

In the framework of the project 7210-PR-315, experimental and analytical investigations into the behaviour of steel and composite beams with web openings were carried out on the following key aspects:

- the design of steel and composite beams with multiple regular and single large web openings under normal (cold) conditions;
- the development of design software for steel and composite beams with single large web openings and design aids for steel and composite cellular beams;
- the design of steel and composite beams with multiple regular web openings under fire conditions;
- the improved manufacture of cellular beams.

A huge number of large-scale tests have been performed. From the test results, the numerical simulations and the analytical investigations remaining questions concerning the design of steel and composite beams with web openings could be answered.

This report is divided into the following parts:

Part 1 contains a summary, general information on the project and a brief description of the works performed.

In Part 2 test reports, analyses, evaluations and design models are presented in detail.

Design recommendations and predesign aids are given in Part 3 of the report.

The CD-ROM enclosed with the report contains:

- Part 1, Part 2 and Part 3 of the report as PDF files;
- software for the design of steel and composite beams with single large web openings;
- an interactive document including hypertext links for the predesign of cellular steel and composite beams fabricated from rolled I-sections; design aids such as loading tables are presented in terms of graphs and tables.

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