Different Types of Beams

A beam is a horizontal structural member that runs horizontally to support vertical loads emanating from the building frame. The load is distributed to the beam's ends and transferred to columns, walls, and posts on both sides of the beam. Beams are a major part of the GATE Civil syllabus. It can only bear lateral loads on the beam's axis. The following are the types of beams:

1. Cantilever beam
2. Simply Supported beam
3. Overhanging beam
4. Fixed beams
5. Continuous beam

Cantilever Beam

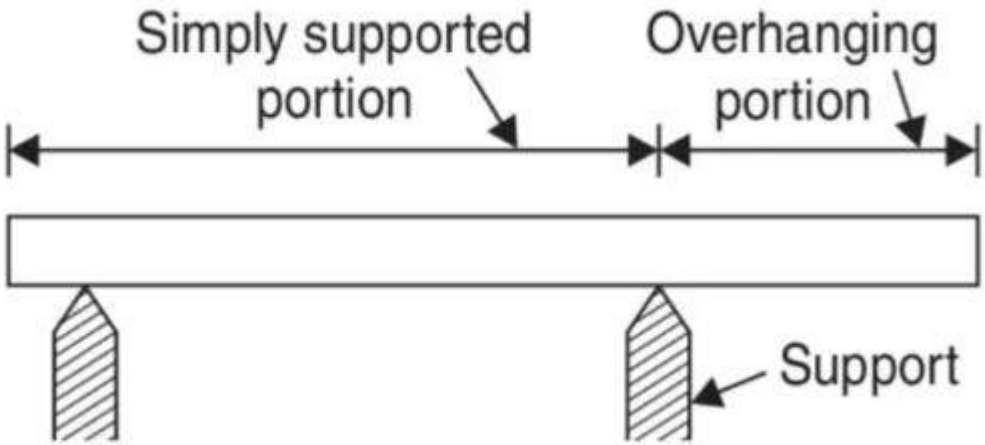
A cantilever beam is a member with one end protruding beyond the point of support, allowing it to move vertically under the impact of vertical loads placed between the free end and the support.

Simply Supported Beam

A simply supported beam is one that is supported by two points and can travel horizontally. Bridges, beams in structures, and machine tool beds are examples of typical practical applications of simply supported beams with point loadings. SSS, or simply supported beam, important for the GATE exam, is shown below

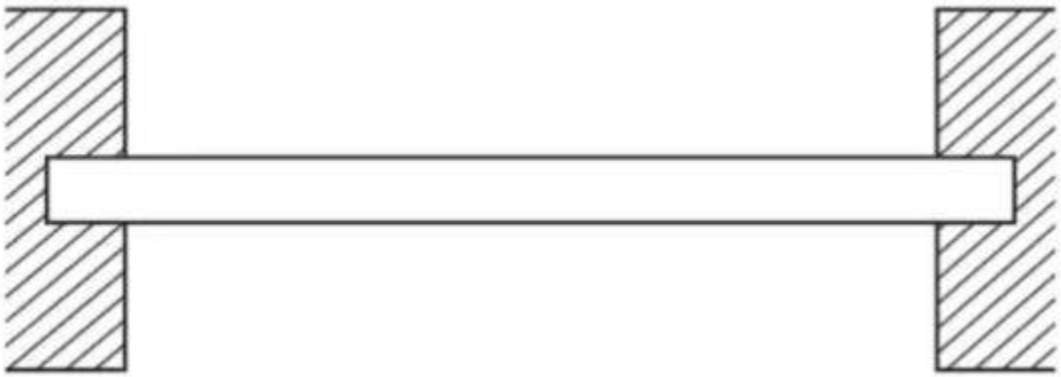
Overhanging Beam

When the end of a beam extends beyond the support, it is referred to as an overhanging beam. Overhanging can occur on one or both sides of the supports.



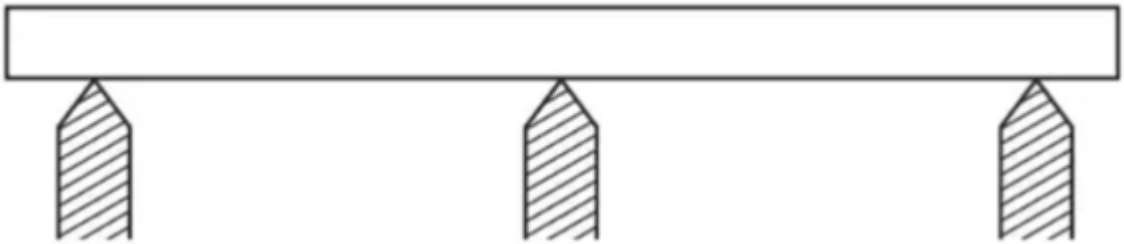
Fixed Beam

A fixed beam is held up by two fixed ends. It's also known as a fixed-end beam, built-in beam, or constrained beam. It is classed as a statically indeterminate beam since there are more than three unknowns and the static equilibrium equations alone are insufficient to identify the support reactions.



Continuous Beam

Continuous steel beams are made up of two or more beams that are welded together and reinforced by additional beams to form a strong but flexible component for large-scale structures. Continuous beams, for example, are utilized in bridges, multi-story buildings, complex roof structures, and other construction projects.



Types of Beam Support

For stability, a structure relies less on the weight and stiffness of a material and more on its shape. Whatever the condition, a certain degree of stiffness is required for connection designs. The form of support connection influences the load-bearing capability of each member that makes up a structural system. Each support condition has an effect on the behaviour of the elements and, thus, the system. Horizontal-span support systems and vertical building structure systems are two types of structures.

Candidates can expect questions in the GATE question paper based on types of Beam support. Roller, pinned, fixed, hanger, and simple support are the five main idealized support structure types, classified by the forms of deflection they constrain.

- Roller supports
- Pinned support
- Fixed support
- Hanger support
- Simple support