



SNS COLLEGE OF TECHNOLOGY



AN AUTONOMOUS INSTITUTION

**Approved by AICTE New Delhi & Affiliated to Anna University Chennai
Accredited by NBA & Accredited by NAAC with “A++” Grade, Recognized by UGC**

COIMBATORE

DEPARTMENT OF CIVIL ENGINEERING

19CET304-DESIGN OF STEEL STRUCTURES

III YEAR / VI SEMESTER

Unit 3 :DESIGN OF COMPRESSION MEMBERS

Topic 2- Slab base and Gusseted bases



Column Bases

The columns are supported on the column bases. The column base is provided for transferring the load from the column to the base and distribute it evenly on the concrete bed. The load is also distributed over a larger area, so that the stress induced in the concrete is within its permissible limits and is capable of resisting overturning.

If column base is not provided, the column is likely to punch through the concrete block. Mild steel plates of sufficient area are attached to the bottom of the column in order to increase the bearing area. Such plates are column bases. These plates are secured to the concrete block through holding down bolts.

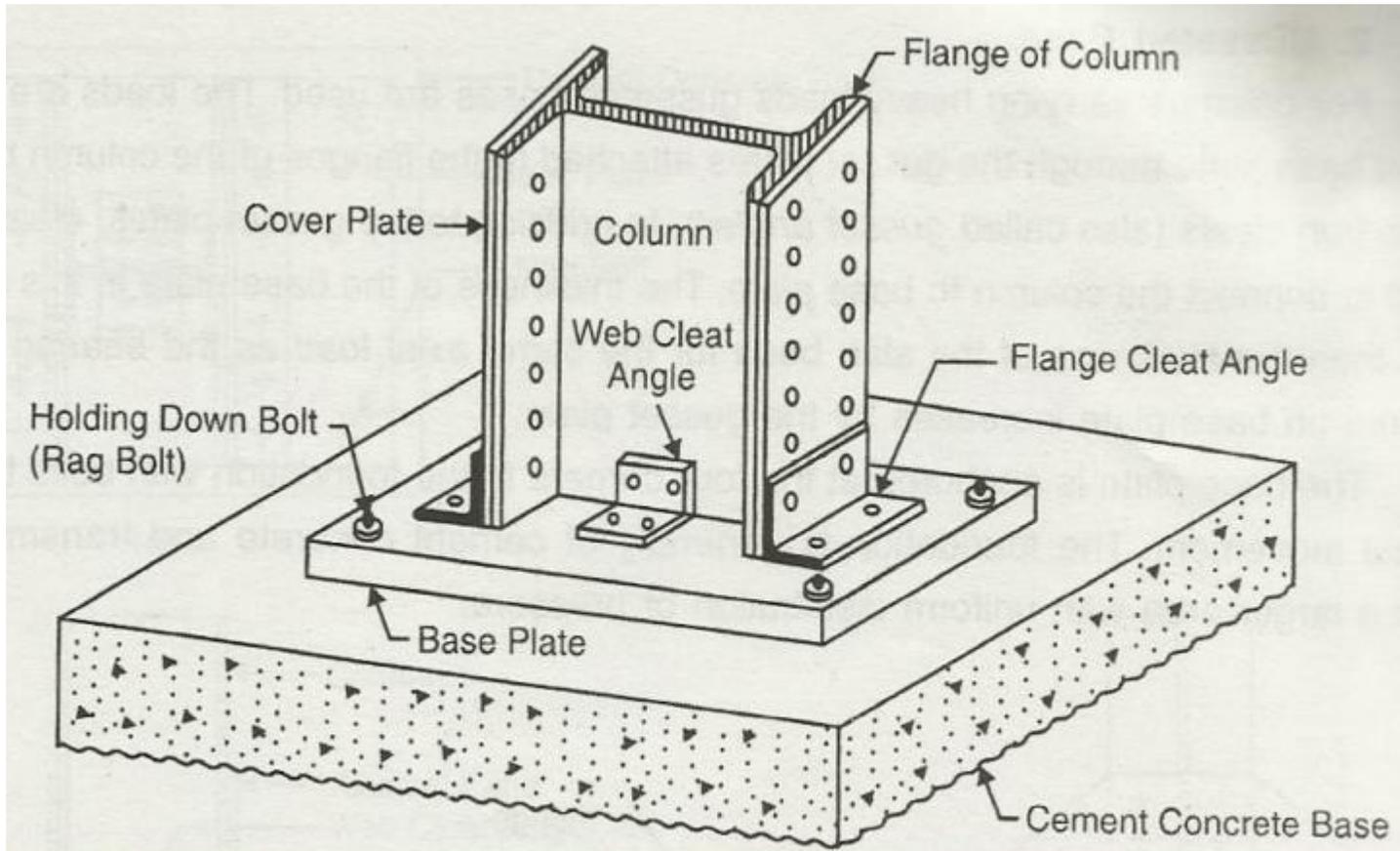


Types of Column Bases

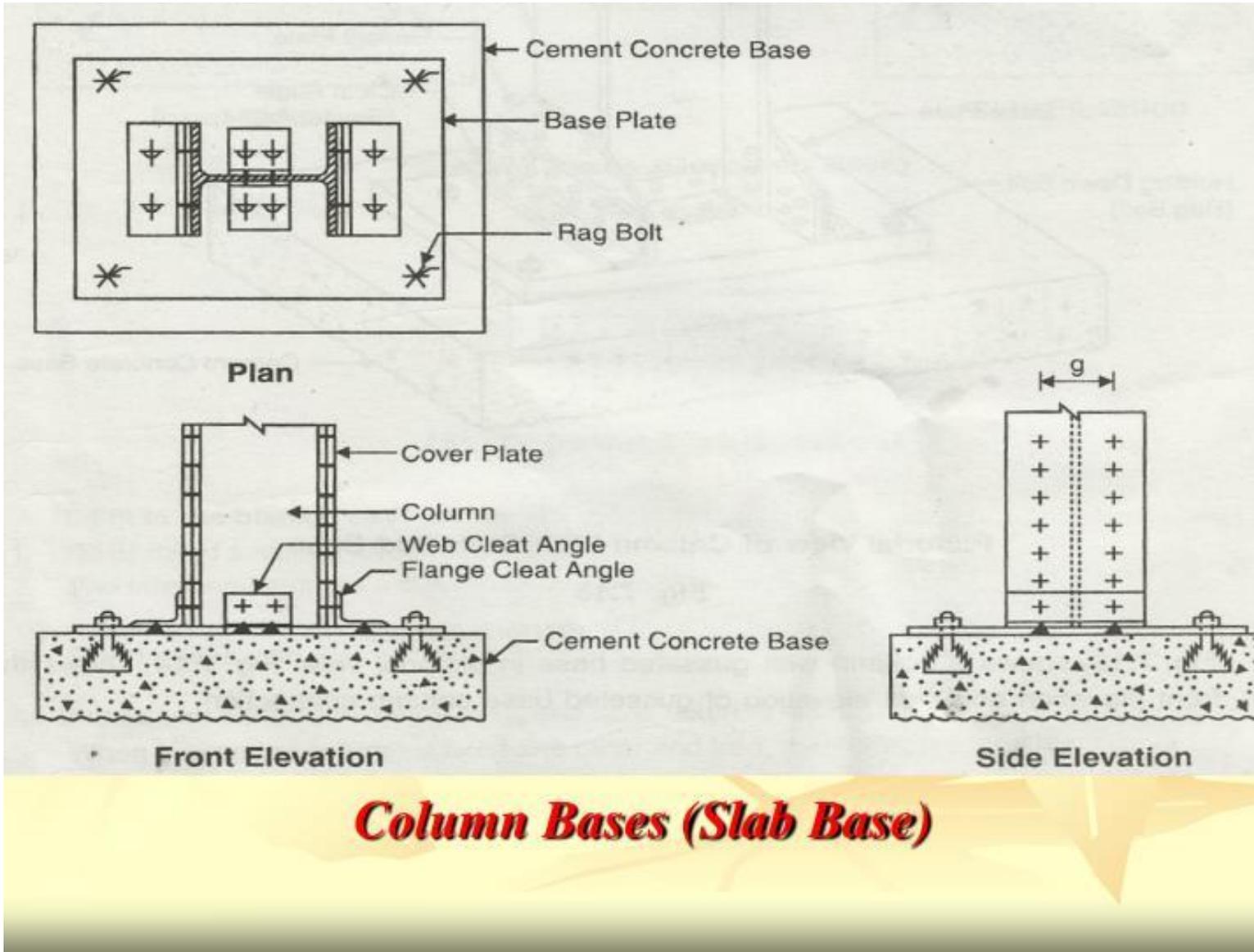
1. Slab Base

2. Gusseted Base

1. Slab Base:- For columns carrying small loads, slab bases are used. It consists of a base plate (placed underneath a machined column end) and cleat angles. The machined column end transfers the load to the slab base by direct bearing. The column end is connected to base plate by welding or by means of riveted angle iron cleats. In order to have a flush base for the slab base it is necessary to use counter-sunk rivets in the horizontal legs of the angle iron cleats. No gusset plates are required for connecting the slab base.



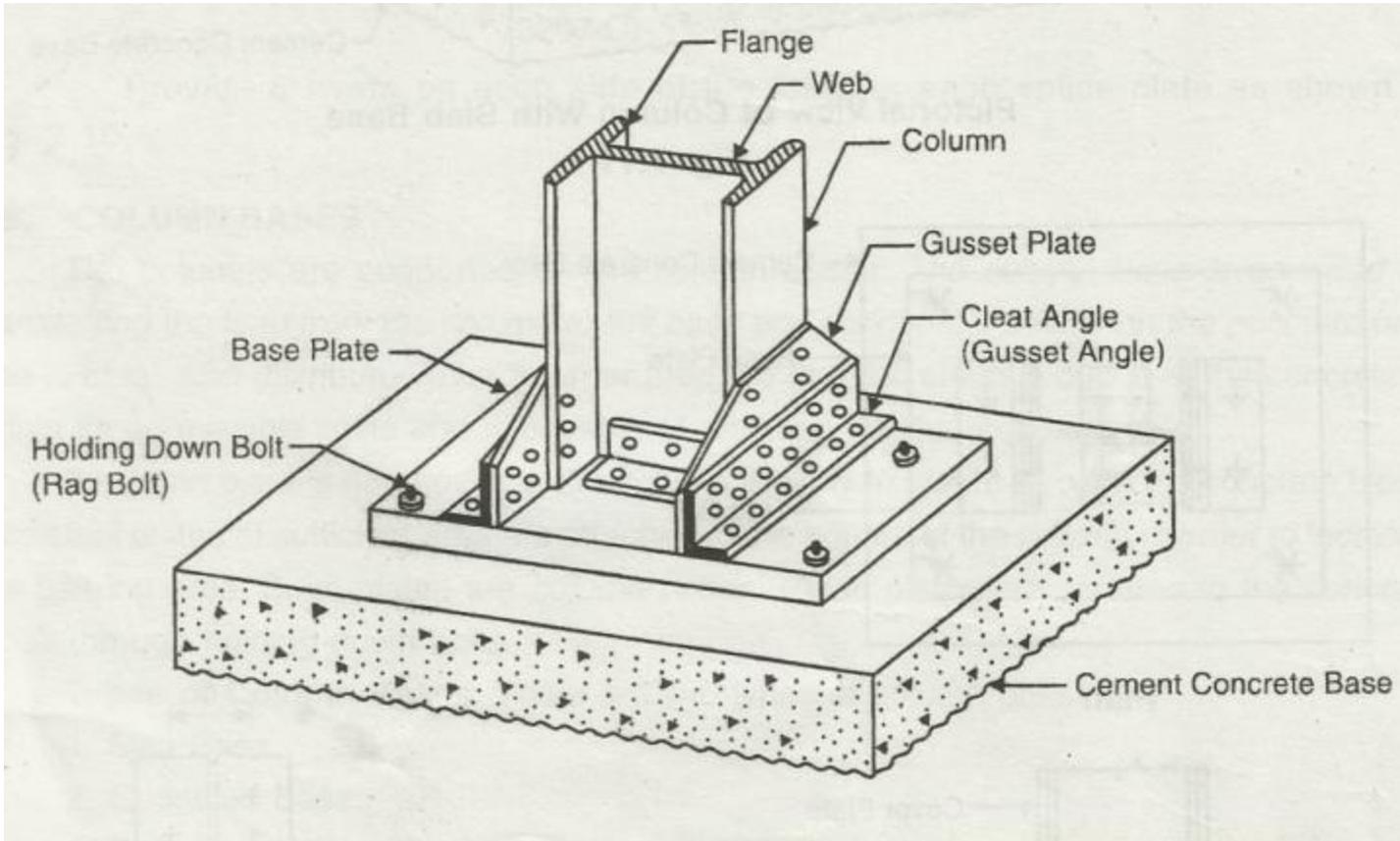
Pictorial View of Column With Slab Base



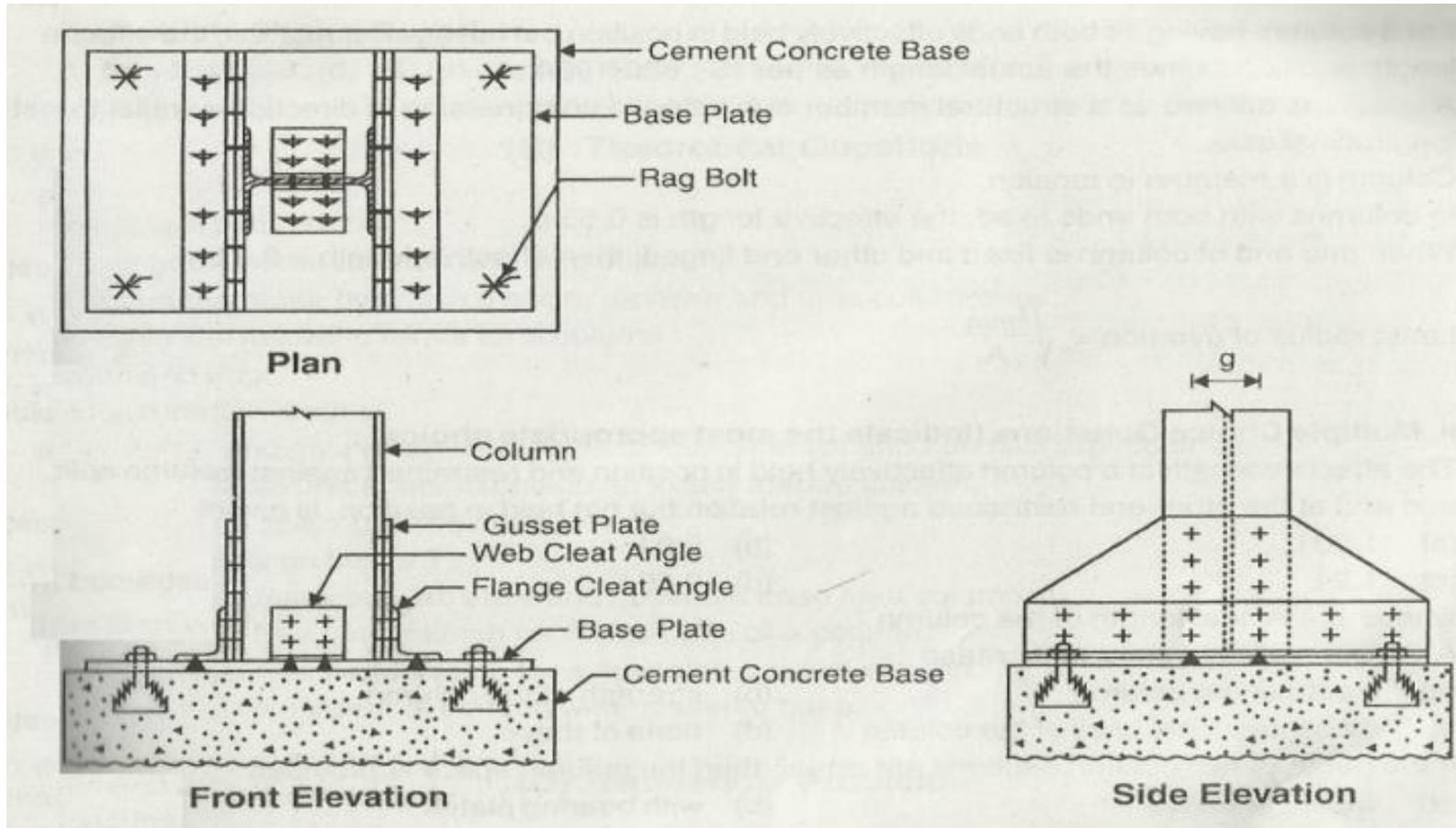


2. Gusseted Base:- For columns carrying heavy loads, gusseted bases are used. The loads are transmitted to the base plate through the gusset plates attached to the flanges of the column by means of angle iron cleats (also called gusset angles). In addition to the gusset plates, cleat angles are used to connect the column to base plate. The thickness of base plate in this case will be less than the thickness of the slab base for the same axial load as the bearing area of the column on base plate increases by the gusset plate.

The base plate is anchored at the four corners to the foundation with bolts to check the lateral movement. The foundation is generally of cement concrete and transmits the load over a larger area with uniform distribution of pressure.



Pictorial View of Column With Gusseted Base



Column Bases (Gusseted Base)



THANK YOU