



DEPARTMENT OF
CIVIL ENGINEERING

REIN-FORCED CEMENT CONCRETE

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UNDER THE GUIDENCE OF

Introduction to Footings

Definition: Footings are structural elements that distribute the load from a building or structure to the ground.

Importance: Footings ensure stability by preventing settlement and tilting of the structure.

Application in India: Footings are crucial in various regions due to the diverse soil conditions (e.g., rocky terrains, flood-prone areas, or soft soil).



Isolated Footing



Isolated Footing

Definition: A single footing supporting a single column, typically used in small to medium-sized structures.

Advantages:

- Simple and cost-effective construction.
- Suitable for low-rise buildings.
- Requires less material and labor.

Use Cases in India:

- Common in residential buildings, temples, and small structures.
- Used in urban and rural areas with stable soil conditions (e.g., Rajasthan, parts of Maharashtra).



Strip Footing



Strip Footing



Definition: A continuous footing that supports a wall or a series of columns, typically used for load-bearing walls.

Advantages:

- Economical and simple to construct.
- Provides stability over a long length.
- Ideal for low-rise buildings.

Use Cases in India:

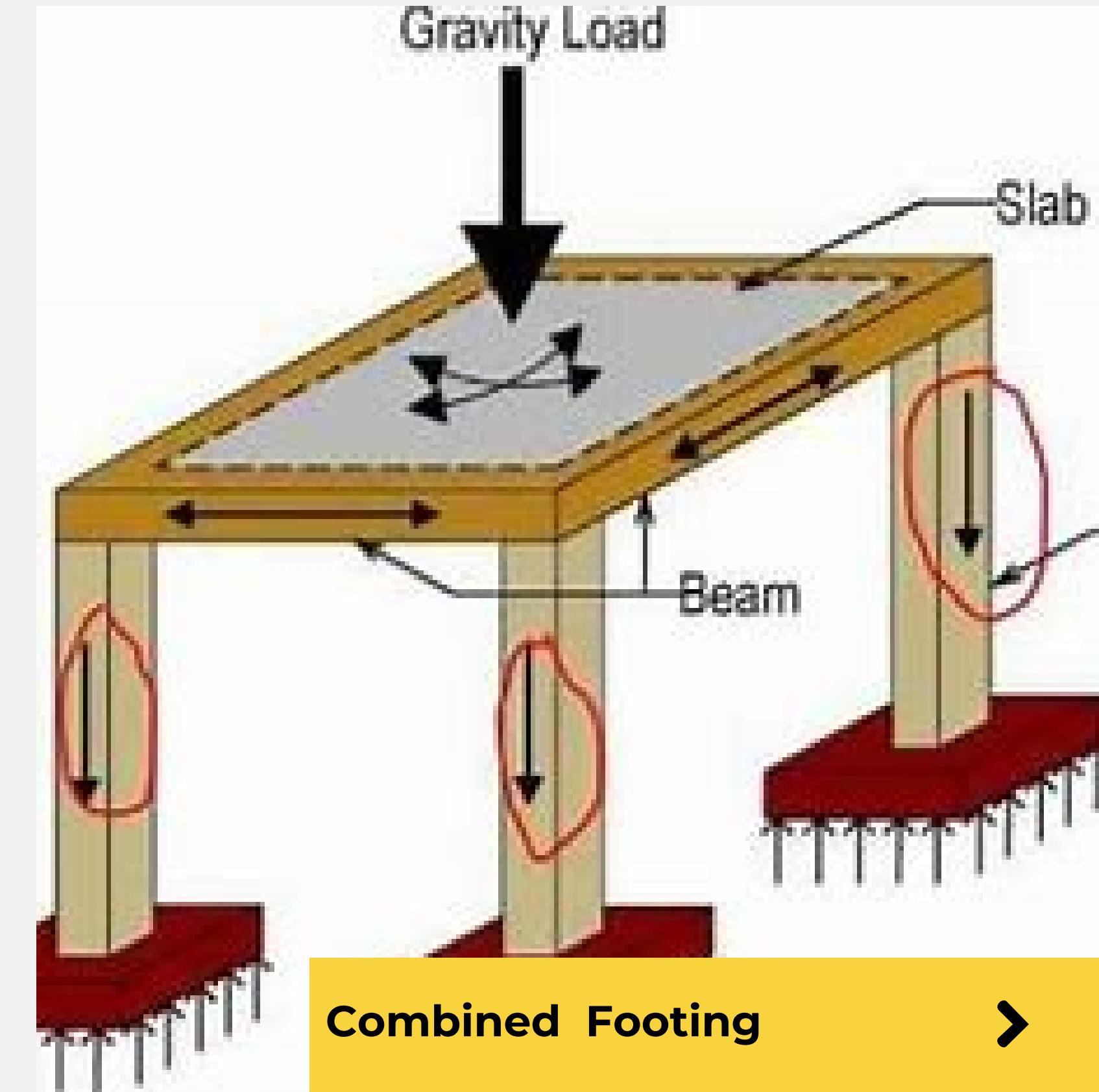
- Widely used in small residential buildings, boundary walls, and low-rise commercial structures.
- Often used in rural areas for single-story homes in states like Gujarat and Tamil Nadu.

Slab and Beam Footing



Slab and Beam Footing

- Definition: A combination of slab and beams used to distribute loads when the soil has a low bearing capacity.
- Advantages:
- Effective in areas with weak or expansive soils.
- Provides added stability and load distribution.
- Helps reduce the effects of differential settlement.
- Use Cases in India:
- Used in areas with poor soil quality, such as parts of Uttar Pradesh, Bihar, and coastal areas.
- Often employed in larger structures like schools or multi-story buildings in cities like Delhi and Chennai.



Combined Footing

Definition: A footing that supports two or more columns located close together, typically used when isolated footings would overlap.

Advantages:

- Efficiently distributes loads from multiple columns.
- Saves space and material compared to individual footings.
- Reduces settlement risk in tight spaces.

Use Cases in India:

- Frequently used in urban settings with densely built environments, such as in Mumbai and Bengaluru.
- Common in small apartment complexes and industrial buildings.



Strap Footing



Strap Footing



Definition: A type of combined footing with a connecting strap (beam) between isolated footings for widely spaced columns.

Advantages:

- Provides even load distribution.
- Ideal for when columns are too far apart to use a combined footing.
- Ensures balanced load sharing between footings.

Use Cases in India:

- Used in industrial buildings, large warehouses, and factories.
- Found in construction projects in industrial zones like Pune and Noida.

Raft Footing



Raft Footing (Mat Foundation)

GREAT BUILDER

Definition: A large, thick concrete slab that covers the entire foundation area, supporting multiple columns and walls.

Advantages:

- Ideal for weak or expansive soils.
- Distributes the load evenly over a large area.
- Reduces differential settlement.

Use Cases in India:

- Common in high-rise buildings and heavy commercial structures in cities like Mumbai, Kolkata, and Hyderabad.
- Used for buildings constructed in soft or marshy areas like those found along the Ganges River.



PILE FOOTING



Pile Footing



Definition: A footing supported by long, slender piles driven deep into the ground to reach stable soil layers.

Advantages:

- Effective in soft, loose, or waterlogged soil conditions.
- Transfers the load to deeper, more stable layers.
- Suitable for tall buildings and bridge foundations.

Use Cases in India:

- Used in coastal areas, such as in Chennai and Kochi, where soil conditions are poor.
- Essential for constructing large bridges and multi-story buildings in cities like Mumbai and Kolkata.

Slab Footing



Slab Footing

Definition: A thick slab of concrete used to spread the load from a column or multiple columns over a wide area.

Advantages:

- Ideal for areas with weak soil.
- Provides stability and minimizes settlement risk.
- Easy to construct.

Use Cases in India:

- Used in areas with expansive soil like Rajasthan, parts of Uttar Pradesh, and other semi-arid regions.
- Common in medium to large buildings where foundation depth needs to be minimized.



Corner Footing



Corner Footing



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Definition: A footing designed for columns placed at the corner of a building or structure, often with an asymmetrical load distribution.

Advantages:

- Helps in load distribution in corner columns.
- Prevents settlement or tilting of structures at the corners.

Use Cases in India:

- Common in corner columns of residential and commercial buildings in crowded urban environments such as Delhi, Bengaluru, and Pune.

Well Foundation



Well Foundation

Definition: A deep foundation used in waterlogged areas, involving a large, caisson-like structure that is sunk into the ground or water.

Advantages:

- Ideal for areas with high water tables.
- Provides a solid base for piers or bridge structures.
- Suitable for underwater or riverbank construction.

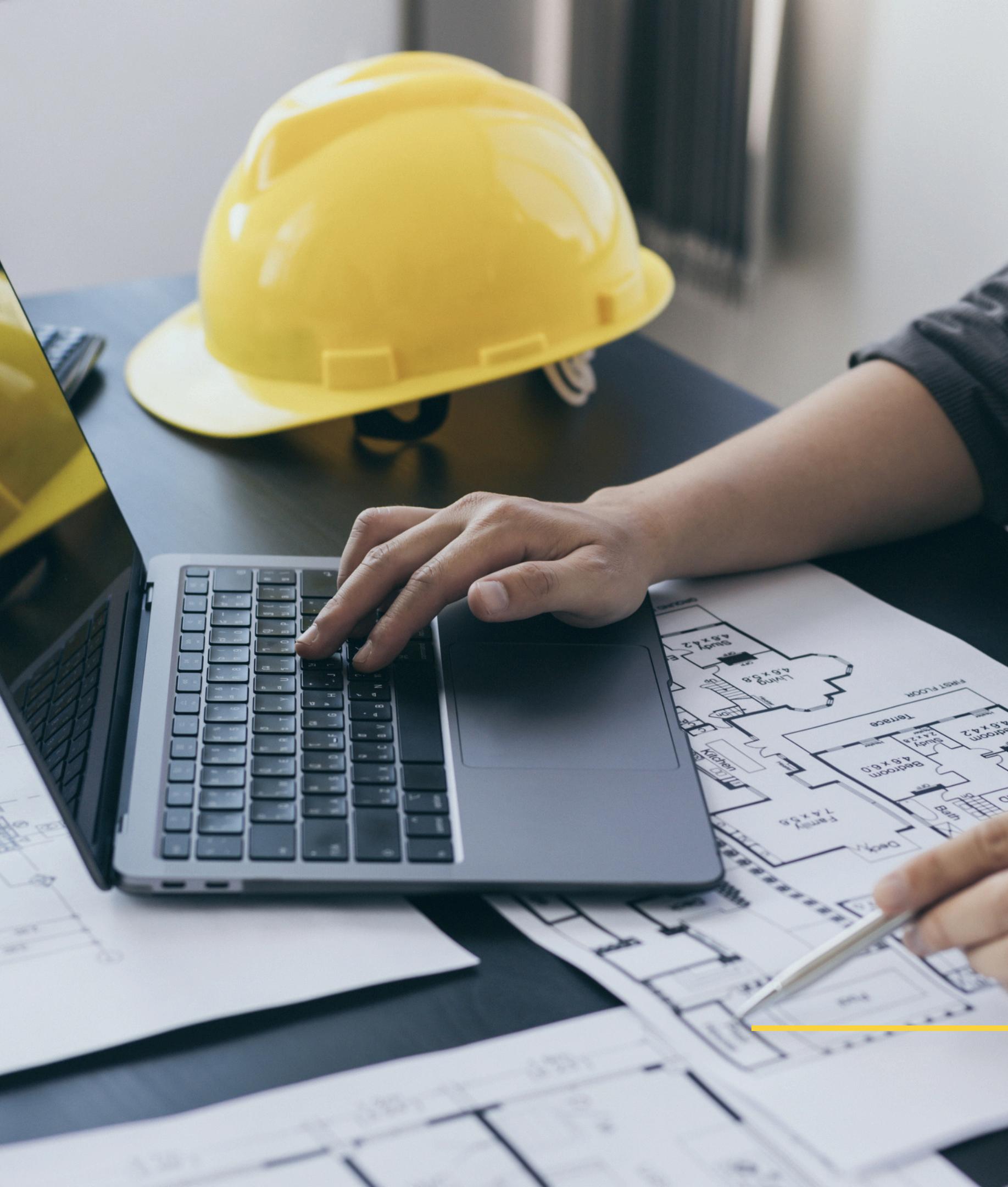
Use Cases in India:

- Widely used for bridges, especially those crossing rivers like the Ganges, Yamuna, and Brahmaputra.
- Used in the construction of piers for major ports such as in Mumbai and Visakhapatnam.



Thank you slide





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