5.3. DESIGN CRITERIA AND DETAILING RULES FOR DISSIPATIVE STRUCTURAL BEHAVIOUR COMMON TO ALL STRUCTURAL TYPES

5.3.1. Design criteria for dissipative structures

5.3.1.1 – Dissipative zones shall have adequate ductility and resistance. The resistance shall be determined in accordance with EN 1993-1-1:2004 and **Chapter 4** for concept C, and to EN 1994-1-1:2004 and **Chapter 5** for concept B (see **5.1.2.1**). Ductility is achieved by compliance to detailing rules.

5.3.1.2 – Dissipative zones may be located in the structural members or in the connections.

(a) If dissipative zones are located in the structural members, the non-dissipative parts and the connections of the dissipative parts to the rest of the structure shall have sufficient overstrength to allow the development of cyclic yielding in the dissipative parts.

(b) When dissipative zones are located in the connections, the connected members shall have sufficient overstrength to allow the development of cyclic yielding in the connections.

5.3.2. Plastic resistance of dissipative zones

5.3.2.1 – Two plastic resistances of dissipative zones are used in the design of composite steel - concrete structures: a lower bound plastic resistance (index: pl,Rd) and an upper bound plastic resistance (index: U,Rd).

5.3.2.2 – The lower bound plastic resistance of dissipative zones is the one taken into account in design checks concerning sections of dissipative elements; e.g. $M_{Ed} < M_{pl,Rd}$. The lower bound plastic resistance of dissipative zones is computed taking into account the concrete component of the section and only the steel components of the section which are classified as ductile.

5.3.2.3 – The upper bound plastic resistance of dissipative zones is the one used in the capacity design of elements adjacent to the dissipative zone: for instance in the capacity design verification of **4.3.1.2**, the design values of the moments of resistance of beams are the upper bound plastic resistances, $M_{U,Rd,b}$, whereas those of the columns are the lower bound ones, $M_{pl,Rd,c}$.

5.3.2.4 – The upper bound plastic resistance is computed taking into account the concrete component of the section and all the steel components present in the section, including those that are not classified as ductile.

5.3.2.5 – Action effects, which are directly related to the resistance of dissipative zones, shall be determined on the basis of the upper bound resistance of composite dissipative sections; e.g. the design shear force at the end of a dissipative composite beam shall be determined on the basis of the upper bound plastic moment of the composite section.

5.3.3. Detailing rules for composite connections in dissipative zones

5.3.3.1 – For the design of welds and bolts, **4.2.3** applies.