CHAPTER VI

GENERAL CONCLUSIONS

1) The calculated elastic-plastic deflexion of rolled black mild steel agrees quite well with the experimental values. In order to obtain better fitting of the curve, it would be necessary to relate the rate of loading conditions in tension and bending as close as possible.

2) The representation of the stress-strain curve of rolled brass by two straight lines gives a load deflexion curve which is of the same general shape as the experimental curve but with considerable differences in the plastic range. This may be due to the very high value of the represented yield stress. Therefore, it would be useful to study the elastic-plastic deflexion of rolled brass by taking an alternative stress-strain representation and it may be advisable to use the power representation method instead of the previous one.

3) The simple plastic theory can be used to predict the collapse loads of portal frames with sufficient accuracy for practical purposes.

SUGGESTIONS FOR THE MODIFICATION OF THE APPARATUS

1) Design a system with a stand bolted to the test bench along which a pulley can be slid (Fig. 6.1). Wrap a sling around the pulley with one end connected to the frame at D and the other end

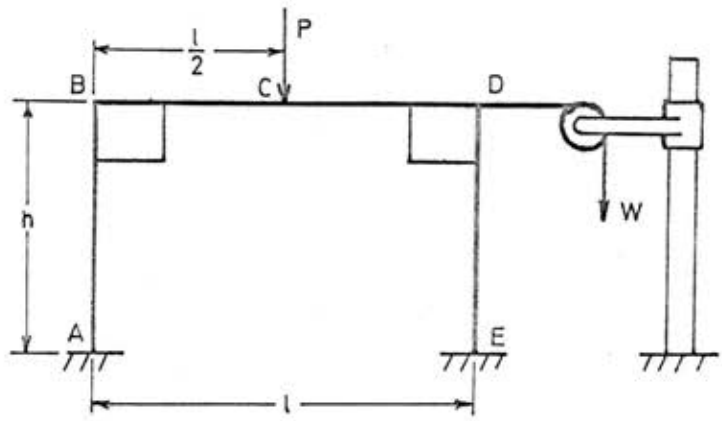

Fig. 6.1. - Portal frame with vertical and horizontal loads.

connected to the weight hanger. By using this system a horizontal load, H, could be applied simultaneously with the vertical load, V. If the span and the height of the frame are suitably in proportion, the study of various modes of failure would be possible.

2) Build one or more weight hangers so that the investigation of beams and frames subjected to many point loads could be carried out.

SUGGESTIONS FOR FURTHER WORK

(1) Study the effect of upper yield stress in the elastic-plastic slope-deflexion equation.

(2) Study the elastic-plastic slope-deflexion equation of simply supported beams subjected to two symmetrical point loads.

(3) Study the plastic behaviour of rolled brass by using the power expression.

(4) Study the irregular path after yield of rolled black mild steel to determine whether the stress-strain curve could be represented by the following diagram:

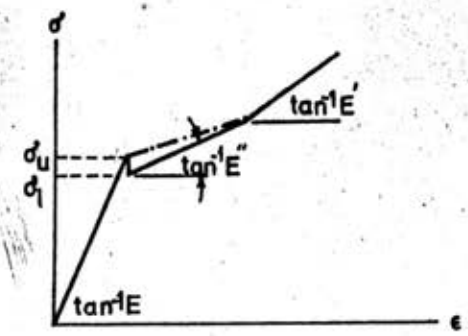

Fig. 6.2--Representation of stress-strain curve of black mild steel considering the irregular path after yield.

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