Guideline for Design for Robustness of Timber Structures

September 25, 2008

	Chapter	Responsible
1	**Introduction** Using assumptions in EC	
2	**Definition of structural robustness** - Hazards: unforeseen loads and defects (incl. material defects); systematic/random, types of actions (permanent, snow, wind, accidental,..), human errors (design, execution) - Consequences - Definition of robustness - Factors affecting robustness: ductility / brittle - Use basic definition of robustness in EN1990	JDS, PHK

3	**Quantification of robustness and methods of assessing robustness of timber structures**
	- Quantification of robustness and methods of assessing robustness
	- System modelling of timber structures
	  - modelling by series / parallel systems
	  - modelling by ductile / brittle elements
	  - stochastic modelling, correlation/dependency
	  - estimation of system reliability
		PHK, JDS, Goran Turk, Dean Cizmar

4	**Methods of designing for robustness of timber structures**
	- Categories of robustness:
	  o Consequence classes
	  o Conventional / new, innovative structure (design and production)
	  o Key elements	

5	**Effect of quality control** - Monitoring requirements (e.g. for in-plane and out-of-plane deformations, cracks, moisture) - Incl. maintenance	
6	**Recommendations** - for code requirements/modification, EN1995 - for future R&D	
Annex A	**Current requirements in building regulations and codes** EN1990 EN1998 (earthquake) Danish requirements	 JDS Branco JDS

	Offshore	JDS
	JCSS	JDS
	ASCE	Neves

Annex B	**Case studies**
	
	Siemens
	Bad Reichenhall
	Purlins
	Columns
	Timber/earthquakes
	
	…
	    - Describe failure
	    - Identification of key elements
	    - How could robustness be increased?
		
		JMA
		Dietsch
		Dietsch
		JMA
		Fabio Casciati
		/Ario Ceccotti/
		Bruno Dujic

First draft of section 2, 3 and annex A and B: end of January 2009

Dissimilation plan

Ductility:
- Distribution of forces to other elements
- Warning in case of failure

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