



SNS COLLEGE OF TECHNOLOGY

Coimbatore – 641 029

An Autonomous Institution



DEPARTMENT OF CIVIL ENGINEERING

19CE0302 – BYE LAWS IN BUILDING AND CONSTRUCTION

IV YEAR / VII SEMESTER

**UNIT 1 :CLASSIFICATION OF BUILDING - BASED ON FIRE
RESISTANCE**



UNIT 1 :FUNDAMENTALS OF BUILDINGS



1. Introduction – Classification of Buildings
2. Based on nature of occupancy
3. Based on fire resistance
4. Based on built in environment and naturality
5. Classification of residential buildings



Classification based on fire resistant



Type 1: Fire-resistive: High-rise buildings made of concrete and protected steel

Type 2: Non-combustible: Newer buildings with tilt-slab or reinforced masonry walls and a metal roof

Type 3: Ordinary: New or old buildings with non-combustible walls but a wood-framed roof

Type 4: Heavy Timber: Older buildings made from thick lumber

Type 5: Wood-framed: Modern buildings with combustible framing and roofs



Type 1 – Fire Resistive

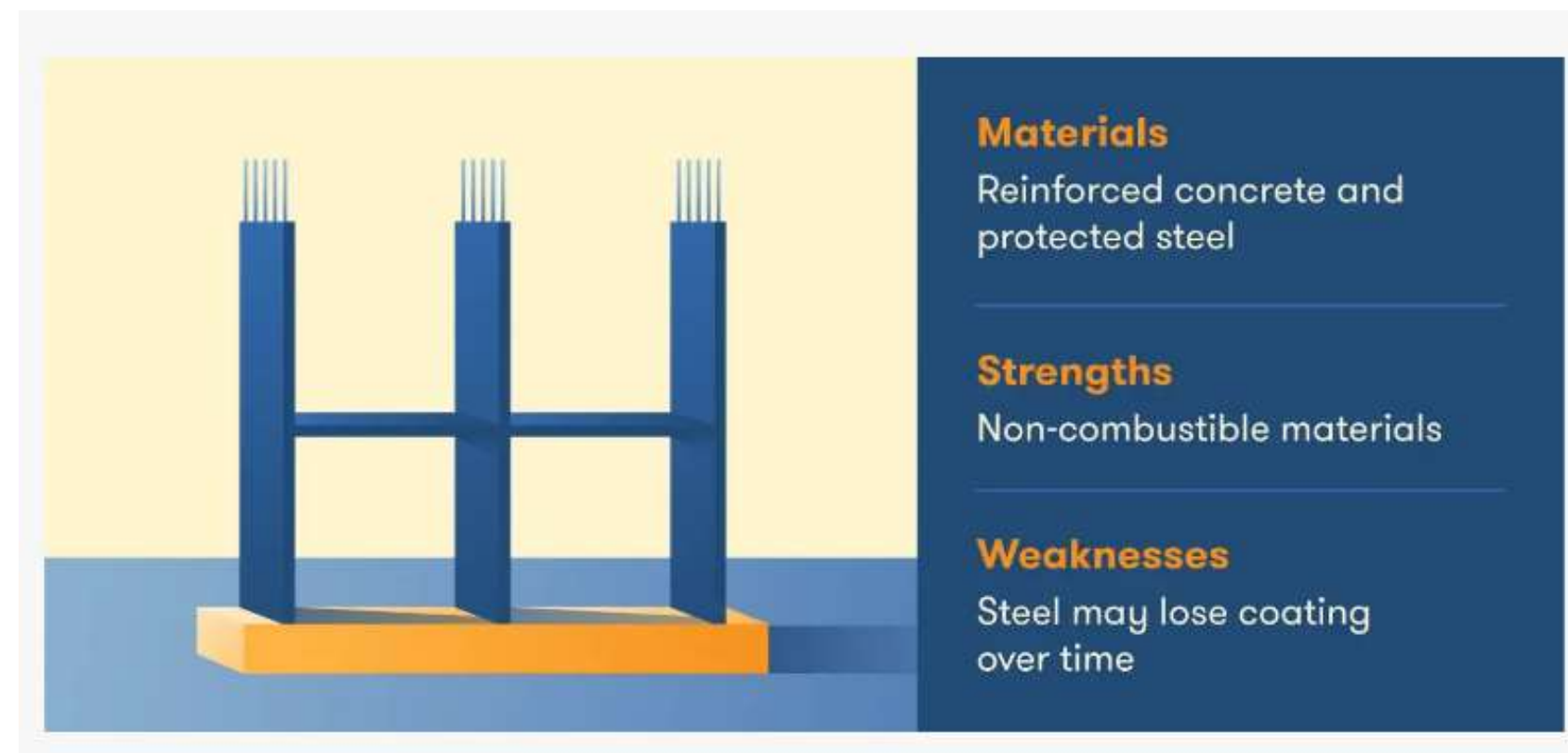


Materials: These buildings are made from reinforced concrete and protected steel covered in a fire-resistant coating.

Strengths: All structural materials are non-combustible, fire-resistant for up to four hours and not vulnerable to collapse.

Weaknesses: Exposed steel can wear down over time and difficult-to-penetrate roofs and windows can prevent ventilation in case of fire.

Special notes: Some Type 1 buildings have specialized HVAC systems and self-pressurizing stairwells that mitigate fire spread.





Type 2 – Non Combustible



Materials: Walls are either tilt-slab construction or reinforced masonry, both fire-resistant. The metal and lightweight concrete in their roofs are non-combustible, but flammable materials like foam and rubber may be present.

Strengths: They have one to two hours of burn resistance, depending on the materials used.

Weaknesses: Without sufficient ventilation, temperatures can quickly rise, leading to collapse.

Special notes: Firefighters aim to ventilate these buildings with skylights or roll-up doors on the exterior of the building.





Type 3 – Ordinary

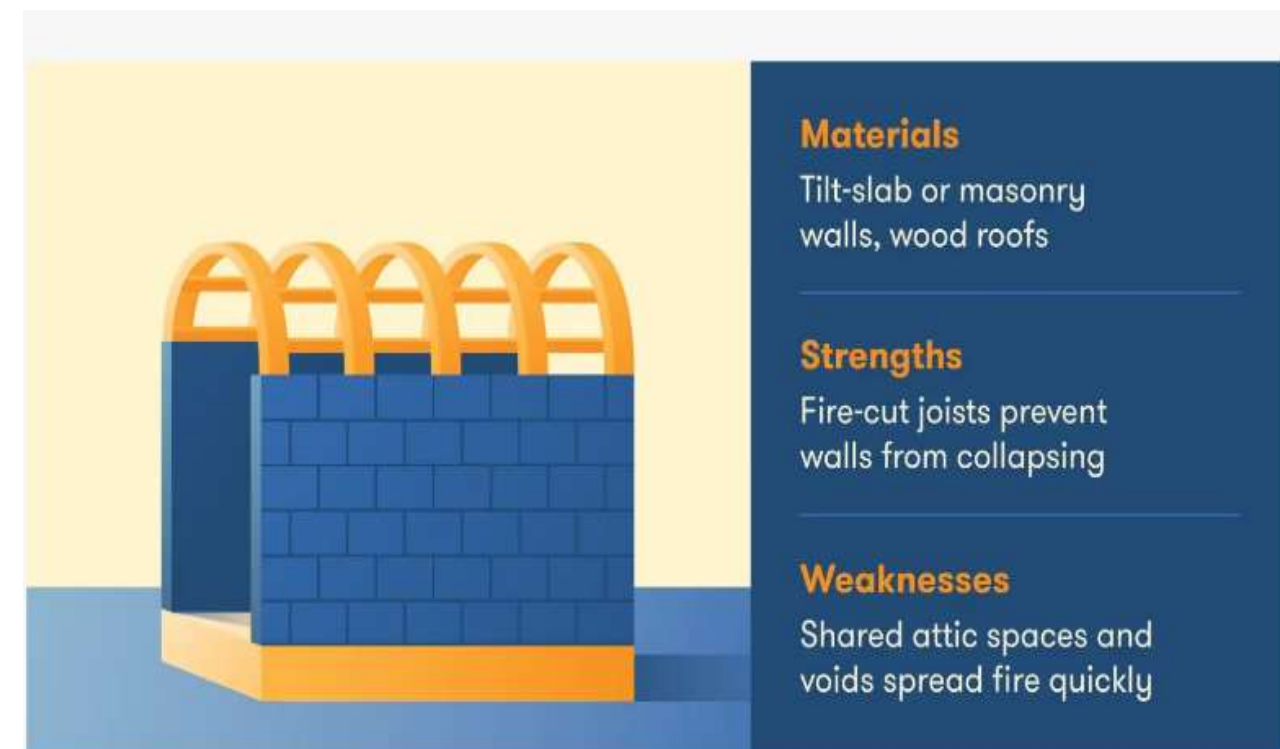


Materials: The walls are made from non-combustible tilt-slab or reinforced masonry, while their wooden roofs are flammable.

Strengths: With a combination of non-combustible masonry and fire-cut joists, exterior walls can stand even if the floors collapse.

Weaknesses: Many buildings of this type have connected attics or horizontal void spaces, enabling flames to spread unless fire stops are installed.

Special notes: The roof systems in these buildings — including parallel chord trusses and panelized roofs — determine what types of cut firefighters must make to ventilate the structure.





Type 4 – Heavy timber

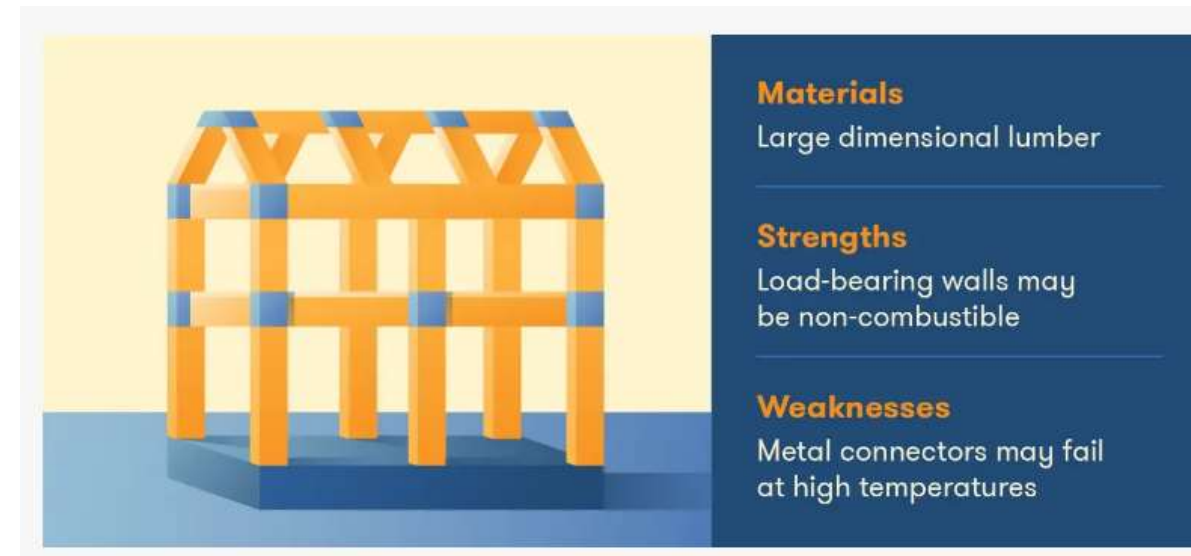


Materials: Large pieces of lumber form these buildings' walls and roofs.

Strengths: Many load-bearing walls are non-combustible, and their drainage systems allow firefighters' water to leave the building without increasing weight and risking collapse.

Weaknesses: Metal joints break at high temperatures, and in factories, hazards like oil, machinery or goods can increase fire severity.

Special notes: Though large dimensional lumber holds up well in fire, older buildings with termites or weather damage face an increased risk of collapse.





Type 5 – Wood framed



Materials: They're made with wood, often manufactured, or other combustible materials in the walls and roof.

Strengths: Larger beams offer structural support that helps prevent building collapse, and interior platforms often prevent the fire from spreading vertically.

Weaknesses: Manufactured wood burns quickly, and modern construction methods leave buildings at high risk of catching fire.

Special notes: Drywall briefly protects structural elements, but other materials common in this type of construction will fuel fires.

