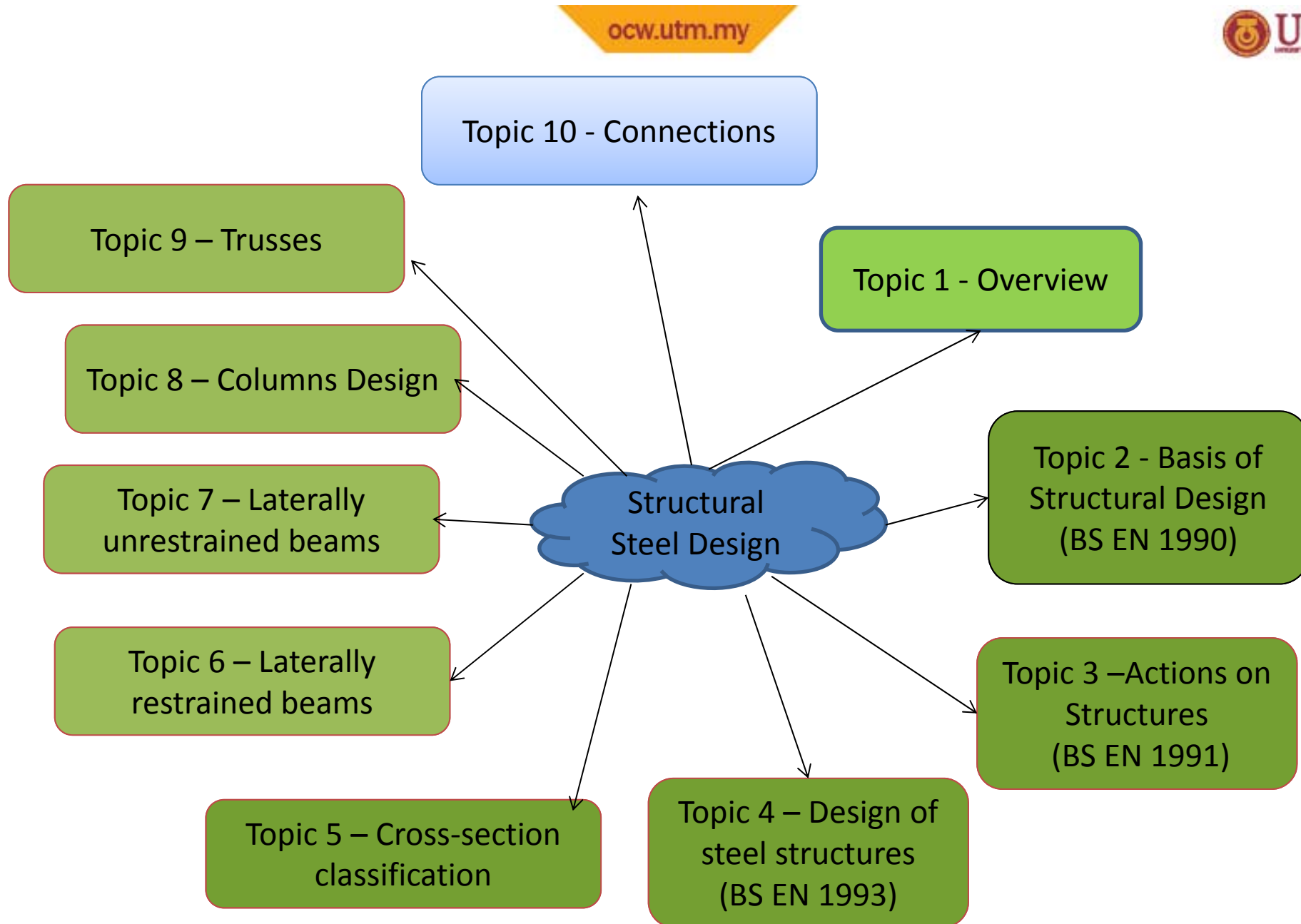


# Structural Steel and Timber Design SAB3233

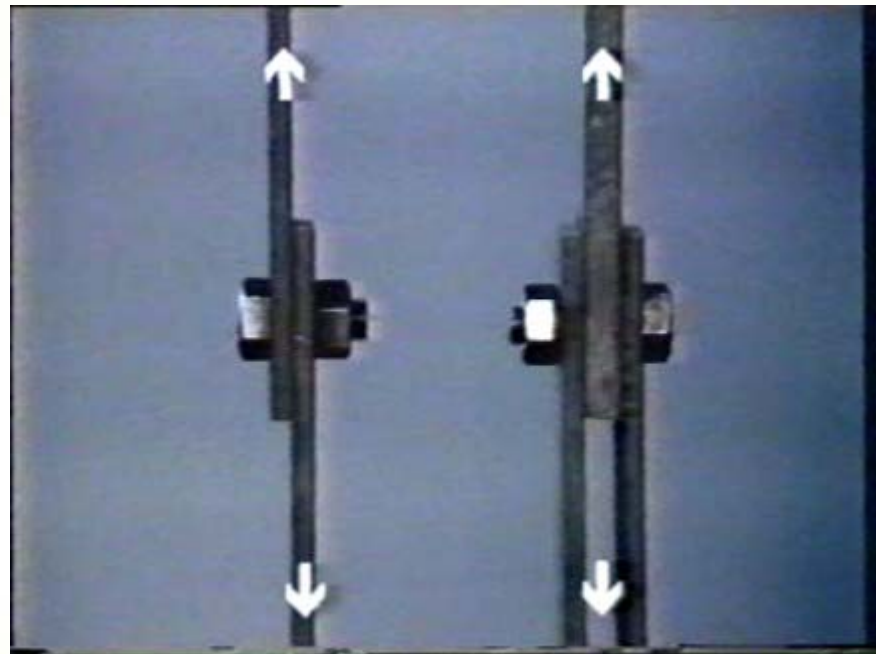
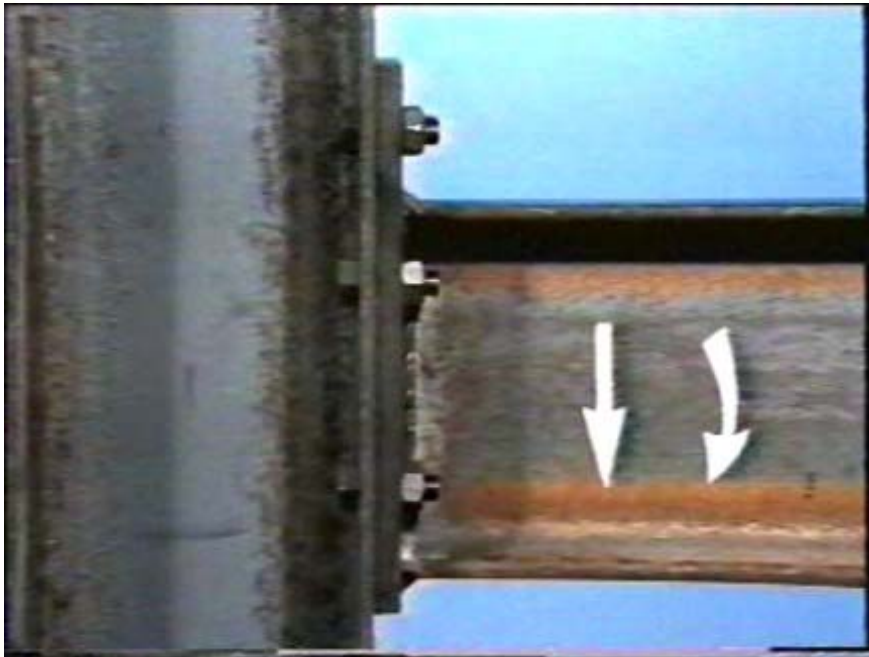
## Topic 10 Connections

Prof Dr Shahrin Mohammad

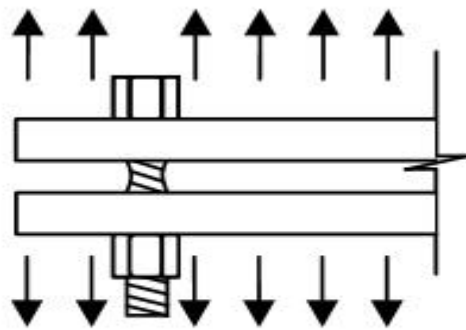






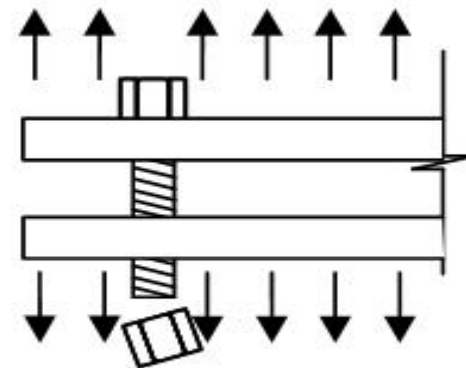


# Bolt failure – in tension



Bolt yielded

3



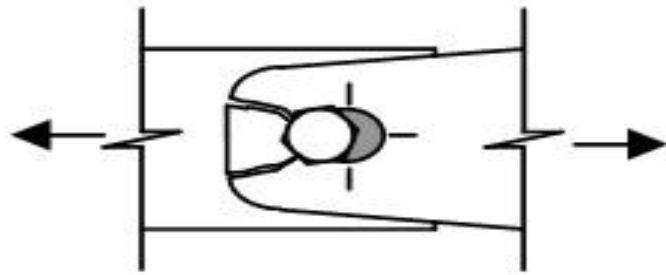
Frictional loss



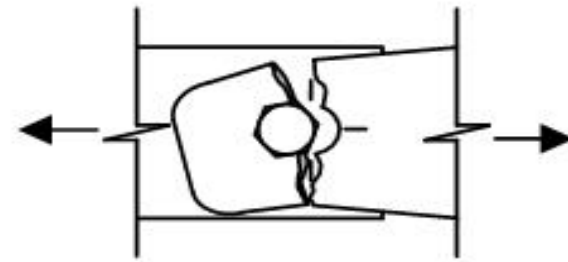
***Bolt failure – in Bearing***



***Bolt failure – in shear***



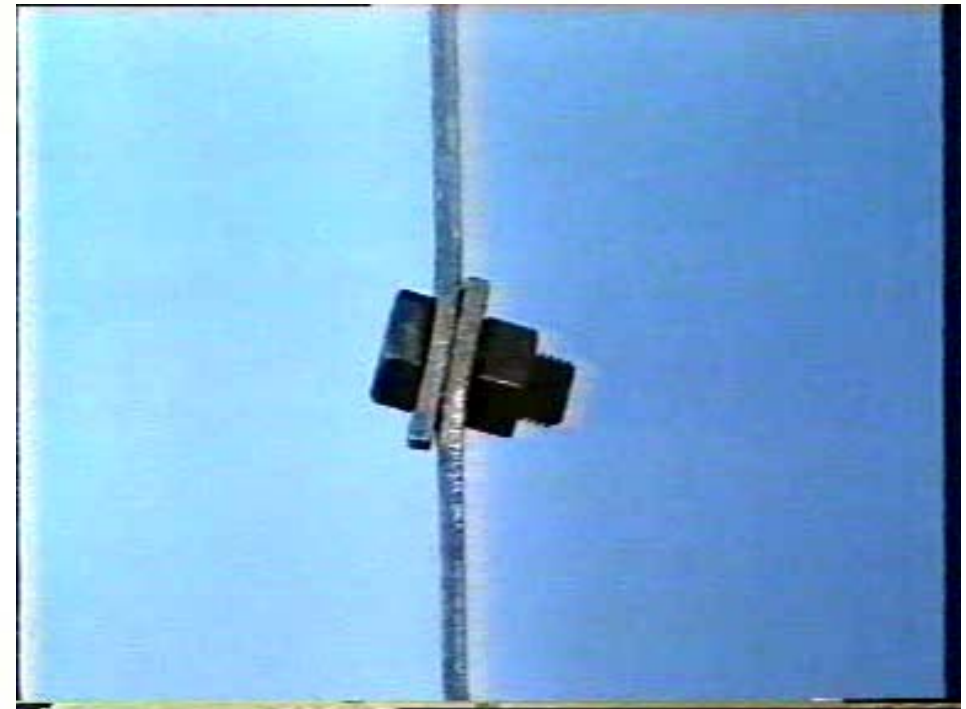
Tearing at the end



Crushing and tearing

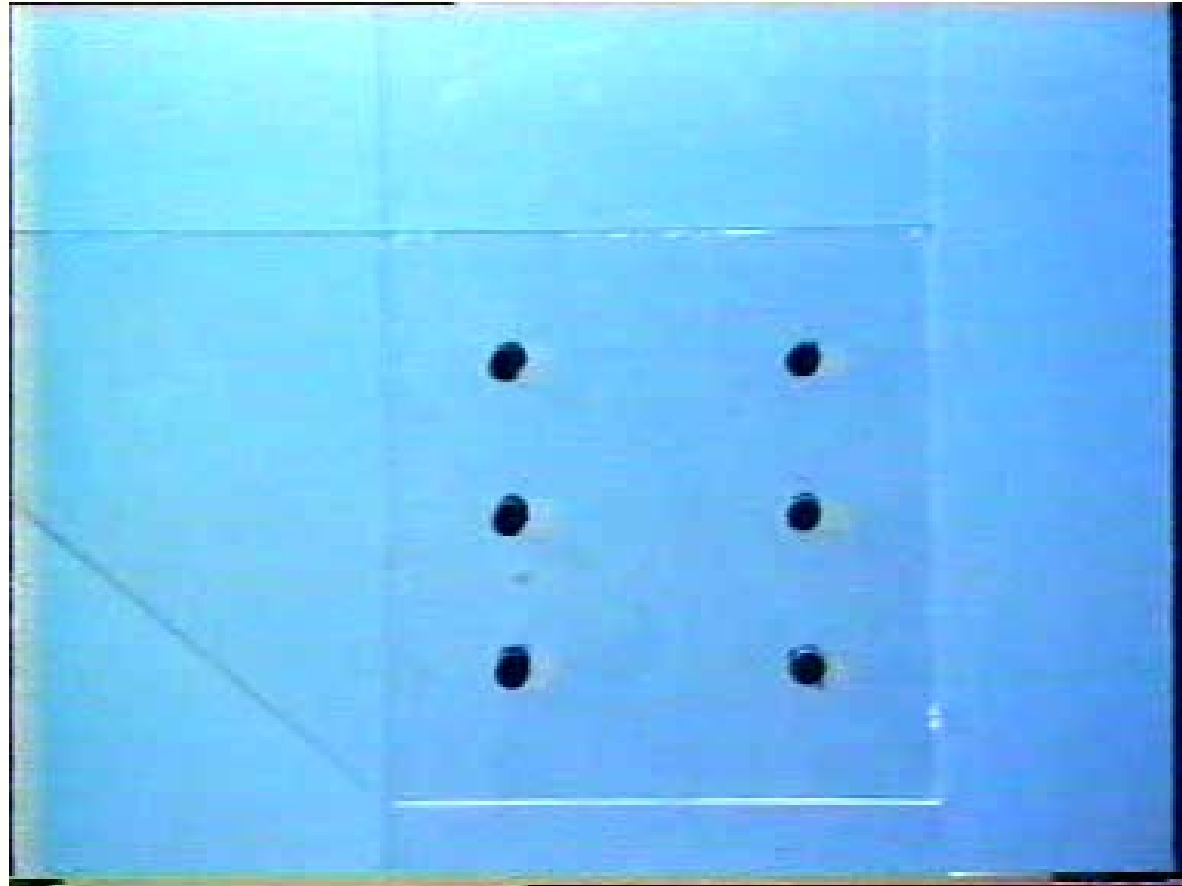


*plate failure – end plate*

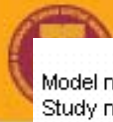


*plate failure – end plate*

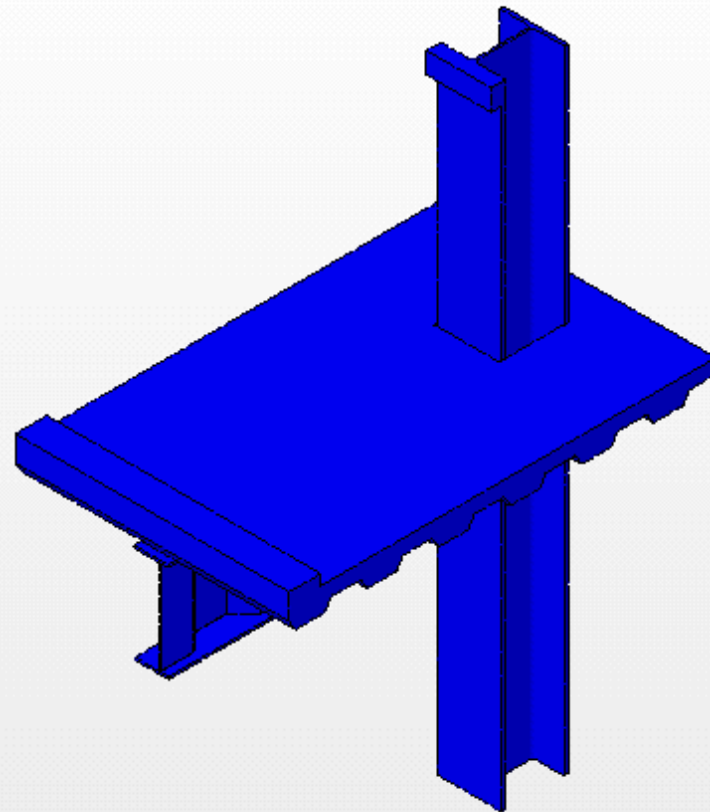




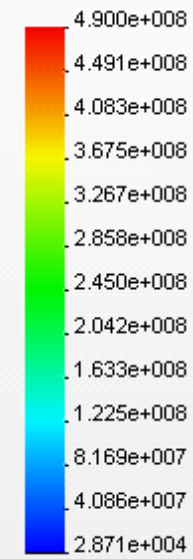




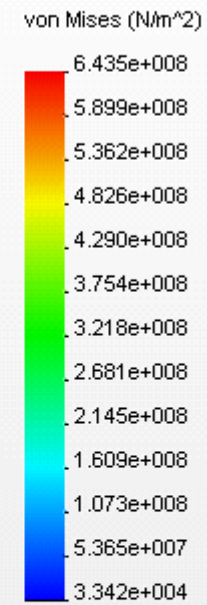
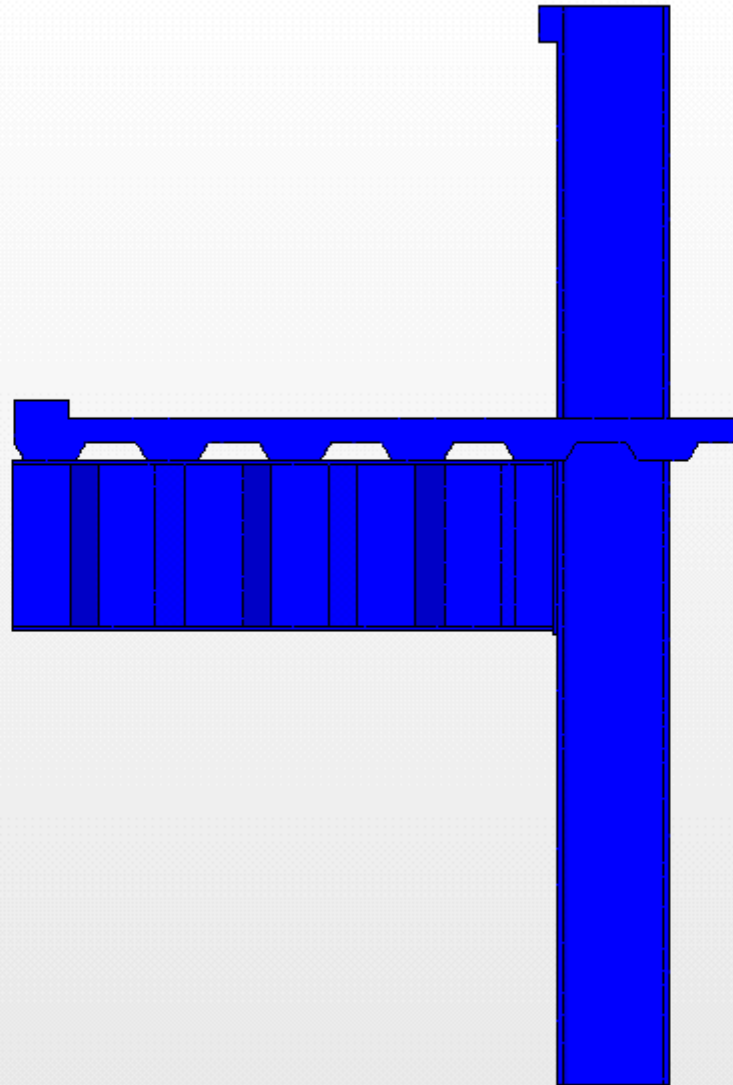
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Plot type: Static Nodal stress-Plot1  
Deformation Scale: 39.2212

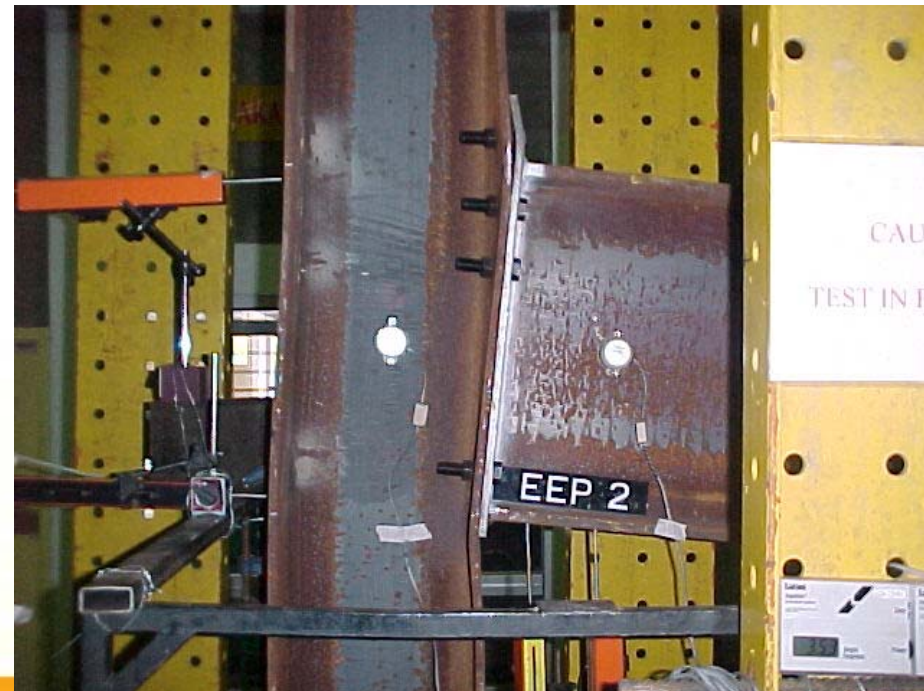


von Mises (N/m<sup>2</sup>)

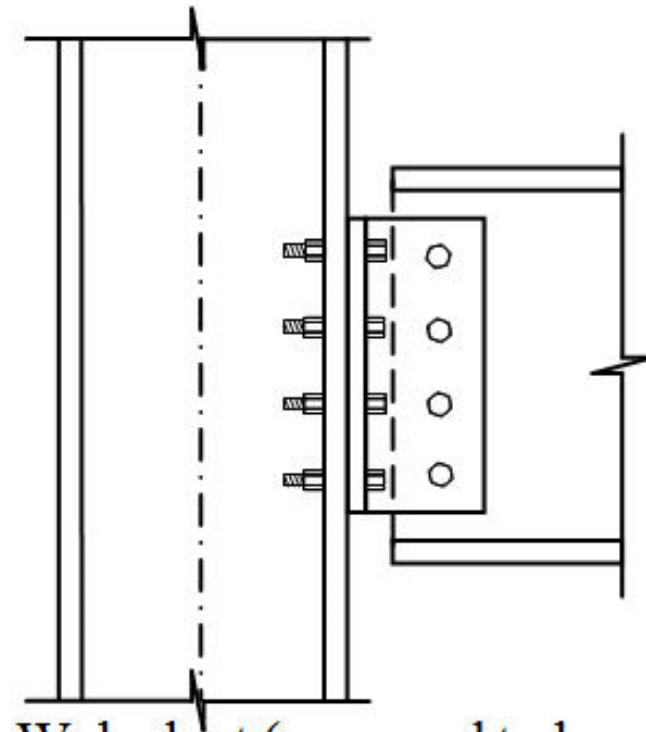
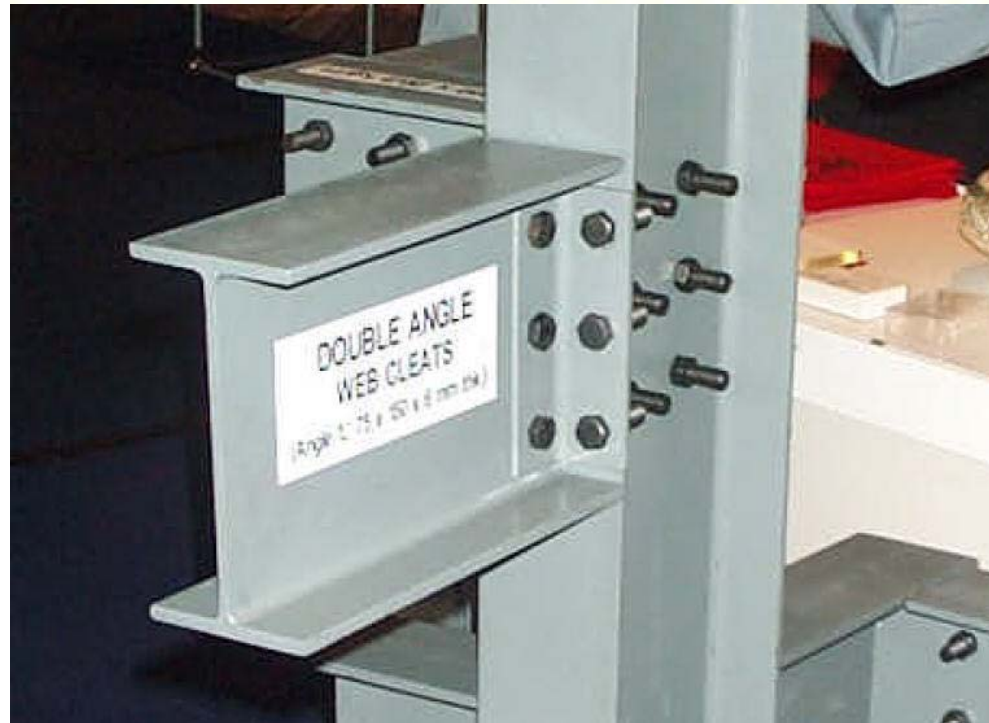


Model name: Model\_1  
Study name: Model\_1 (C7a) 289kN  
Plot type: Static Nodal stress-Plot1  
Deformation Scale: 29.857

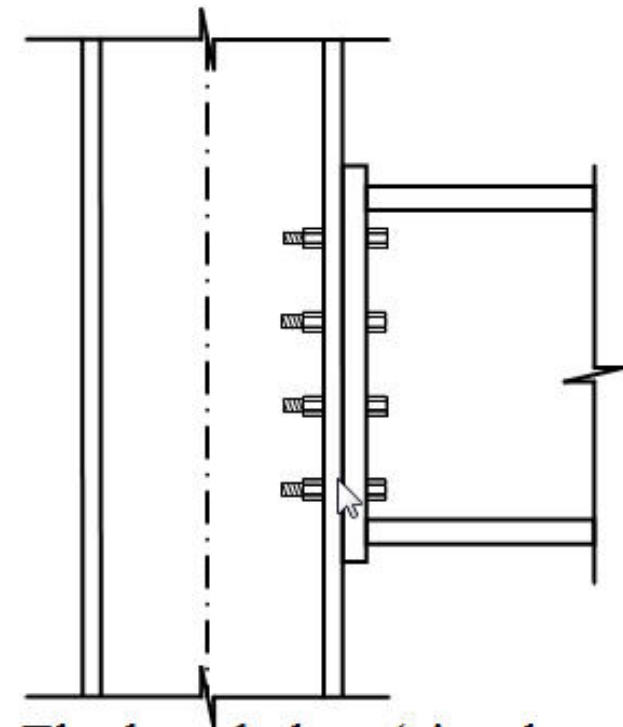
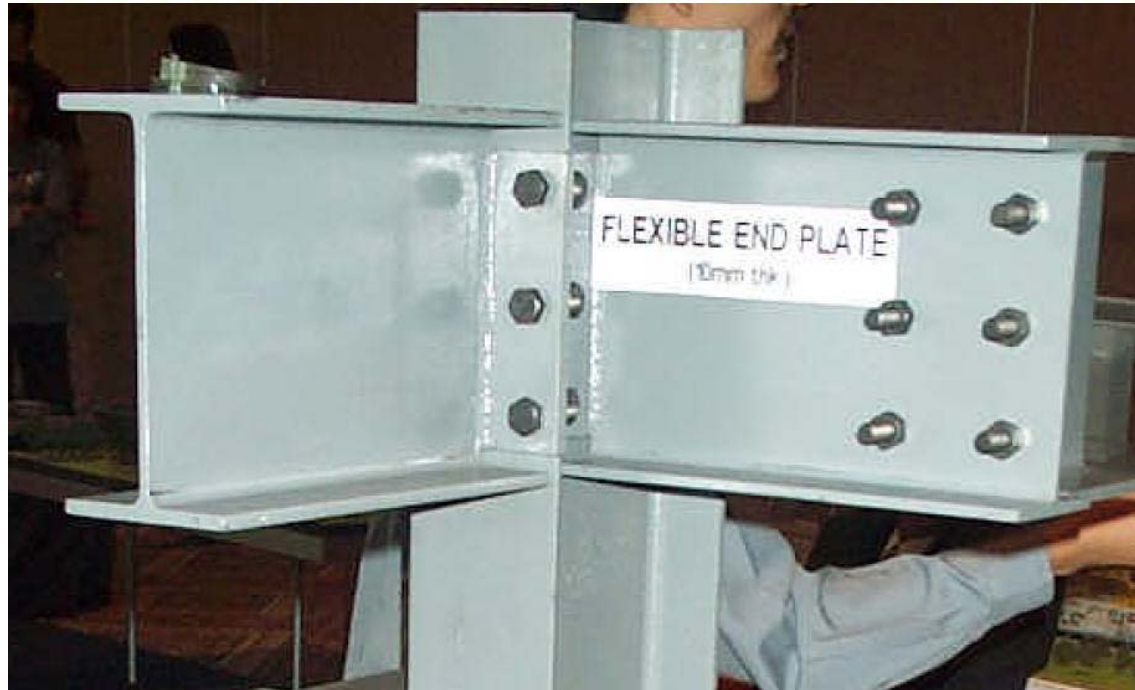




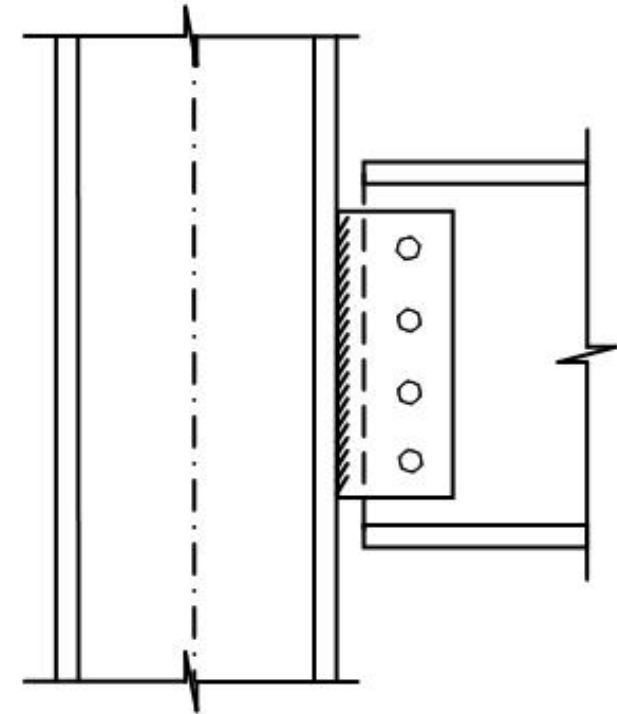




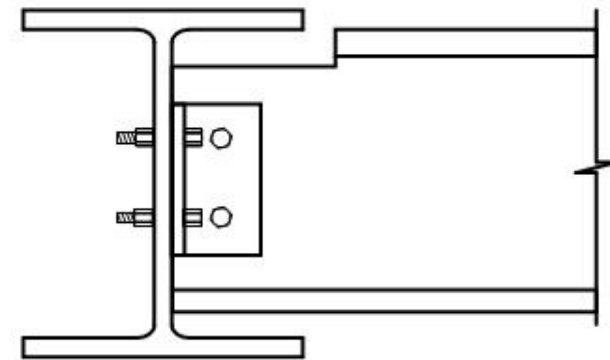
Web cleat (assumed to be simple construction)



Flush end plate (simple semi-continuous)

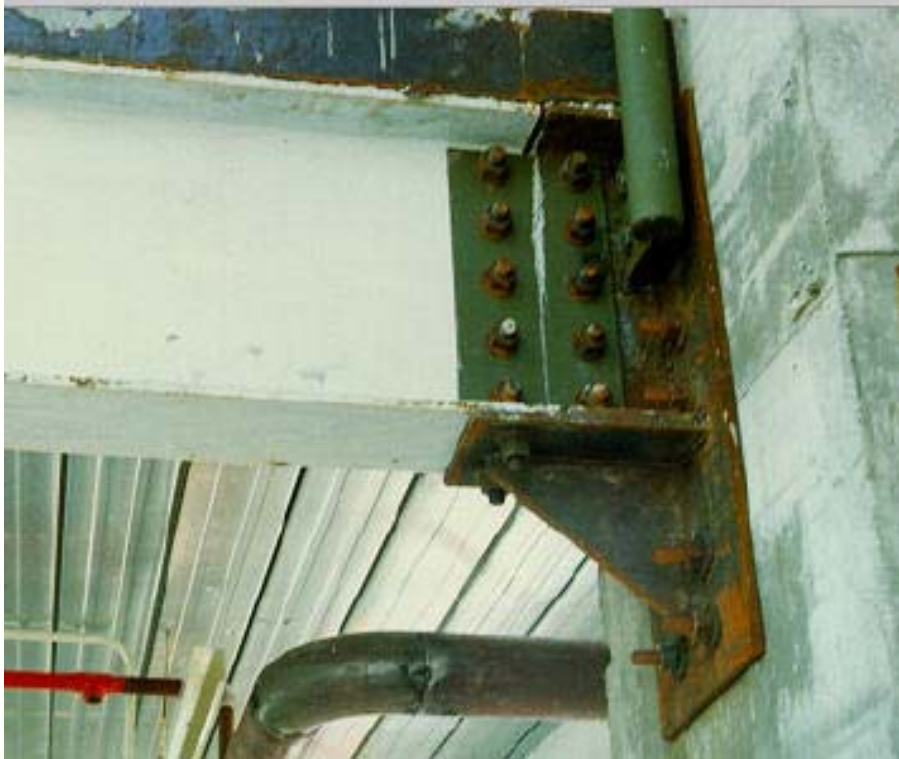


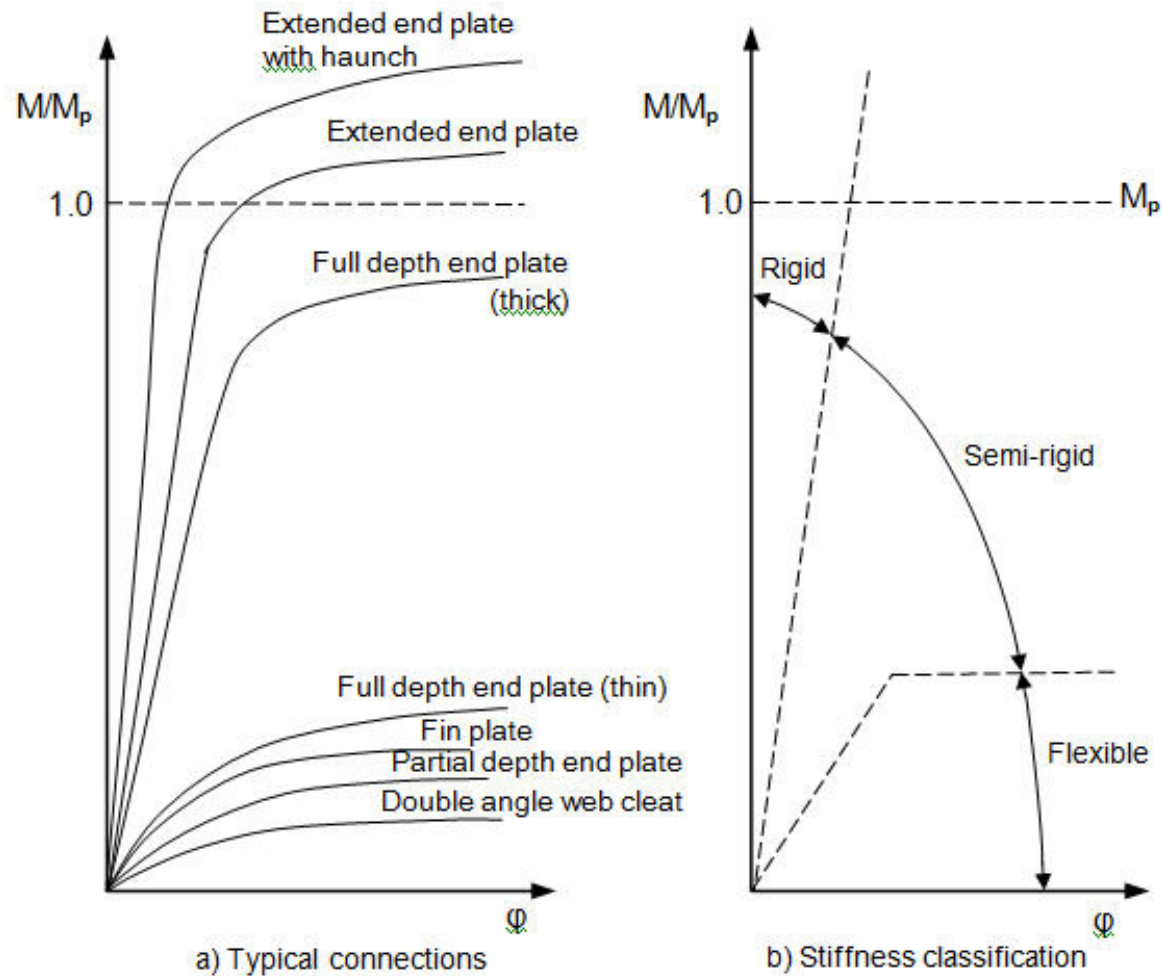
Fin plate (assumed to be simple construction, could be semi-continuous)



Secondary beam-main beam connection  
(web cleat) (assumed as pin connection)

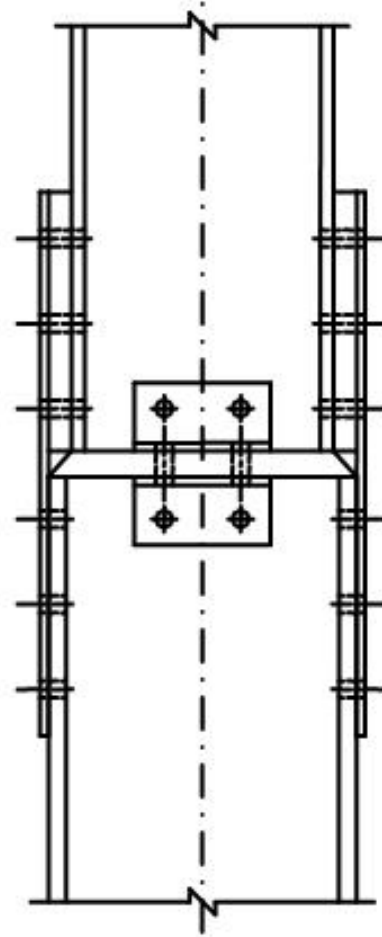






$M_p$  = plastic moment capacity of the beam

**Figure 7.3** Moment rotation characteristic



Column splice (continuous)







