wall facade?
9. Define: What is a rainscreen facade?
10. Define: Why use a double-skin facade?

Answer Key

1. B) Rainscreen - Rainscreen systems drain and ventilate any water that gets past the outer cladding.
2. B) Thermal buffering and natural ventilation potential - The ventilated cavity buffers heat and can be used for shading or airflow.
3. B) A non-structural cladding system hung on the building frame - Curtain walls carry only their own weight and wind loads, transferring them to the structural frame.
4. B) Structural foundation support - Foundations carry building loads; facades manage environmental performance and appearance, not foundation support.
5. Identify the main driver: solar heat gain and glare control Compare options: single-skin curtain wall with low-E coated glass vs a double-skin facade with a ventilated shading cavity Double-skin facade reduces cooling loads by buffering solar heat in the cavity before it reaches the interior Decision: specify a double-skin facade with operable shading blinds in the cavity
6. Constraint: preserve the original masonry look Option: apply a rainscreen overcladding system only on non-visible elevations Add interior insulation and an air barrier behind the existing masonry on the street facade Decision: hybrid approach - rainscreen where possible, interior retrofit where appearance must be preserved
7. Identify risks: water infiltration and material corrosion Choose a rainscreen facade: an outer cladding layer with a drained and vented air cavity behind it Specify corrosion-resistant fasteners and marine-grade aluminum or fiber-cement cladding Decision: ventilated rainscreen system with corrosion-rated materials
8. A non-structural exterior wall system, typically aluminum-framed glazing, hung off the building's structural frame floor by floor.
9. A cladding system with a drained, ventilated air cavity behind it that keeps most water out and lets any that gets in drain and evaporate.
10. It adds a ventilated buffer cavity between two glazed layers, reducing heat gain/loss and enabling natural ventilation or shading.

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