

# Technical Recommendations (Design & Structure)

## 1.1 Structural System

- Use **hot-dip galvanized steel structure (recommended)** or reinforced steel trusses
- Structure must be designed for:
  - Dead load (tiles + insulation + finishes)
  - Live load (maintenance)
  - Wind uplift forces
- Prefer **rigid frame system with intermediate supports** for long spans

✓ Important:

Living rooms are sensitive spaces → any vibration or deflection will be noticeable.

---

## 2 Roof System Composition (Very Important)

From bottom to top:

1. Structural steel frame (galvanized)
  2. Secondary framing / slope correction (if needed)
  3. Vapor barrier layer
  4. Thermal insulation (critical layer)
    - Rock wool (best for acoustic + thermal)
    - Or rigid polyurethane boards
  5. Waterproof membrane (fully continuous)
  6. Battens (treated timber or galvanized steel)
  7. Roof tiles (final layer)
  8. Ridge caps + ventilation elements
- 

## 3 Thermal Comfort (Key Factor)

Since this is a living space:

- Minimum insulation thickness: **5–10 cm**
- Prefer **rock wool insulation** for:
  - Heat reduction

- Sound insulation (rain noise control)
- Ensure full coverage without thermal bridges

✓ Result:

- Cooler in summer
  - Warmer in winter
  - Reduced energy consumption
- 

## 4 Acoustic Performance

Living rooms require comfort:

- Use **dense insulation (rock wool preferred)**
  - Avoid direct rigid connections between roof sheets and interior ceiling
  - Add suspended ceiling if needed (gypsum board system)
- 

## 5 Waterproofing System

- Must be **fully continuous membrane system**
- Overlaps sealed according to manufacturer instructions
- All roof penetrations must be sealed (vents, edges, skylights if any)

✓ Critical:

No compromise allowed → leakage directly affects interior space

---

## 6 Ventilation Strategy

- Provide roof ventilation where possible:
  - Ridge ventilation systems
  - Or controlled air gaps
- Prevent trapped humidity inside roof layers