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DEPARTMENT OF CIVIL ENGINEERING

CANTILEVER STRUCTURE MODEL

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MODEL-1 (CANTILEVER STRUCTURE)

- Cantilever structures are simple structure .
- Cantilevers are widely found in constructions, notably in cantilever bridges and balconies etc.
- The cantilever is supported at its one end to the main structure and remains free at other end.

Types of cantilever structures

- Single cantilever structures
- Double cantilever structures

Single cantilever

- A cantilever is a rigid structural element, such as a beam or a plate, anchored at one end to a (usually vertical) support from which it protrudes;
- This connection could also be perpendicular to a flat, vertical surface such as a wall.
- Cantilevers can also be constructed with trusses or slabs.

Double Cantilever

A very simple model of the double cantilever beam (dcb) dynamic crack propagation specimen is studied. ...

The analysis employs an energy balance crack propagation criterion and both constant specific fracture energy and a class of crack speed dependent fracture energies are considered.

Applications

We come across with cantilever daily in our life due to their extensive use in construction.

Examples:

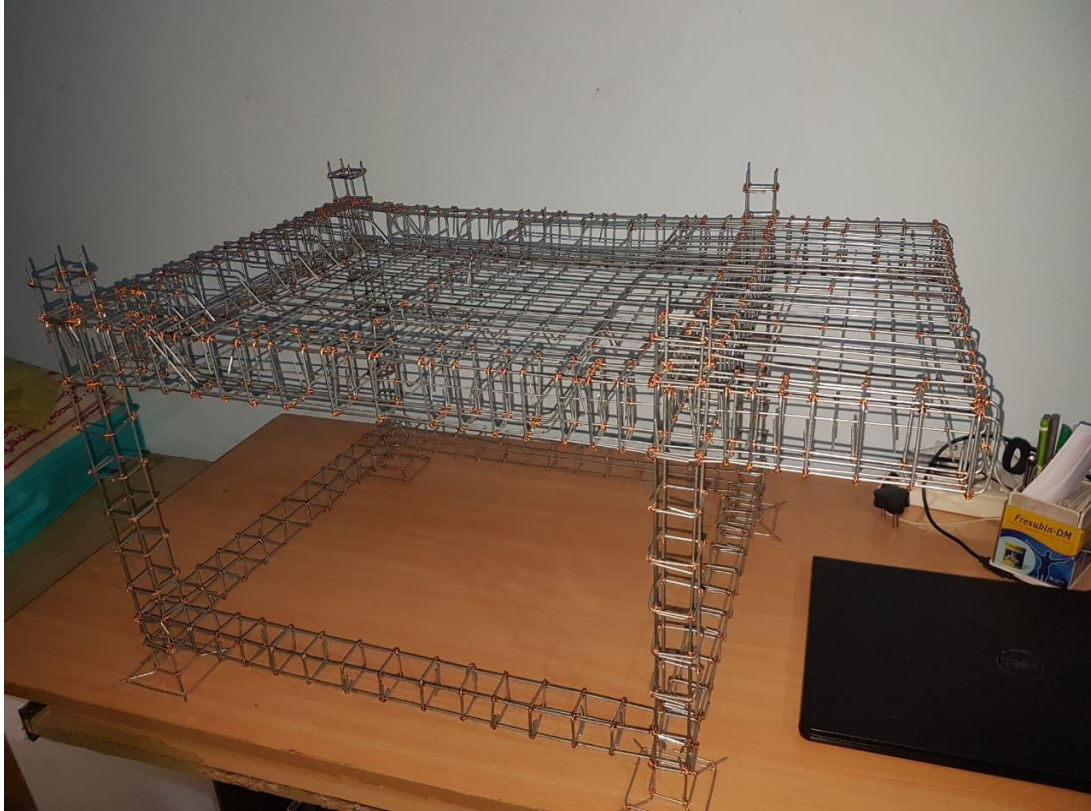
- Bridges
- Towers
- Traffic light post

- Large Warehouse store
- Balconies of house
- Auditorium
- Billboards at the side of roads/highways.
- Furniture
- Shelving

Details of building model

PARTS OF CANTILEVER MODEL

- FOUNDATION
- PLINTH BEAM
- COLUMNS
- BEAMS
- SLAB



Materials used

- Aluminum bars.
- Copper wire for binding purpose.
- Leveling Tube & Steel Tape.
- Small bar bending set up & Cutting player

Model dimensions

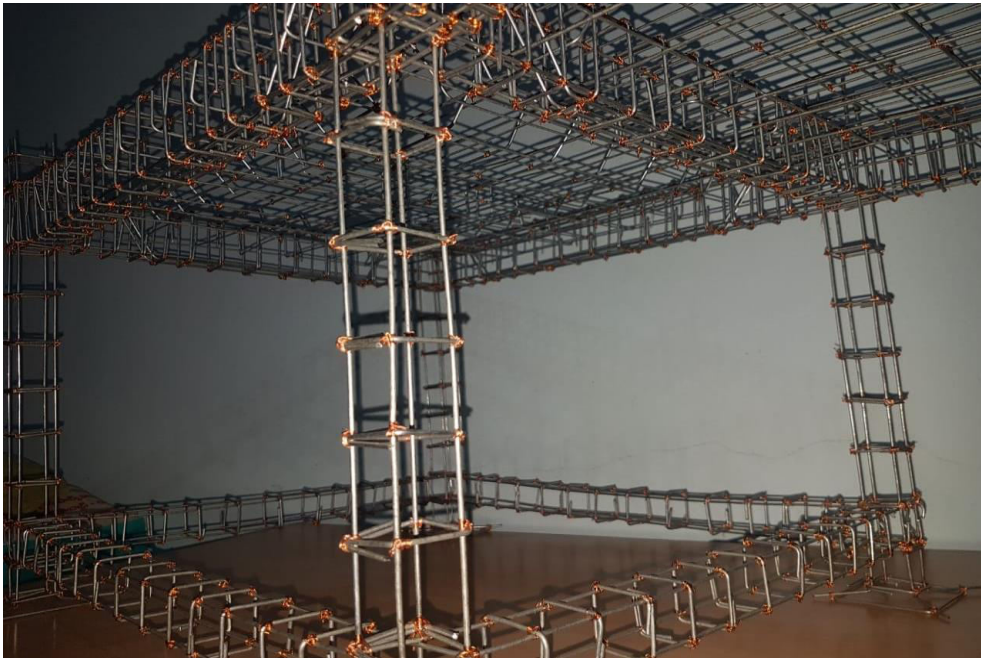
Maximum span length of cantilever slab/Beam

- For normal structure maximum cantilever span could be **2 meter** to 2.5 meter.
- The maximum length of cantilever slab shouldn't be more than **2m** or 6–6.5 ft.

The thickness of slab should also satisfy span/ effective depth ratio of 7 required for cantilever slab.

Foundation details

S.NO	Particulars	Dimensions(mm)
1	Length	70
2	Width	70
3	Column	30x30
4	spacing between the bars	10
5	height of foundation	38
6	Type of Footing	Isolated footing
7	Plinth	20x30



Beam details



Slab details

s.no	Particulars	Dimensions (mm)
1	Length	690
2	Width	460
3	Thickness of slab	30
4	spacing between the bars	10
6	Type of Slab	Two way slab



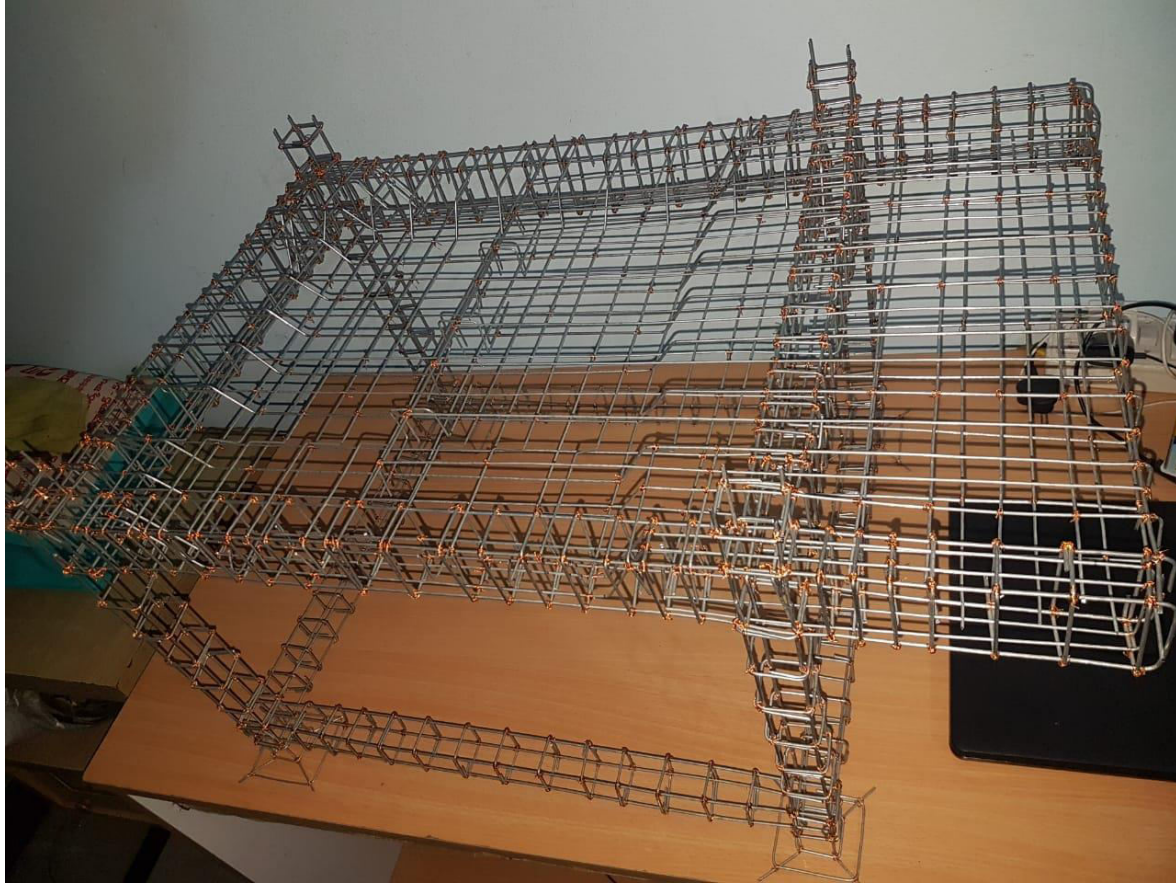
Cantilever beam and slab portion details

Sl.No.	Cantilever beam	Dimensions (mm)
1	Cantilever Length	170
2	anchoring length	100
3	height	50
4	spacing between the lateral ties	20
5	length of stirrup	150

Sl.No.	Cantilever Slab	Dimensions (mm)
1	Cantilever Length	170
2	Slab Thickness	30







Future work:

- **To improve Beam and column strength.**
- **Extension of floor level with increasing cantilever portion simultaneously.**
- **Analysis and design of cantilever structures with different code provision.**
- **Comparison with working model and simulation model.**