

TOWARDS THE DEVELOPMENT OF A
RATIONAL DESIGN PHILOSOPHY

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The purpose of this paper is to emphasise to the unwary designs engineer, the need to design giving due consideration to the interdependent nature of many aspects of structural form, materials of construction and foundation types in the interactive process.

The scope of this paper is limited to the discussion of various mechanisms of soil subsidence and effects on actions generated in the Structural Elements. The Models available for quantitative assessment of these effects are presented. The possible failure modes of the Structural Elements leading to structural collapse are explained. This creates an awareness among Engineers of the three important factors of Function, Safety and Economy in the design process introduced vividly by the Structure Foundation composite analysis.

In conclusion, the Structure and the Foundation considered as one composite system often results in a more economical design. The rigidity of the Structure, resists settlements. The settlements computed on a flexible treatment of the Structure exceeds the above values.

Foundation deformations may lead to excessive Actions being generated on Structural Units, creating stress resultants in excess of the material properties. The analysis leads to more useful information than the formal design practices.

It is recommended that a definitive system for identifying an appropriate Structure Foundation model with a particular practical problem be established to formalise the composite system of Design. Micro computer facilities make this analytical approach accessible to many.