12-Difference Between long Column and Short Column

by Civil Lead

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Difference Between long Column and Short Column

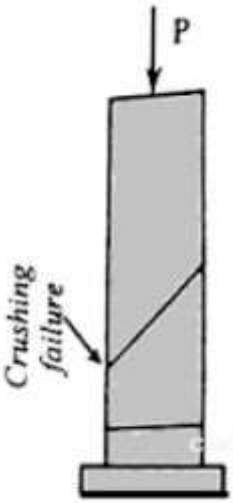
The column is the most important component of RCC structure. Various types of columns are used in the structure. According to slenderness ratio columns are divided into two types:

- Short Column
- Long or slender Column

Short column

A short column is the one whose ratio of effective length to its least lateral dimension is less than or equal to 12. Then it is termed as a short column.

$$(l_{ef} / b) \leq 12$$



Short Column

l_{ef} = effective length

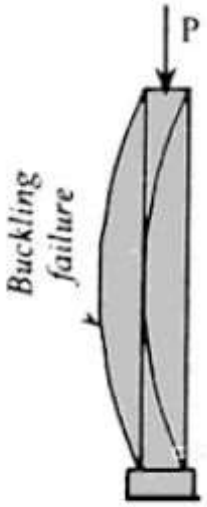
b = least lateral dimension of column

Also, read – ***Difference Between Lap length and Development Length***

Long or Slender Column

A long or slender column is the one whose ratio of effective length to its least lateral dimension is not less than 12. Then it is termed as a long column.

$$(l_{ef} / b) > 12$$



Long or slender Column

In long columns, the permissible values of stresses in concrete and steel, used for

formula.

$$C_r = 1.25 - l_{ef}/48b$$

C_r = reduction coefficient

l_{ef} = effective length

b = least lateral dimension of the column

When in a column, having helical reinforcement, the permissible load is based on the core area, the least lateral dimension should be taken as the diameter of the core.

Also, Read – ***How to Calculate Quantity of Steel in One Way Slab?***

Difference Between Short Columns and Long Columns

S.No.	Short Columns	Long Columns
1	If the ratio of effective length to its least lateral dimension is less than or equal to 12 then it is called short column	If the ratio of the effective length of the column to its least lateral dimension is greater than 12 then it is called a long column.
2	The effective length to least radius of gyration ratio is less than or equal to 40.	The effective length to least radius of gyration ratio is greater than 40.
3	Buckling tendency is very low.	Long and cylinder columns buckle easily.
4	The crushing tendency is very high.	It has a very low crushing tendency.
5	The load-carrying capacity is high as compared to long columns of the same cross-sectional area.	The load-carrying capacity of a long column is less as compared to a short column of the same cross-sectional area.

	is due to their crushing.	buckling.
7	It has more radius of gyration.	It has less radius of gyration.
8	It has a high load-carrying capacity because of its low height.	It has less load carrying capacity because of its more height.
9	They are subjected to compressive stresses.	They are subjected to buckling stresses.
10	Its slenderness ratio is less than 45.	Its slenderness ratio is more than 45.
11	Short columns have a large lateral dimension as compared to its height.	Long columns have a small lateral dimension as compared to its height.
12	The short column is stronger than a long column and it is highly preferable.	Long column is weaker than a short column and generally, it is not preferred.

I hope now you understood the difference between long column and short column. If you find this article helpful please don't forget to share it.

Finally thanks! for reading the article.

Also, read

What is Lap Length?

What is Development Length?

Bar Bending Schedule (BBB) – Importance, Advantages, Preparation.

How to Calculate Cutting Length of Stirrups for Beam and Column?

Structural Design