



Modelling of the Cardington Demonstration Fire Test using ABAQUS

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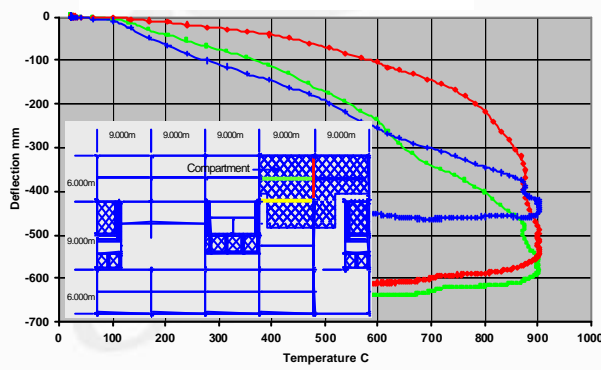
Overview



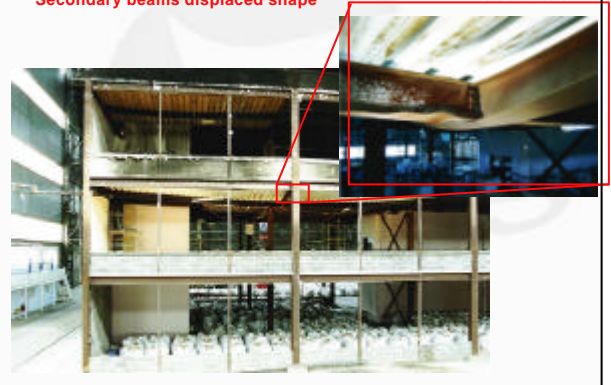
- Two bay fire compartment
- Natural fire development
- Temperatures soared from <100 deg.C to 1000 deg.C in 10 mins
- Instrumentation did not record slab temperature gradient
- Explicit run with Mass Scaling=100:
 - beam elements for structural members - 12 hours
 - shell elements for primary beam member - 36 hours(These runs are limited to 1st 40 mins of test)



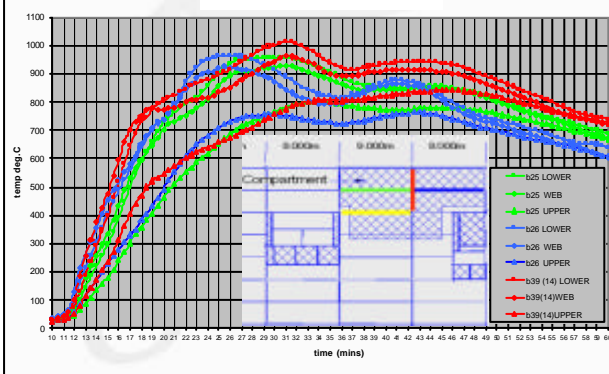
Beam midspan deflections with temperature



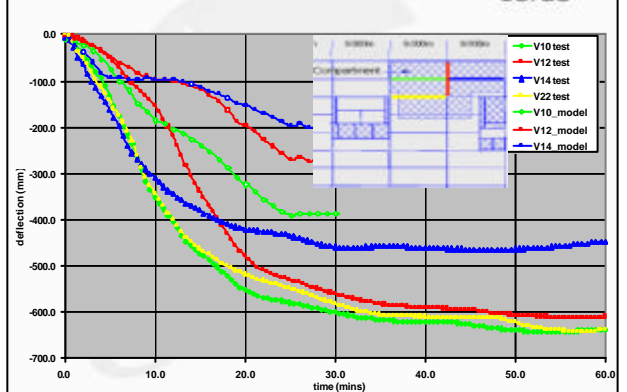
Secondary beams displaced shape



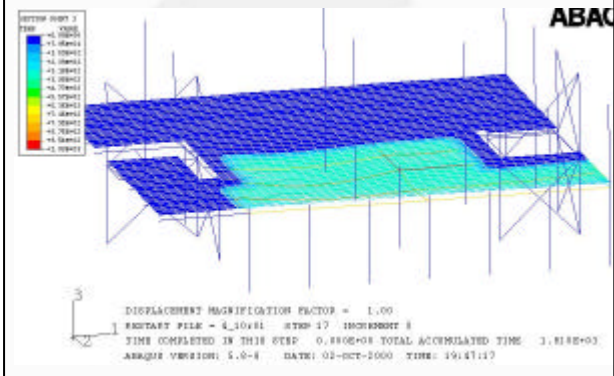
Beam temperature histories



Beam midspan deflections



Deformed plot showing temperature distribution
after 30 minutes
(view shows underside of heated floor)



Further work



Conduct study with various slab temperature gradients and magnitudes

Open to further suggestions

