

# STRUT AND TIE METHOD IN DEEP BEAM

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## ABSTRACT

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Engineers have been looking and searching various ways of designing structures that are simple and easily model with real life objects. In order to achieve this, actual structures have to be modeled in such a way that they become amenable to analysis. Strut-and-tie modeling has been developed as an alternative structural analysis method to address regions of discontinuity, whose analysis has so far been addressed through the conventional analysis approach. The strut-and-tie models are used commonly to design regions of structural concrete members with geometric or loading discontinuities. Hence, designing such special structures and predicting their behavior will increase the possibility of using them in confidence, as well as making them safe. Analysis and application of deep beam using strut and tie method will be discussed in this report. 4 test specimens adapted from Aguilar et al will be use to verify the ultimate strength using strut and tie method. The results will be compared with other methods using ACI 318 and BS 8110.

The objective of this report is to

- introduce the theoretical background of strut and tie
- the mechanism of shear strength towards reinforced concrete
- the strength and behaviour of deep beam
- definition of the strut-and-tie model and its compliance to the real world
- design and calculation of deep beam using strut and tie model and compare with test specimens, ACI code, and BS code