Development and Application of OpenSees for a RC Frame in Fire

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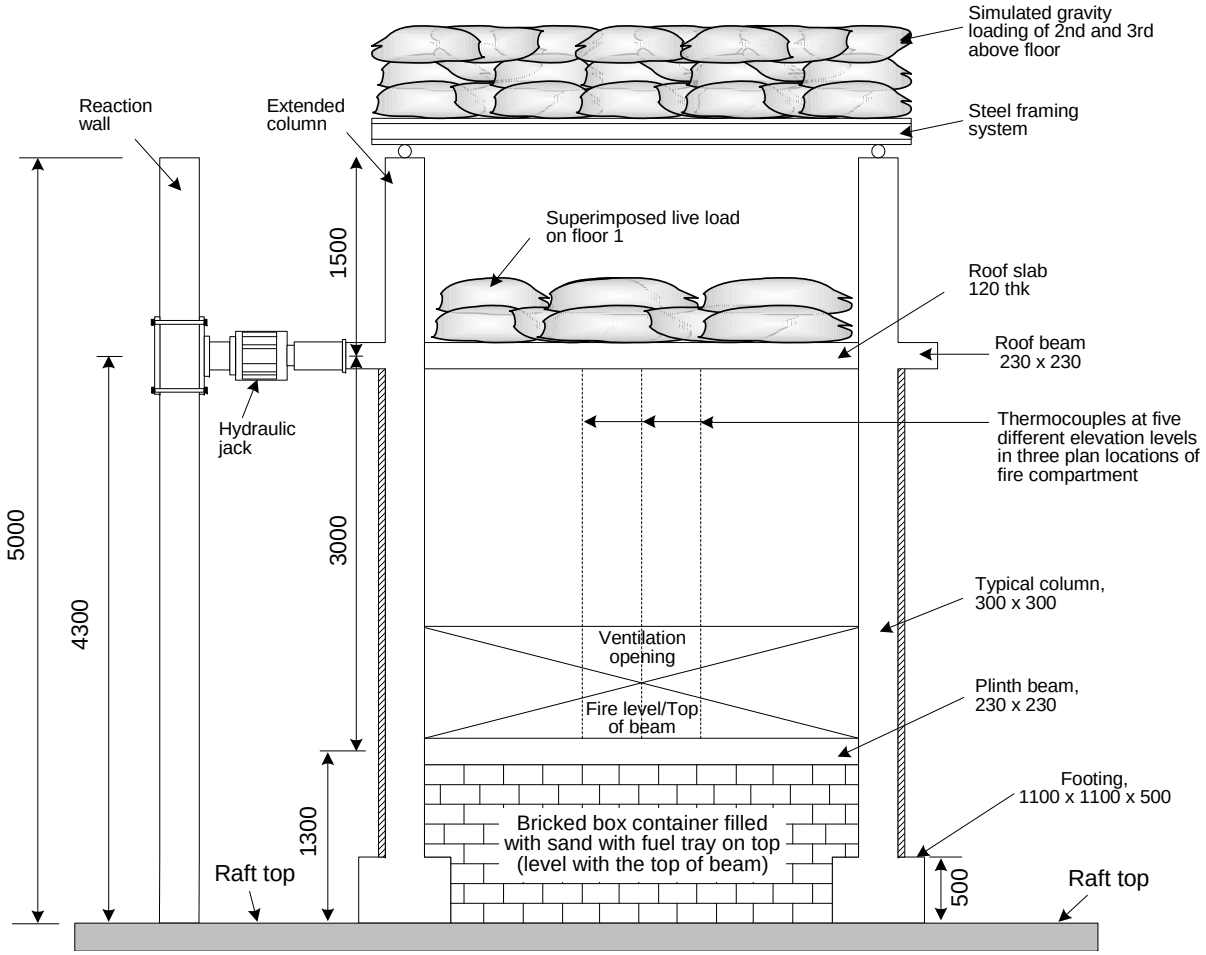
1 Fire Following Earthquake

San Francisco earthquake, 1906

Kobe earthquake, 1995

- Fire following an earthquake is an important factor causing damage to buildings and life-line structures
- It is important to understand the behaviour of structures subjected to post-earthquake fires.

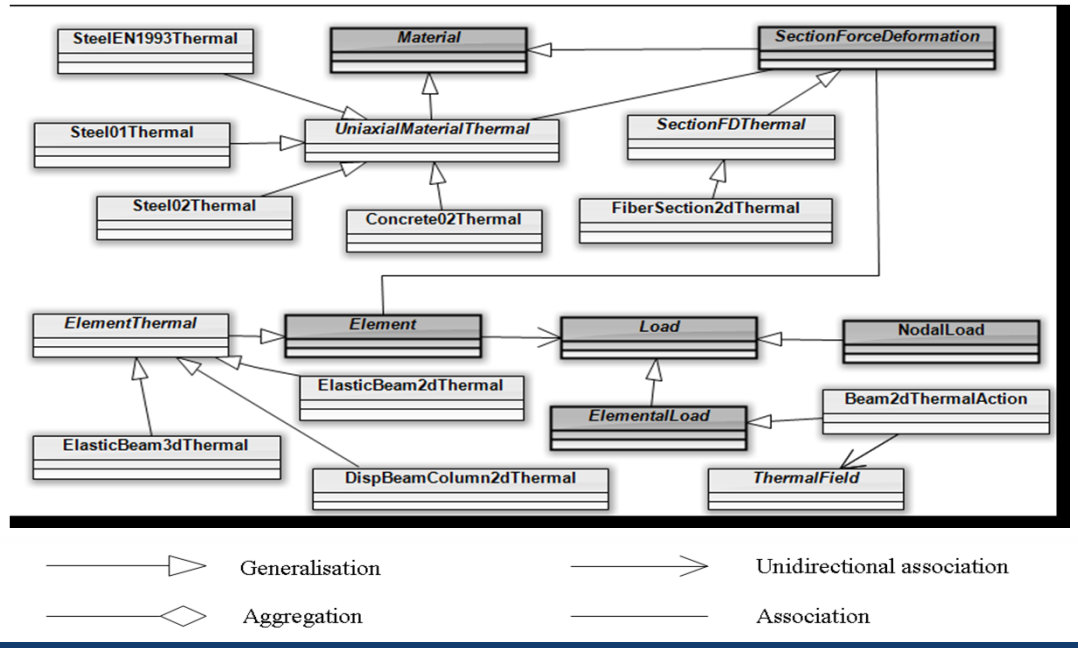
2 Experiment in India



- Understanding of the mechanics of the response of earthquake damaged structures subjected to fire
- Understanding behaviour of structural materials subjected to fire after damage and to develop constitutive laws for programming into computational models

3 OpenSees

- An open source, object oriented software framework

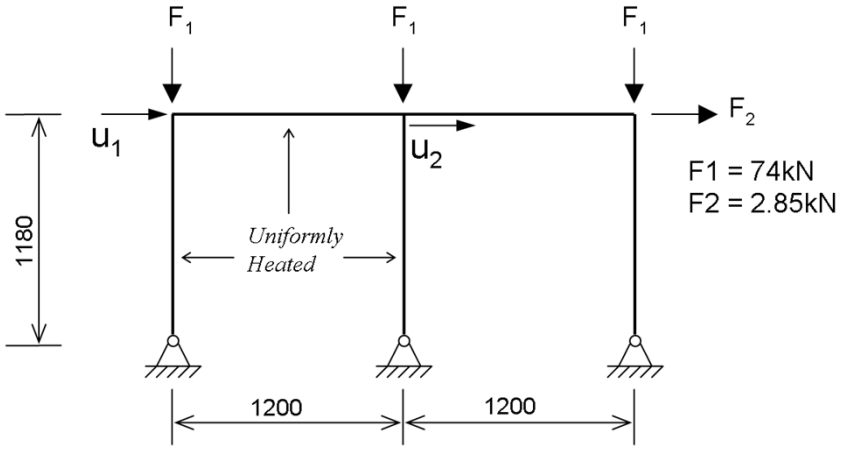


Development

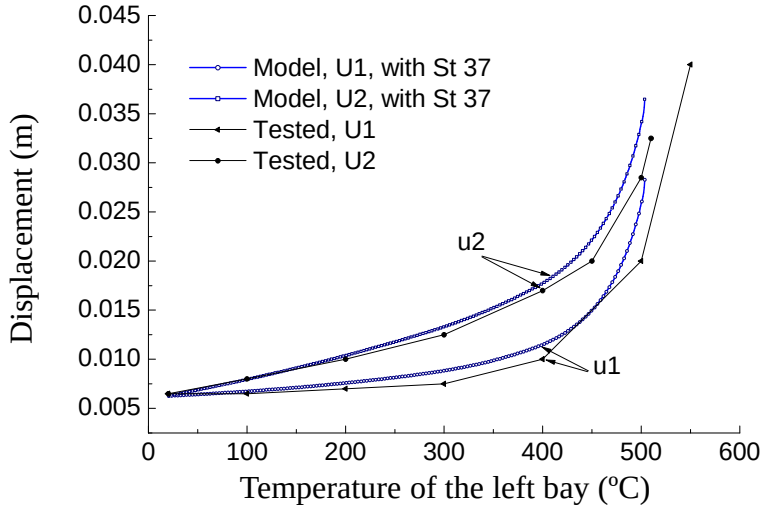
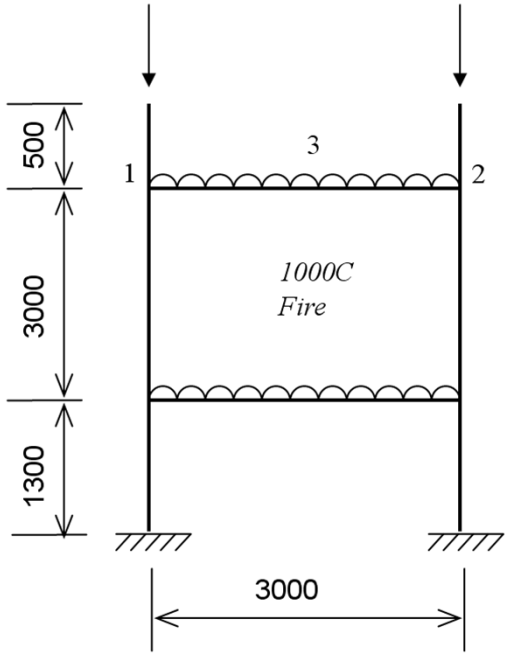
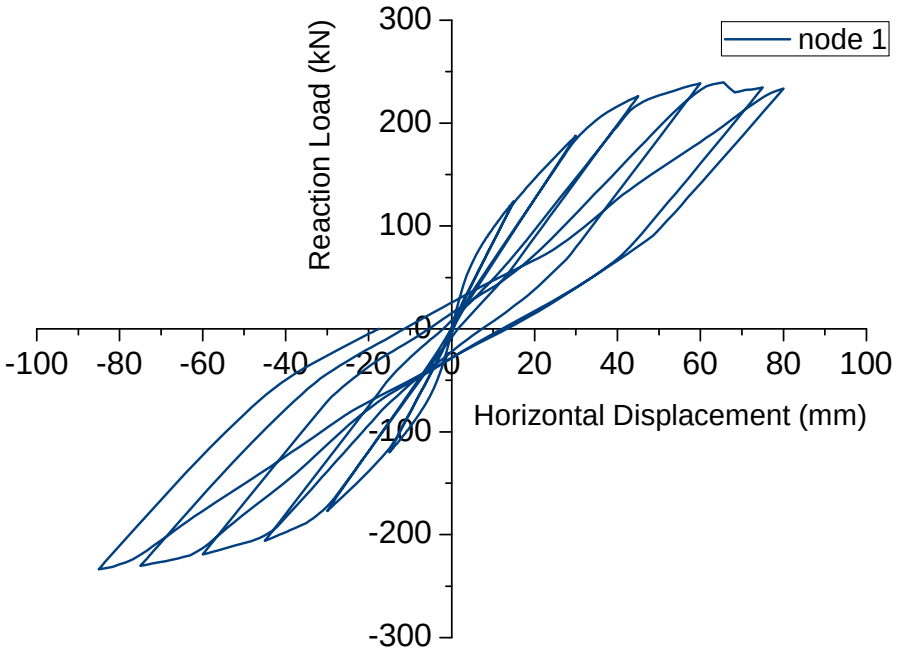
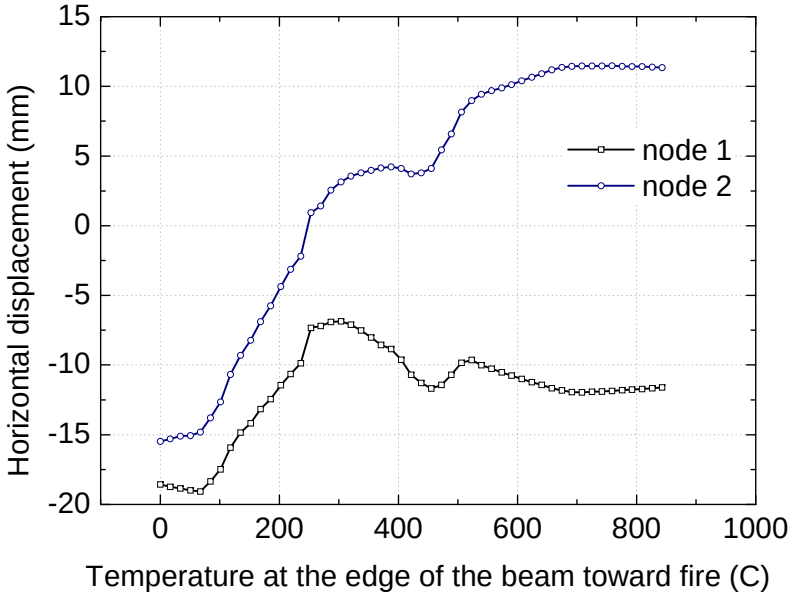
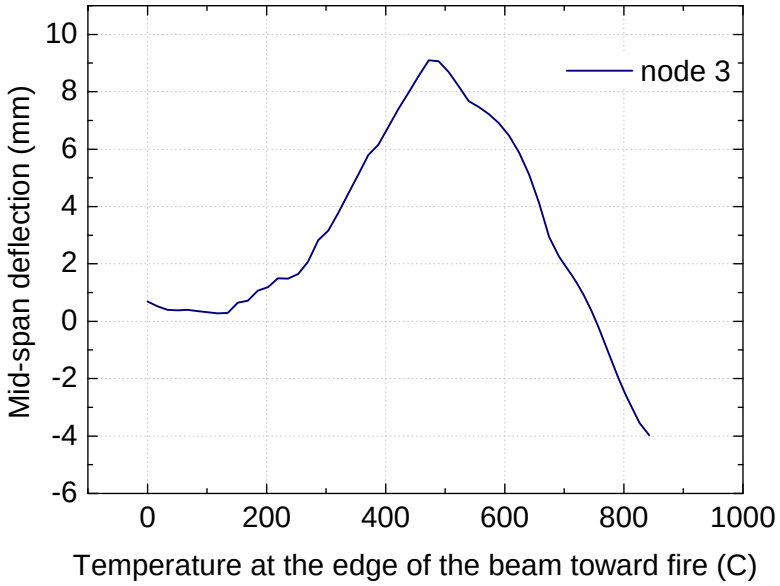
- Thermal action (thermal load)
- Material
- Section-Force deformation
- Element

Test the new modules

- Modelling an experiment



Steel frame (ZSR1) tested and analyzed by Rubert



4 Modelling the experiment