



**A Hybrid Approach  
to the Representation and Processing  
of Design Standards**

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## Abstract

This thesis presents an environment for the modelling and processing of structural design standards. This environment is known as SADA, an acronym for Standards Automated Design Assistant. SADA addresses many of the drawbacks conventionally associated with design standards and existing models of design standards. A study of existing standards models and design standards was carried out, which resulted in the identification of a number of key issues, including:

- structural design standards are ambiguous and are therefore subject to interpretation;
- structural design standards generally address standard or routine design contexts, existing standards models fail to recognise this;
- existing models are generally opaque in nature:
  - i. it is not clear to the user how the standards have been modeled
  - ii. processing of the standard is a 'black-box' activity, furthermore;
  - iii. users have no control over the modelling or processing activities.

SADA consists of four main modules, each consisting of several components:

- Code Information Base;
- Processing Module;
- Dependency Network Generator;
- Design Case Base.

Each module performs its designated tasks contributing to the overall functionality of SADA. Numerous standards can be encapsulated and browsed in a hypertext manner within the SADA model. SADA supports the production of designs within the scope of the standards contained in the model. Standard and non-standard contexts are distinguished. A procedural approach is adopted for the production of standard or routine designs. Case Based support is provided for handling non-standard designs. A conformance checking facility is provided for designs produced



within SADA, and independently. An applicability checking feature ensures standards are not applied out of context. Various features giving the user control over the modelling and processing of the standards contained in SADA have been implemented.