

## 5.10 Summary

In the previous sections, the behaviour of practical columns subjected to axial compressive loading was discussed and the following conclusions were drawn.

- Very short columns subjected to axial compression fail by yielding. Very long columns fail by buckling in the Euler mode.

- Practical columns generally fail by inelastic buckling and do not conform to the assumptions made in Euler theory. They do not normally remain linearly elastic upto failure unless they are very slender

- Slenderness ratio ( $l/r$ ) and material yield stress ( $f_y$ ) are dominant factors affecting the ultimate strengths of axially loaded columns.

- The compressive strengths of practical columns are significantly affected by (i) the initial imperfection (ii) eccentricity of loading (iii) residual stresses and (iv) lack of distinct yield point and strain hardening. Ultimate load tests on practical columns reveal a scatter band of results shown in Fig. 5.19. A lower bound curve of the type shown therein can be employed for design purposes.