CHAPTER IV

CONCLUSIONS

An approximate method has been presented for the analysis
of symmetrical rectangular frame-tube structures subjected to
lateral loads of uniform, triangular or trapezoidal distribution.
The method is suitable for use in the preliminary design of such
complicated structures without the need to carry out expensive
computer analysis.

The accuracy of the predicted internal forces and lateral
displacement depends primarily on the assumed shape of axial
deformation in the columns. Because of the simple kinematic
assumptions used, the lateral displacement due to axial deformation
is overestimated and a correction factor is simply applied. For
the assumed shape functions of the axial displacements given in
this study, a correction factor of 0.55 has been found to give
satisfactory results. Of all 39 frame-tubes of different numbers
of stories, stiffness factors and column height to bay width
ratios, 90 % or more of the predicted maximum axial force in the
corner column, maximum spandrel beam shears and the top displacement
are found to be accurate to within 30%. Results for the axial

forces in the columns are worse for columns in the interior of the structure as well as in the upper stories. However, this is not very significant in the preliminary design stage.