



Behaviour of Cold Formed Steel Portal Frames in Fire

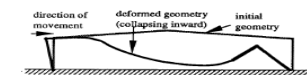
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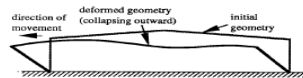


PORTAL FRAME CONSTRUCTION

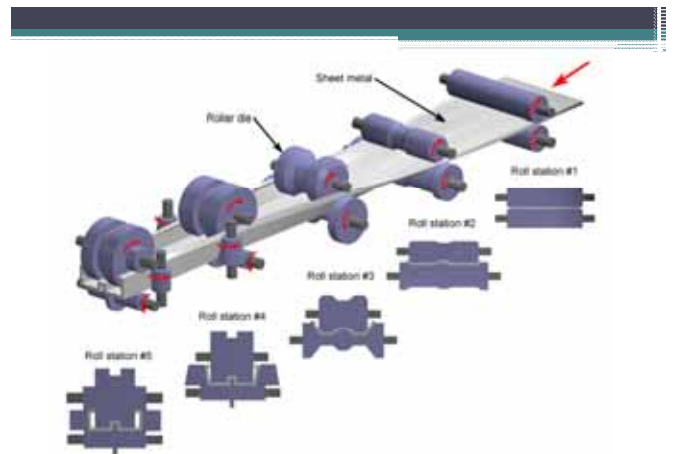
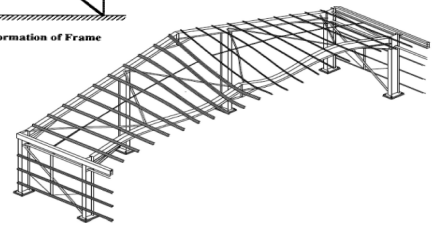
Behaviour in Fire

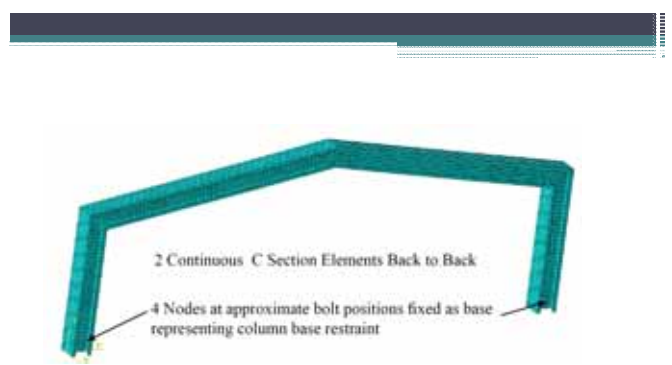
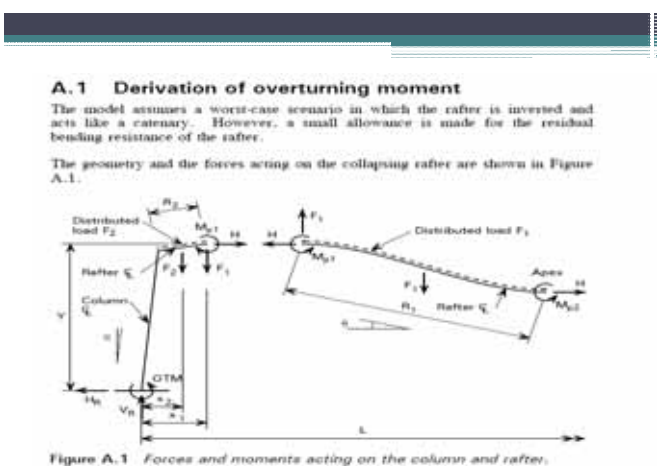
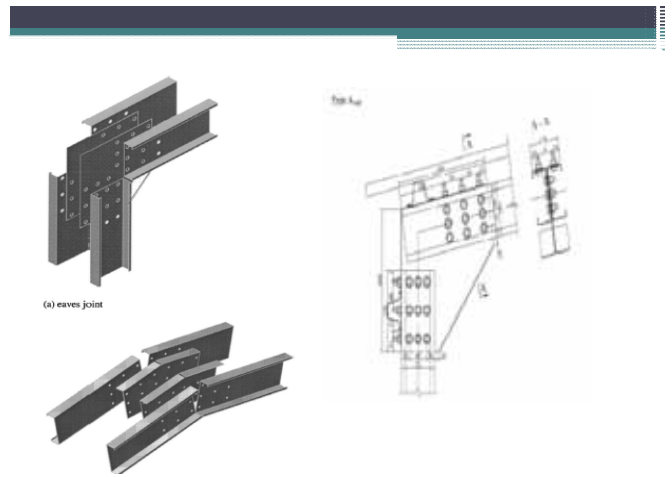
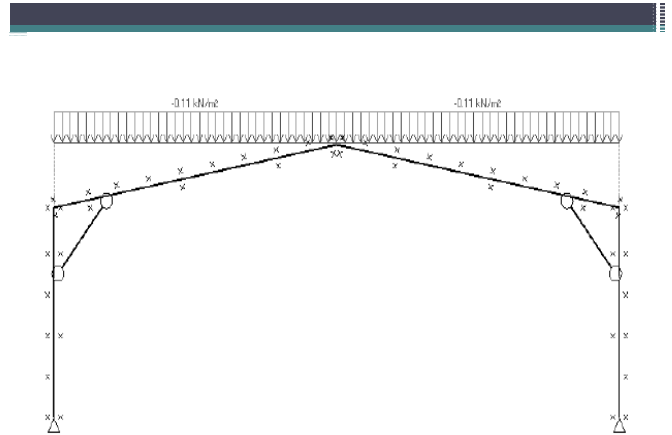


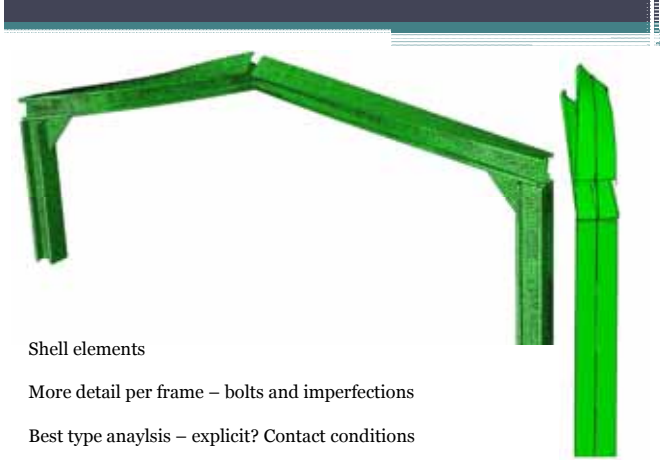
a. Acceptable Deformation of Frame



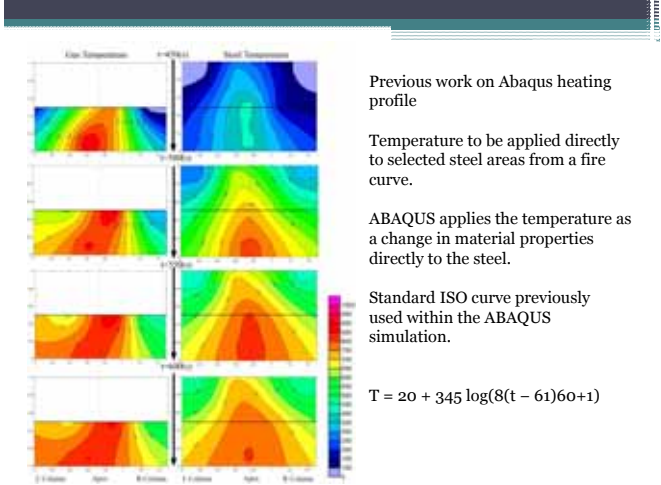
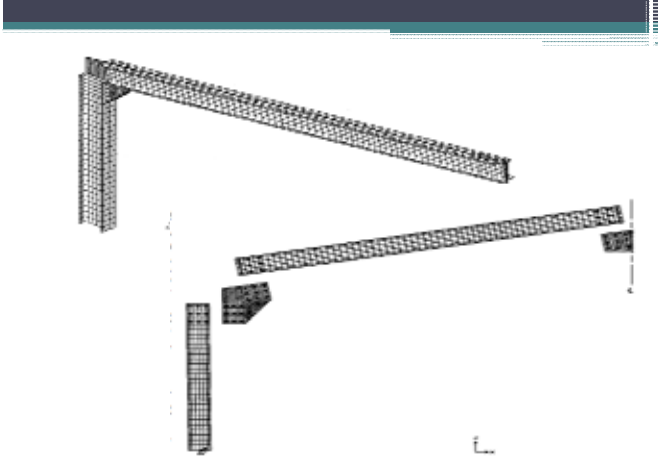
b. Unacceptable Deformation of Frame







Shell elements
 More detail per frame – bolts and imperfections
 Best type analysis – explicit? Contact conditions



Previous work on Abaqus heating profile
 Temperature to be applied directly to selected steel areas from a fire curve.
 ABAQUS applies the temperature as a change in material properties directly to the steel.
 Standard ISO curve previously used within the ABAQUS simulation.
 $T = 20 + 345 \log(8(t - 61)60 + 1)$

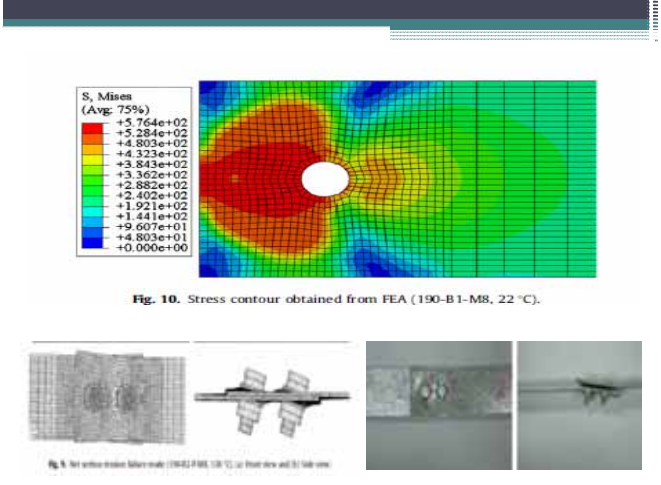


Fig. 10. Stress contour obtained from FEA (190-B1-M8, 22 °C).



Fig. 8. Not written section after made (190-B1-M8, 120 °C) at front view and 3/4 view.



Validate models with full scale site test

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