



Database for the Semi-rigid Behaviour of Beam-to-column Connections in Seismic Regions

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The behaviour of steelwork connections has long been recognised as complex. A database of test results for connection behaviour constitutes an essential step towards the development of design methodologies, allowing more researchers to investigate in this field without the financial burden of carrying out experimental work, avoiding being misled by incomplete or incorrect data, and opening the way to design assisted by testing.

A database of experimental results for steel and steel-concrete composite connections is presented which encompasses graphical treatment of data, numerical manipulation and statistical treatment of groups of results, allowing easy comparison of connection behaviour. Simplified constitutive models for the hysteretic behaviour of connections are presented and included in the database for comparison and calibration with experimental results.

The database SERIWWW was developed according to the following specifications:

- Possibility to introduce test results for any type of connection in free form format, irrespective of the type of connection (existent or not);
- Possibility to deal with any material;
- Possibility to deal with dynamical tests;
- Possibility to deal with numerical simulations;
- Easy interchange (import-export) with any commercial program (EXCEL, ACCESS, etc.);
- INTERNET on-line implementation.

and implemented as independent modules which correspond to different levels of utilisation, as shown in Table 1.

An experimental project of beam-to-column composite connection cyclic and dynamic tests currently under execution is presented where both con-

TABLE 1
Modular database organisation

<i>SERIWWW</i>			
<i>Module A</i>	<i>Module B</i>	<i>Module C</i>	<i>Module D</i>
Free storage of results for any type of connection or material	Generation of moment-rotation curves from theoretical models	of Generation of library of connections based on hierarchical organisation of components	Interface to calculation modules
Database manipulation of test results	Statistical analysis of results	Non-dimensional analysis of groups of test results	
Data visualization of test results		Statistical analysis across test results	

necting members are composite. The beam is composed of an I-section connected to a composite deck while the column is composed of an H-section enveloped in concrete. The beam is covered by fire resisting material to provide a structure with high fire resistance. Initial results are fed into the database for development calibration. © 1998 Elsevier Science Ltd. All rights reserved

KEYWORDS

Database, steel connections, composite connections, semi-rigid connections, beam-to-column connections.