4.2. GENERAL DESIGN CRITERIA AND DETAILING RULES

4.2.1. Design rules for ductile elements in compression or bending

4.2.1.1 – Sufficient local ductility of members which dissipate energy in compression or bending shall be ensured by restricting the width-thickness ratio b/t according to the cross-sectional classes specified in EN 1993-1-1:2004, 5.5.

4.2.1.2 – Depending on the ductility class and the behaviour factor q used in the design, the requirements regarding the cross-sectional classes of the steel elements which dissipate energy are indicated in **Table 4.2**.

Table 4.2. Required cross-sectional class

Behaviour Factor q	Cross-sectional class
$1.5 < q \leq 2$	Class 1,2 or 3
$2 < q \leq 4$	Class 1 or 2

4.2.2. Design rules for ductile elements in tension

For tension members or parts of members in tension, the ductility requirement of EN 1993-1-1:2004, 6.2.3(3) should be met.

4.2.3. Design rules for connections

4.2.3.1 – For fillet weld or bolted connections, **Eq.(4.1)** should be satisfied:

$$R_d \geq 1.1\,\gamma_{ov}\,R_{fy} \qquad \textbf{(4.1)}$$

4.2.3.2 – Categories *B* and *C* of bolted joints in shear in accordance with EN 1993-1-8:2004, 3.4.1 and category *E* of bolted joints in tension in accordance with EN 1993-1-8:2004, should be used. Shear joints with fitted bolts are also allowed. Friction surfaces should belong to class A or B as defined in ENV 1090-1.

4.2.3.3 – For bolted shear connections, the design shear resistance of the bolts should be higher than 1.2 times the design bearing resistance.