

Technical Recommendations for closed balcony (Design & Structure)

1 Structural System

- The structure must be **fully independent or properly tied to the main building**
- Recommended system:
 - **Galvanized steel hollow sections (preferred)**
 - **OR hot-dip galvanized steel trusses**
- Steel must be:
 - Anti-corrosion treated (hot-dip galvanized preferred)
 - Designed for **dead load + wind load + tile load + enclosure load**

✓ Important:

Closed balconies create **wind pressure inside + suction effects**, so structure must resist uplift forces.

2 Aluminum System Integration (Very Important)

Since the balcony will have:

- Aluminum windows
- Aluminum sliding doors
- Fixed glass panels

You must ensure:

✓ **Frame compatibility:**

- Structural steel must allow **precise anchoring points for aluminum frames**
- Avoid random fixing into tiles or weak substrates

✓ **Thermal break recommendation:**

- Use **thermal break aluminum systems** (recommended in hot climates like Jordan)
- Reduces heat transfer and condensation

✓ **Water sealing logic:**

- Aluminum system must not carry roof water load
 - Water must always be directed to gutters (never toward windows)
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3 Roof Slope

- Minimum slope: **25°**
- Recommended: **30° – 35°**

✓ Reason:

- Prevents water stagnation
 - Ensures self-cleaning of tiles
 - Improves long-term waterproofing
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4 Roof System Layers (From bottom to top)

1. Steel structure (galvanized)
 2. Secondary slope framing (if required)
 3. Vapor barrier (optional but recommended)
 4. Thermal insulation layer
 - Rock wool OR rigid polyurethane boards
 5. Waterproof membrane (bituminous or synthetic)
 6. Battens (treated wood or galvanized steel)
 7. Roof tiles (final layer)
 8. Ridge caps + edge finishing elements
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5 Thermal & Acoustic Performance

Closed balcony becomes a usable living space, so:

- Install **thermal insulation minimum 5–10 cm**
- Use **rock wool for best acoustic performance**
- Prevent heat transfer through roof by full coverage insulation

✓ Result:

- Cooler space in summer
- Reduced rain noise

- Better indoor comfort
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6 Drainage System

- Must include **external gutters or concealed gutters**
- Minimum slope inside gutters: **1–2%**
- Water must be directed away from:
 - Aluminum windows
 - Doors
 - Facade walls

✓ Optional premium solution:

- Hidden box gutter integrated with roof design