Proposal of amendments on EN 1993-1-3:2006

1. General

This paper includes a brief summary for the decision of amendments on EN 1993-1-3:2006 within CEN/TC250 Subcommittee 3 (SC3) “Steel Structures”.

2. Background for Amendments

3. Summary of Amendments

3.1 Numbering System

Each amendment will be identified using the following numbering system:

AM-1-3-2012-01

- No. of amendment
- Year
- Part of EN 1993
- Amendment

3.2 Proposed Amendments

AM–1-3–2013–60	
Subject	Plank profiles
Clause No. / Subclause No. / Annex	Clauses 6.1.7.3 (5), Section 10.2
Reason for amendment	The plank profiles are often used but the information is not provided in the EN 1993-1-3 as to the design rules for this type of profiles.
Proposed change	The current clause 6.1.7.3 (5) states: (5) The value of the coefficent α should be obtained from the following: a) for Category 1: - for sheeting profiles: $\alpha = 0{,}075$ ... (6.20a) - for liner trays and hat sections: $\alpha = 0{,}057$ ... (6.20b) b) for Category 2: - for sheeting profiles: $\alpha = 0{,}15$ ... (6.20c) - for liner trays and hat sections: $\alpha = 0{,}115$ ... (6.20d) Replace the current clause with: (5) The value of the coefficient α should be obtained from the following: a) for Category 1 : – for sheeting profiles: $\alpha = 0{,}075$ ... (6.20a) – for liner trays and hat sections: $\alpha = 0{,}057$ ... (6.20b) – for plank profiles: $\alpha = 0{,}115$ ... (6.20c) b) for Category 2: – for sheeting profiles: $\alpha = 0{,}15$ ... (6.20d) – for liner trays and hat sections: $\alpha = 0{,}115$ ... (6.20e) – for plank profiles: $\alpha = 0{,}115$ ... (6.20f) The current title of the section 10.2 is : **10.2 Liner trays restrained by sheeting** Replace the current title with : **10.2 Liner trays restrained by sheeting and plank profiles** Add the following sentence and figure to the clause 10.2.1 (1): Plank profiles should be large channel type section with two webs and a flat wide flange. The joint between planks can be a clip one or chevron shaped as shown in figure 10.10.

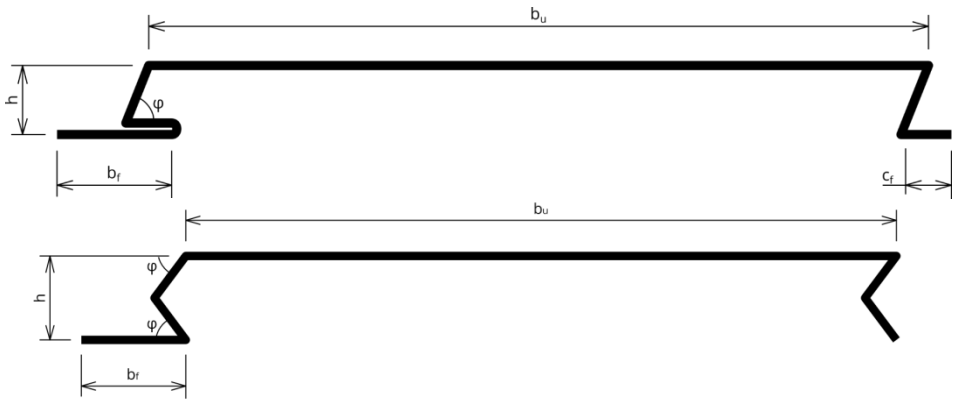


Figure 10.10: Typical geometry for plank profiles

Renumber the remaining figures.

The current clause 10.2.1 (2) states:

(2) The resistance of the webs of liner trays to shear forces and to local transverse forces should be obtained using 6.1.5 to 6.1.11, but using the value of $M_{c,Rd}$ given by (3) or (4).

Replace the clause 10.2.1 (2) with:

(2) The resistance of the webs of liner trays and plank profiles to shear forces and to local transverse forces should be obtained using 6.1.5 to 6.1.11, but using the value of $M_{c,Rd}$ given by (3) or (4).

Add in the current clause 10.2.1 (3):

The moment resistance $M_{c,Rd}$ of a plank profile may be obtained using 10.2.2 provided that the geometrical properties are within the range given in table 10.7

Table 10.7: Range of validity for plank profiles

0,75 mm ≤	t_{nom}	≤ 1 mm
	b_f	≤ 40 mm
25 mm ≤	h	≤ 30 mm
	b_u	≤ 300mm
	φ	≤ 60°
11 mm ≤	c_f	

The current clause 10.2.1 (4) states:

(4) Alternatively the moment resistance of a liner tray may be determined by testing provided that it is ensured that the local behaviour of the liner tray is not affected by the testing equipment.

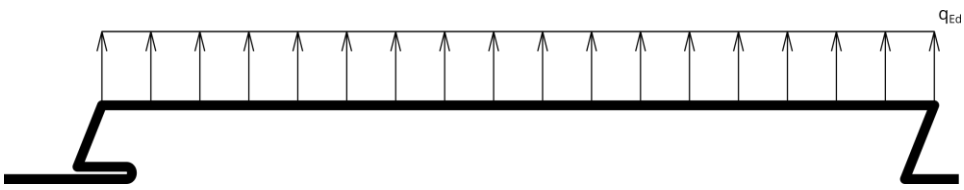
Change the clause 10.2.1 (4) with:

(2) Alternatively the moment resistance of a liner tray or plank profile may be determined by testing provided that it is ensured that the local behaviour of the liner tray or plank profile is not affected by the testing equipment.

Add the following new section :

10.2.3 Non dislocation of the joint for plank profiles

(1) Dislocation of the joints is a particular failure mode for plank profiles when solicited in suction



(2) To prevent the dislocation of the joint of plank profile, it must be verified :

$$q_{Ed}\ (kN/m^2) \leq q_{Rd}\ (kN/m^2)$$

(3) The load resistance regarding joint dislocation of a plank profile is :

$$q_{Rd} = \frac{0{,}8 \cdot 2 \cdot E \cdot 1000 \cdot t^3 \cdot \delta_{lim}}{b_u \cdot \left(12 \cdot (1-\nu^2) \cdot \sqrt{\left(\frac{2 \cdot b_f^{\,3}}{3}\right)^2 + \left[b_f \cdot \left(\frac{b_u \cdot h}{3} + \frac{h^2}{2}\right)\right]^2}\right)}$$

Where:

- For clip joint:
  $\delta_{lim} = c_f$
- For chevron shaped joint:

$$\delta_{lim} = \frac{h}{2 \cdot \tan\varphi}$$

Background information	RFCS research project GRISPE: D4.5 – Background guidance for EN 1993-1-3 Proposal from M. Blanc, T. Renaux, and D. Izabel