Common Structural Rules for Bulk Carriers and Oil Tankers, 1 January 2023, Rule Change Notice 1

Amended Rules

Rules for the Survey and Construction of Steel Ships Part CSR-B&T

Reason for Amendment

IACS periodically conducts rule changes and correction of editorial errors (Corrigenda) as part of the maintenance work of the Common Structural Rules for Bulk Carriers and Oil Tankers.

Rule Change Notice 1 related to the 1 January 2023 edition of the Common Structural Rules for Bulk Carriers and Oil Tankers were published by IACS in December 2023. The relevant requirements are amended in accordance with the Rule Change Notice 1.

Outline of Amendment

Relevant requirements are amended in accordance with the Rule Change Notice 1.

Part CSR-B&T COMMON STRUCTURAL RULES FOR BULK CARRIERS AND OIL TANKERS

Part 1 GENERAL HULL REQUIREMENTS

Chapter 4 LOADS

Section 6 INTERNAL LOADS

4. Steel Coil Loads in Cargo Holds of Bulk Carriers

4.1 General

Table 9 Number n_2 of Load Point Dunnages per Elementary Plate Panel

n_2 (1) (2)	n_3 (3)				
	2	3	4	5	6
1	$0 < \frac{\ell}{\ell_{st}} \le 0.5$	$0 < \frac{\ell}{\ell_{st}} \le 0.33$	$0 < \frac{\ell}{\ell_{st}} \le 0.25$	$0 < \frac{\ell}{\ell_{st}} \le 0.2$	$0 < \frac{\ell}{\ell_{st}} \le 0.17$
2	$0.5 < \frac{\ell}{\ell_{st}} \le 1.2$	$0.33 < \frac{\ell}{\ell_{st}} \le 0.67$	$0.25 < \frac{\ell}{\ell_{st}} \le 0.5$	$0.2 < \frac{\ell}{\ell_{st}} \le 0.4$	$0.17 < \frac{\ell}{\ell_{st}} \le 0.33$
3	$1.2 < \frac{\ell}{\ell_{st}} \le 1.7$	$0.67 < \frac{\ell}{\ell_{st}} \le 1.2$	$0.5 < \frac{\ell}{\ell_{st}} \le 0.75$	$0.4 < \frac{\ell}{\ell_{st}} \le 0.6$	$0.33 < \frac{\ell}{\ell_{st}} \le 0.5$
4	$1.7 < \frac{\ell}{\ell_{st}} \le 2.4$	$1.2 < \frac{\ell}{\ell_{st}} \le 1.53$	$0.75 < \frac{\ell}{\ell_{st}} \le 1.2$	$0.6 < \frac{\ell}{\ell_{st}} \le 0.8$	$0.5 < \frac{\ell}{\ell_{st}} \le 0.67$
5	$2.4 < \frac{\ell}{\ell_{st}} \le 2.9$	$1.53 < \frac{\ell}{\ell_{st}} \le 1.87$	$1.2 < \frac{\ell}{\ell_{st}} \le 1.45$	$0.8 < \frac{\ell}{\ell_{st}} \le 1.2$	$0.67 < \frac{\ell}{\ell_{st}} \le 0.83$
6	$2.9 < \frac{\ell}{\ell_{st}} \le 3.6$	$1.87 < \frac{\ell}{\ell_{st}} \le 2.4$	$1.45 < \frac{\ell}{\ell_{st}} \le 1.7$	$1.2 < \frac{\ell}{\ell_{st}} \le 1.4$	$0.83 < \frac{\ell}{\ell_{st}} \le 1.2$
7	$3.6 < \frac{\ell}{\ell_{st}} \le 4.1$	$2.4 < \frac{\ell}{\ell_{st}} \le 2.73$	$1.7 < \frac{\ell}{\ell_{st}} \le 1.95$	$1.4 < \frac{\ell}{\ell_{st}} \le 1.6$	$1.2 < \frac{\ell}{\ell_{st}} \le 1.37$
8	$4.1 < \frac{\ell}{\ell_{st}} \le 4.8$	$2.73 < \frac{\ell}{\ell_{st}} \le 3.07$	$1.95 < \frac{\ell}{\ell_{st}} \le 2.4$	$1.6 < \frac{\ell}{\ell_{st}} \le 1.8$	$1.37 < \frac{\ell}{\ell_{st}} \le 1.53$
9	$4.8 < \frac{\ell}{\ell_{st}} \le 5.3$	$3.07 < \frac{\ell}{\ell_{st}} \le 3.6$	$2.4 < \frac{\ell}{\ell_{st}} \le 2.65$	$1.8 < \frac{\ell}{\ell_{st}} \le 2.0$	$1.53 < \frac{\ell}{\ell_{st}} \le 1.7$
10	$5.3 < \frac{\ell}{\ell_{st}} \le 6.0$	$3.6 < \frac{\ell}{\ell_{st}} \le 3.93$	$2.65 < \frac{\ell}{\ell_{st}} \le 2.9$	$2.0 < \frac{\ell}{\ell_{st}} \le 2.4$	$1.7 < \frac{\ell}{\ell_{st}} \le 1.87$

(1) In case ℓ/ℓ_{st} is greater than the value given in Table 9, n_2 is to be considered as greater than 10.

(2) For plating, n_2 is to be based on ℓ. For stiffener, n_2 is to be derived with ℓ replaced by ℓ_{bdg}.

(3) The number of dunnages, n_3, considered at the design stage is to reflect the intended operation conditions. Unusual arrangements with 5 or more dunnages per row of steel coil need to be carefully considered by the designer and ship owner.

Table 10 Distance between Outermost Load Point Dunnages per Elementary Plate Panel, ℓ_{lp}, in *m*

n_2 (1)	n_3				
	2	3	4	5	6
1	Actual breadth of dunnages				
2	$0.5\ell_{st}$	$0.33\ell_{st}$	$0.25\ell_{st}$	$0.2\ell_{st}$	$0.17\ell_{st}$
3	$1.2\ell_{st}$	$0.67\ell_{st}$	$0.50\ell_{st}$	$0.4\ell_{st}$	$0.33\ell_{st}$
4	$1.7\ell_{st}$	$1.20\ell_{st}$	$0.75\ell_{st}$	$0.6\ell_{st}$	$0.50\ell_{st}$
5	$2.4\ell_{st}$	$1.53\ell_{st}$	$1.20\ell_{st}$	$0.8\ell_{st}$	$0.67\ell_{st}$
6	$2.9\ell_{st}$	$1.87\ell_{st}$	$1.45\ell_{st}$	$1.2\ell_{st}$	$0.83\ell_{st}$
7	$3.6\ell_{st}$	$2.40\ell_{st}$	$1.70\ell_{st}$	$1.4\ell_{st}$	$1.2\ell_{st}$
8	$4.1\ell_{st}$	$2.73\ell_{st}$	$1.95\ell_{st}$	$1.6\ell_{st}$	$1.37\ell_{st}$
9	$4.8\ell_{st}$	$3.07\ell_{st}$	$2.40\ell_{st}$	$1.8\ell_{st}$	$1.53\ell_{st}$
10	$5.3\ell_{st}$	$3.60\ell_{st}$	$2.65\ell_{st}$	$2.0\ell_{st}$	$1.7\ell_{st}$

(1) When $n_2 > 10$, ℓ_{lp} is to be taken equal to ℓ.

4.3 Static Loads

4.3.1 Static loads on the inner bottom

The static load $F_{sc-ib-s}$, in *kN*, on the inner bottom due to steel coils is to be taken as:

$$F_{sc-ib-s} = M_{sc-ib} g$$

where:

M_{sc-ib} : Equivalent mass of steel coils, in *t*, to be taken as:

$$M_{sc-ib} = K_S W \frac{n_1 n_2}{n_3} \text{ for } n_2 \leq 10 ~~\text{and } n_3 \leq 5~~$$

$$M_{sc-ib} = K_S W n_1 \frac{\ell}{\ell_{st}} \text{ for } n_2 > 10 ~~\text{or } n_3 > 5~~\text{, for plating}$$

$$M_{sc-ib} = K_S W n_1 \frac{\ell_{bdg}}{\ell_{st}} \text{ for } n_2 > 10\text{, for stiffener}$$

K_S : Coefficient to be taken as:

$K_S = 1.4$ when steel coils are lined up in one tier with a key coil.

$K_S = 1.0$ in other cases.

4.3.2 Static load on the hopper side

The static load $F_{sc-hs-s}$, in *kN*, on the hopper side due to steel coils is to be taken as:

$$F_{sc-hs-s} = \cos\theta_h M_{sc-hs} g$$

where:

M_{sc-hs} : Equivalent mass of steel coils, in *t*, to be taken as:

$$M_{sc-hs} = C_k W \frac{n_2}{n_3} \text{ for } n_2 \leq 10 ~~\text{and } n_3 \leq 5~~$$

$$M_{sc-hs} = C_k W \frac{\ell}{\ell_{st}} \text{ for } n_2 > 10 ~~\text{or } n_3 > 5~~\text{, for plating}$$

$$M_{sc-hs} = C_k W \frac{\ell_{bdg}}{\ell_{st}} \text{ for } n_2 > 10\text{, for stiffener}$$

C_k : Coefficient to be taken as:

$C_k = 3.2$ when steel coils are lined up two or more tiers, or when steel coils are lined up one tier and key coil is located second or 3rd from hopper sloping plate or inner hull plate.

$C_k = 2.0$ for other cases.

Chapter 6 HULL LOCAL SCANTLING

Section 4 PLATING

2. Special Requirements

2.2 Bilge Plating

2.2.2 Bilge ~~plate~~ plating thickness

(a) The net thickness of transversely stiffened bilge plating is not to be taken less than the ~~offered~~ net required thickness for the adjacent bottom shell ~~or~~ plating and adjacent side shell plating, by **Ch 6** and **Ch 8, Sec 2** and **Sec 3**, whichever is greater. When bilge plating is divided into two or more strakes, in accordance with this requirement, the net thicknesses of lower and upper strakes are to be determined in comparison with the net required thicknesses of adjacent bottom shell plating and side shell plating respectively.

Chapter 8 BUCKLING

Section 1 GENERAL

2. Application

2.1 Scope

2.1.3 Enlarged stiffener

Enlarged stiffeners~~, with or without web stiffening,~~ used for Permanent Means of Access (*PMA*), whose net web height are above 700 mm, and net offered section modulus are 3 times greater than the smaller one of adjacent surrounding stiffeners not used for PMA, are to comply with the following requirements:

(a) Slenderness requirements for primary supporting members as follows:

- For enlarged stiffener web, see item **(a)** of **Ch 8**, **Sec 2**, **4.1.1**.
- For enlarged stiffener flange, see item **(b)** of **Ch 8**, **Sec 2**, **4.1.1** and **Ch 8**, **Sec 2**, **5.1**.
- For stiffeners fitted on enlarged stiffener web, see **Ch 8**, **Sec 2**, **3.1.1** and **Ch 8**, **Sec 2**, **3.1.3**.

(b) Buckling strength of prescriptive requirements as follows:

- For enlarged stiffener web, see **Ch 8**, **Sec 3**, **3.2**.
- For stiffeners fitted on enlarged stiffener web, see **Ch 8**, **Sec 3**, **3.1** and **Ch 8**, **Sec 3**, **3.3**.

(c) All structural elements used for *PMA* are to be complied with for the buckling requirements of the FE analysis in **Ch 8**, **Sec 4** when applicable.

(d) Buckling strength of longitudinal *PMA* platforms without stiffeners fitted on enlarged stiffener web is to be checked using the criteria for local supporting members in **Ch 8**, **Sec 3**, **3.1** and **Ch 8**, **Sec 3**, **3.3**.

Section 2 SLENDERNESS REQUIREMENTS

4. Primary Supporting Members

4.1 Proportions and Stiffness

4.1.1 Proportions of web plate and flange

The net thicknesses of the web plates and flanges of primary supporting members are to satisfy the following criteria:

(a) Web plate:

$$t_w \geq \frac{s_w}{C_w}\sqrt{\frac{R_{eH}}{235}}$$

(b) Flange:

$$t_f \geq \frac{b_{f-out}}{C_f}\sqrt{\frac{R_{eH}}{235}}$$

where:

s_w : Plate breadth, in *mm*, taken as the spacing of the web stiffeners.

C_w : Slenderness coefficient for the web plate taken as:

$$C_w = 100$$

C_f : Slenderness coefficient for the flange taken as:

$$C_f = 12$$

R_{eH} : Specified minimum yield stress of the plate material, in N/mm^2.
For the web plates, a lower specified minimum yield stress may be used in this slenderness criterion provided the requirements specified in **Sec 3** and **Sec 4**, if applicable, are satisfied for the structure assumed in the same lower specified minimum yield stress.

If requirement **(b)** is not fulfilled, the effective free flange outstand, in *mm*, used in strength assessment including the calculation of actual net section modulus, is to be taken as:

$$b_{f-out-max} = C_f t_f \sqrt{\frac{235}{R_{eH}}}$$

Chapter 9 FATIGUE

Section 2 STRUCTURAL DETAILS TO BE ASSESSED

2. Finite Element Analysis

2.1 Structural Details to be Assessed

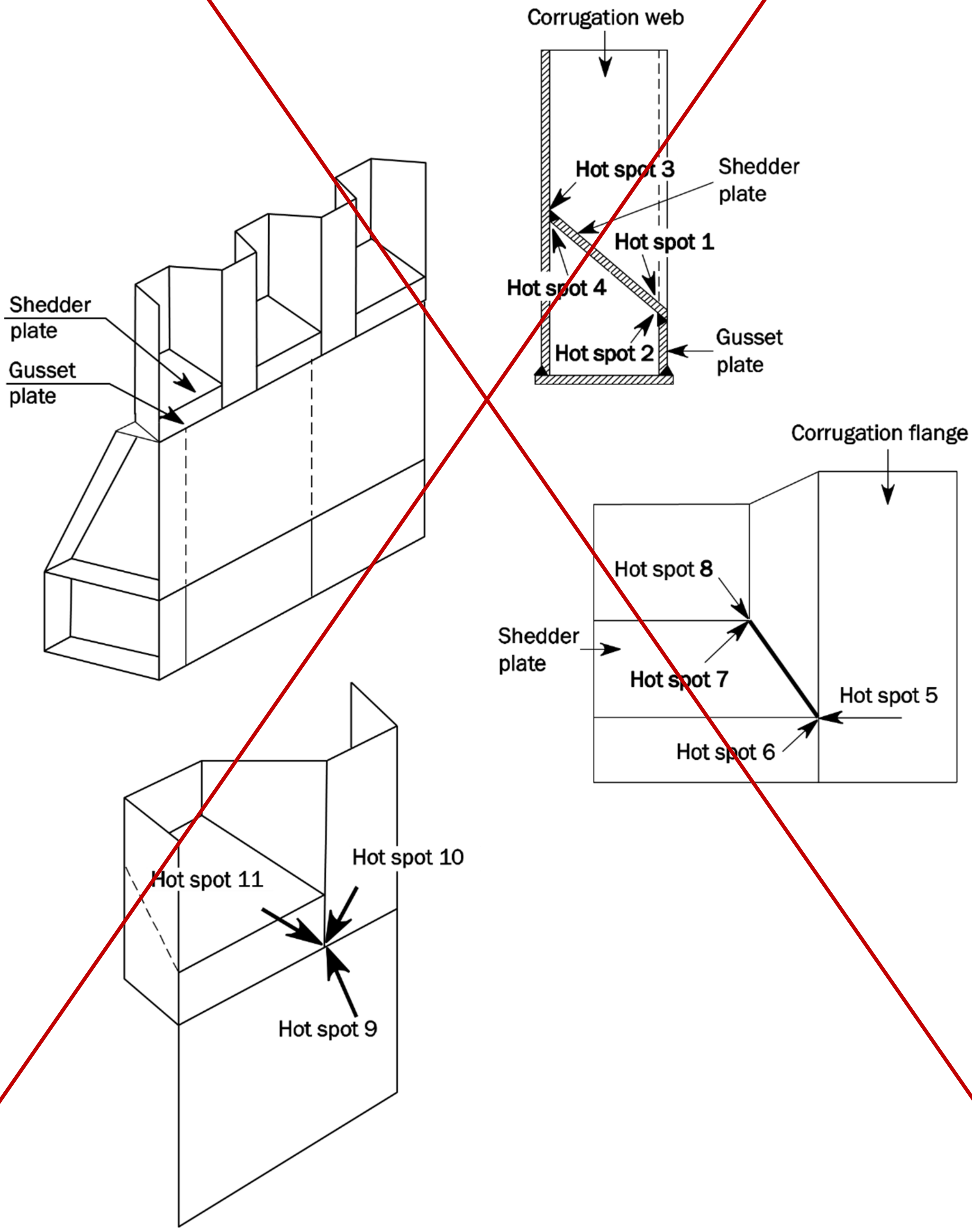
2.1.1 General

Critical structural details to be checked for fatigue by finite element analysis according to **Ch 9, Sec 5** are given in **2.1.2** to **2.1.4**.

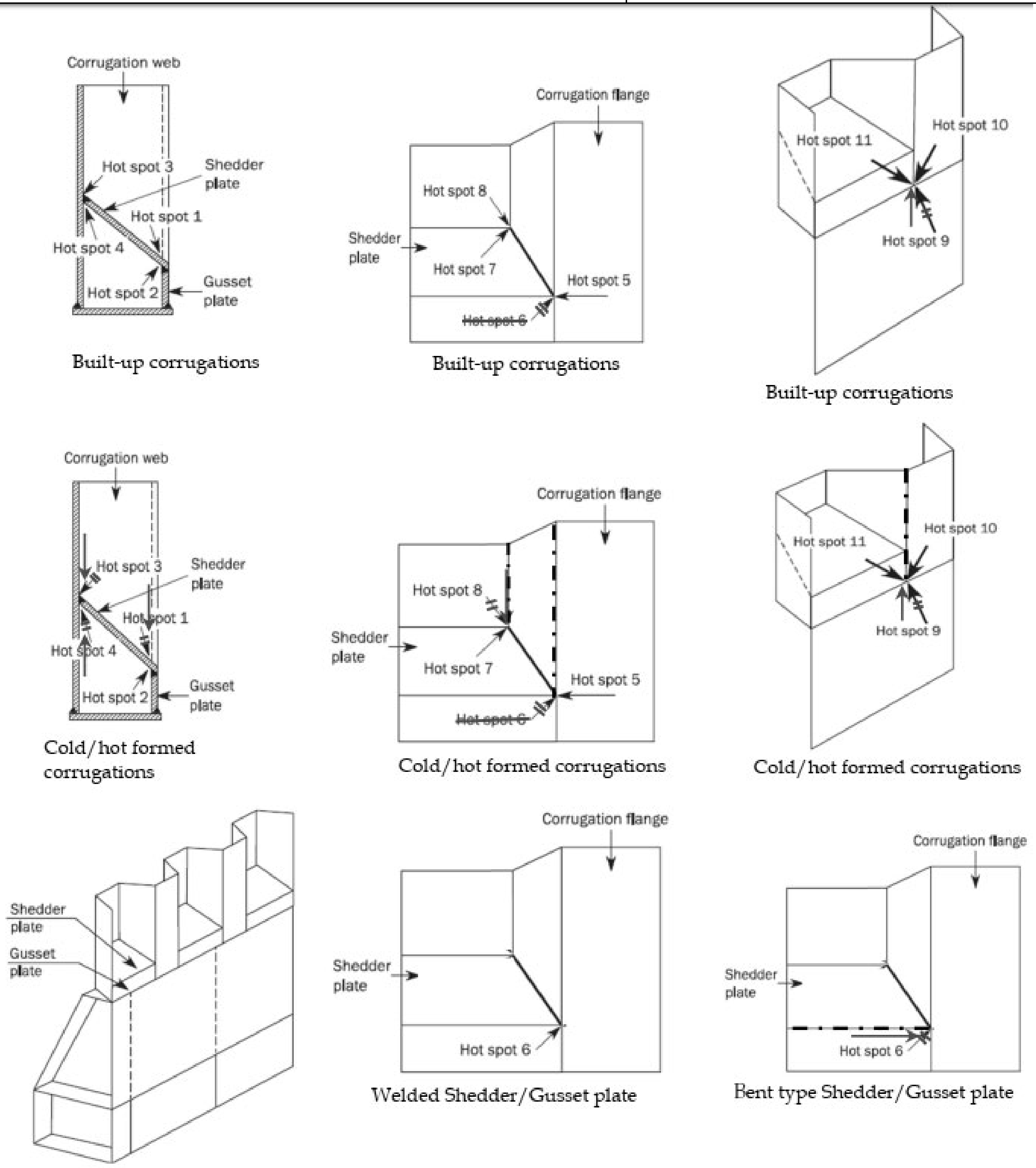
Table 4 to **Table 1~~8~~9** give the list of hot spots for structural details.

Table 8 Hot Spots for Corrugated Bulkhead to Lower Stool Connection

Hot spot location	Procedure for calculation of hot spot stress
Hot spots 1 and 3: Corrugation web above shedder plate Hot spot 4: Corrugation web below shedder plate Hot spot 5, 7 and 8: Corrugation flange Hot spot 6: Gusset plate Hot spot 9: Lower stool plate to stool top plate Hot spot 10: Corrugation corner to stool top plate Hot Spot 11: Gusset plate in way of corrugation corner	**Ch 9, Sec 5, 3.1**, type "*a*"
Hot spot 2: Corrugation web below shedder plate	**Ch 9, Sec 5, 4.3**



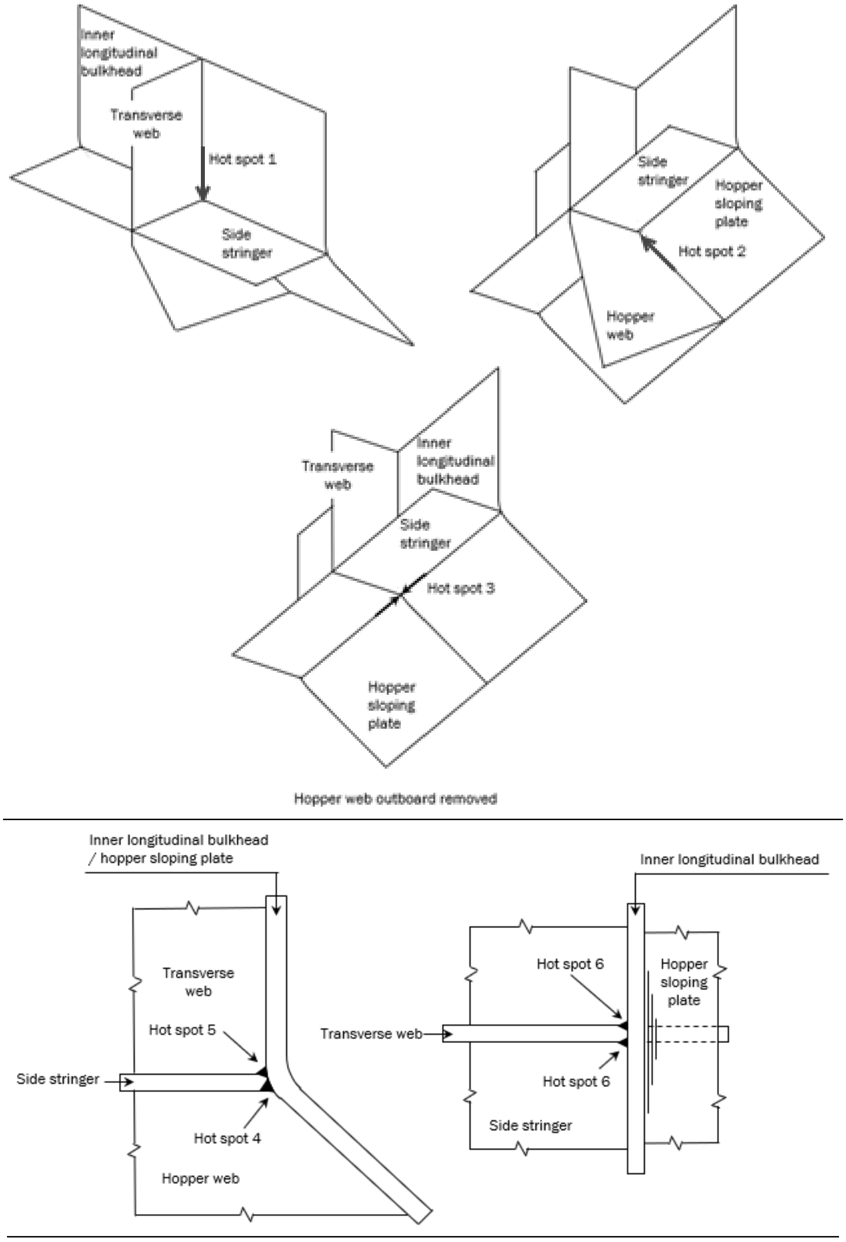
Hot spot location	Procedure for calculation of hot spot stress	
	Cold/hot formed corrugations (Bent type)	Built-up corrugations (welded)
Hot spots 1 and 3: Corrugation web above shedder plate Hot spot 4: Corrugation web below shedder plate	**Ch 9, Sec 5, 3.1, type "*a*"**	**Ch 9, Sec 5, 4.3**
Hot spot 2: Corrugation web below shedder plate	**Ch 9, Sec 5, 4.3**	
Hot spot 5: Corrugation flange	**Ch 9, Sec 5, 3.1, type "*a*"**	
Hot spot 8: Corrugation flange	**Ch 9, Sec 5, 3.1, type "*a*"**	**Ch 9, Sec 5, 4.3**
Hot spot 6: Gusset plate in case of welded gusset plate/shedder plate	**Ch 9, Sec 5, 4.3**	
Hot spot 6: Gusset plate in case of bent type gusset plate/shedder plate	**Ch 9, Sec 5, 3.1, type "*a*"**	
Hot spot 7: Shedder plate	**Ch 9, Sec 5, 4.3**	
Hot spot 9: Lower stool plate to stool top plate	**Ch 9, Sec 5, 3.1, type "*a*"**	
Hot spot 10: Corrugation corner to stool top plate Hot spot 11: Gusset plate in way of corrugation corner	**Ch 9, Sec 5, 4.3**	



. ▬ . ▬ . ▬: the knuckle line of cold/hot formed connections

Table 19 Hot spots for radiused upper hopper knuckle connection

Hot spot location	Procedure for calculation of hot spot stress
Hot spot 1: Inner longitudinal bulkhead plate on ballast tank side, above side stringer Hot spot 2: Radiused hopper sloping plate on ballast tank side, below side stringer Hot spot 3: Radiused hopper sloping plate on ballast tank side, below side stringer, towards hopper web Hot spot 4: Hopper web, below side stringer Hot spot 5: Transverse web, above side stringer Hot spot 6: Side stringer, to transverse web	**Ch 9, Sec 5, 3.3**



3. Hot Spot Stress for Details Different from Web-stiffened Cruciform Joints

3.3 Bent Hopper Knuckle

3.3.1

The hot spot stress at the inner bottom/hopper sloping plate and inner hull/hopper sloping plate in transverse, vertical and longitudinal directions (i.e. hot spots 1, 2 and 3 defined in **Ch 9, Sec 2, Table 5** and **Table 19**) of a bent hopper knuckle is to be taken as the surface principal stress read out from a point shifted away from the intersection line between the considered member and abutting member by the weld leg length.

The hot spot stress, in N/mm^2, is obtained by the following formula:

$$\sigma_{HS} = \sigma_{shift}$$

where:

σ_{shift}: Surface principal stress, in N/mm^2, at the shifted read out position as defined in **4.2.1** and taken as:

$$\sigma_{shift} = \sigma_{membrane}(x_{shift}) + \sigma_{bending}(x_{shift})$$

$\sigma_{bending}(x_{shift})$: Bending stress, in N/mm^2, at x_{shift} position.

$\sigma_{membrane}(x_{shift})$: Membrane stress at x_{shift} position, in N/mm^2.

3.3.2

The procedure for calculation of hot spot stress at flange such as inner bottom /hopper sloping plate and inner hull/hopper sloping plate is the same that for web-stiffened cruciform joints as described in **4.2.1**. The procedure that applies for hot spots on the ballast tank side of the inner bottom/hopper plate and inner hull/hopper sloping plate in way of a bent hopper knuckle is in principle the same as that applied on the cargo tank side of the inner bottom plate for welded knuckle in **Fig. 18** and **Fig. 19**. The intersection line is taken at the mid-thickness of the joint assuming median alignment. The plate angle correction factor and the reduction of bending stress as applied for a web-stiffened cruciform joint in **4.2.2** are not to be applied for the bent hopper knuckle type.

3.3.3

The stress at hot spots located in way of the web such as transverse web, side stringer and side girder (i.e. hot spots 4, 5 and 6 defined in **Ch 9, Sec 2, Table 5** and **Table 19**) at a bent hopper knuckle type is to be derived as described for web-stiffened cruciform joints in **4.3.1**.

Part 2 SHIP TYPES

Chapter 1 BULK CARRIERS

Section 3 HULL LOCAL SCANTLING

Symbols

For symbols not defined in this section, refer to **Pt 1**, **Ch 1**, **Sec 4**.

C_{XG}, C_{YS}, C_{YR}, C_{YG}, C_{ZP}, C_{ZR} : Load combination factors, as defined in **Pt 1**, **Ch 4**, **Sec 2**.

d_{shr} : Effective shear depth of the stiffener as defined in Pt 1, **Ch 3**, **Sec 7**, **1.4.3**.

F_R : Resultant force, in *kN*, as defined in **Pt 1**, **Ch 4**, **Sec 6**, **Table 7**.

$F_{sc-ib-s}$: Static load, in *kN*, as defined in **Pt 1**, **Ch 4**, **Sec 6**, **4.3.1**. ~~ℓ is to be substituted by ℓ_{bdg} for stiffeners.~~

F_{sc-ib} : Total load, in *kN*, as defined in **Pt 1**, **Ch 4**, **Sec 6**, **4.2.1**. ~~ℓ is to be substituted by ℓ_{bdg} for stiffeners.~~

$F_{sc-hs-s}$: Static load, in *kN*, as defined in **Pt 1**, **Ch 4**, **Sec 6**, **4.3.2**. ~~ℓ is to be substituted by ℓ_{bdg} for stiffeners.~~

F_{sc-hs} : Total load, in *kN*, as defined in **Pt 1**, **Ch 4**, **Sec 6**, **4.2.2**. ~~ℓ is to be substituted by ℓ_{bdg} for stiffeners.~~

ℓ : Distance, in *m*, as defined in **Pt 1**, **Ch 4**, **Sec 6**.

ℓ_{bdg} : Effective bending span, in *m*, as defined in **Pt 1**, **Ch 3**, **Sec 7**, **1.1.2**.

ℓ_{lp} : Distance, in *m*, as defined in **Pt 1**, **Ch 4**, **Sec 6**.

ℓ_{SF} : Side frame span ℓ, in *m*, as defined in **Ch 1**, **Sec 2**, **Fig. 2**, not to be taken less than 0.25 D.

P : Design pressure in kN/m^2, for the design load set being considered according to **Pt 1**, **Ch 6**, **Sec 2**, **2** and calculated at the load calculation point defined in **Pt 1**, **Ch 3**, **Sec 7**, **3.2**.

P_R : Resultant pressure, in kN/m^2, as defined in **Pt 1**, **Ch 4**, **Sec 6**, **Table 7**.

s_{CW} : Plate width, in *mm*, taken as the width of the corrugation flange b_{f-cg} or the web b_{w-cg}, whichever is greater, see **Pt 1**, **Ch 3**, **Sec 6**, **Fig. 21**.

s_{cg} : Half pitch, in *mm*, of the corrugation flange as defined in **Pt 1**, **Ch 3**, **Sec 6**, **Fig. 21**.

4. Primary Supporting Members

4.2 Design Load Sets

4.2.2 Loading conditions

The severest loading conditions from the loading manual or otherwise specified by the designer are to be considered for the calculation of P_{in} in design load sets BC-11 to BC-12.

~~If primary supporting members support deck structure or tank/watertight boundaries, applicable design load sets in **Pt 1, Ch 6, Sec 2, Table 1** are also to be considered.~~ For Primary supporting member in bilge hopper tanks and topside tanks, applicable design load sets in **Pt 1, Ch 6, Sec 2, Table 1** are to be considered.

Table 3 Design Load Sets for Primary Supporting Members in Cargo Hold Region

Item	Design load set	Load component	Draught	Design load	Loading condition
~~Bulk cargo hold assigned as ballast hold~~ Bulk cargo hold • Double bottom floors and girders • Stringers and transverse web frames in double side structures ~~Compartments not carrying liquids~~	WB-4 (1)	$P_{in} - P_{ex}$ ~~(1)~~	T_{BAL-H}	$S+D$	Heavy ballast condition
	WB-6 (1)	P_{in}	-	S	Harbour/test condition
	BC-11	$P_{in} - P_{ex}$ ~~(1)~~	T_{SC}	$S+D$	~~Cargo loading~~ Full load condition
	BC-12	$P_{in} - P_{ex}$ ~~(1)~~	~~-~~ T_{SC}	S	Harbour condition
	FD-1 (2)	P_{in}	T_{SC}	$S+D$	Flooded condition
	FD-2 (2)	P_{in}		S	Flooded condition

(1) ~~P_{ex} is to be considered for external shell only.~~ Only applicable to holds assigned as ballast hold.

(2) ~~FD-1 and FD-2 are not applicable to external shell.~~ Not applicable to holds assigned as ballast hold.

Section 5 CARGO HATCH COVERS

5. Strength Check

5.5 ~~Stiffeners and Primary Supporting Members of Variable Cross Section~~ (Void)

~~5.5.1~~

~~The net section modulus Z, in cm^3, of stiffeners and primary supporting members with a variable cross section is to be taken not less than the greater of the values given by the following formulae:~~

~~$Z = Z_{CS}$~~

$$Z = \left(1 + \frac{3.2\alpha - \psi - 0.8}{7\psi + 0.4}\right) Z_{CS}$$

~~where:~~

~~Z_{CS}: Net section modulus, in cm^3, for a constant cross section, complying with the checking criteria in **5.4.4**.~~

~~α : Coefficient taken equal to:~~

$$\alpha = \frac{\ell_1}{\ell_0}$$

~~ψ : Coefficient taken equal to:~~

$$\psi = \frac{Z_1}{Z_0}$$

~~ℓ_1 : Length of the variable section part, in m, as shown in **Fig. 3**.~~

~~ℓ_0 : Span measured, in m, between end supports, as shown in **Fig. 3**.~~

~~Z_1 : Net section modulus at end, in cm^3, as shown in **Fig. 3**.~~

~~Z_0 : Net section modulus at mid-span, in cm^3, as shown in **Fig. 3**.~~

~~Moreover, the net moment of inertia, in cm^4, of stiffeners and primary supporting members with a variable cross section is to be taken not less than the greater of the values given by the following formulae:~~

~~$I = I_{CS}$~~

$$I = \left[1 + 8\alpha^3\left(\frac{1 - \varphi}{0.2 + \sqrt{\varphi}}\right)\right] I_{CS}$$

~~where:~~

~~I_{CS} : Net moment of inertia, in cm^4, with a constant cross section complying with **5.4.5**.~~

~~φ : Coefficient taken equal to:~~

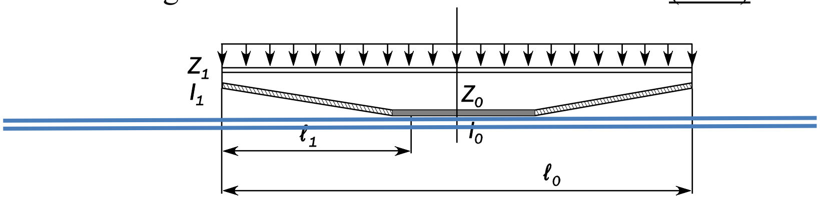
$$\varphi = \frac{I_1}{I_0}$$

~~I_1 : Net moment of inertia at end, in cm^4, as shown in **Fig. 3**.~~

~~I_0 : Net moment of inertia at mid-span, in cm^4, as shown in **Fig. 3**.~~

~~The use of these formulae is limited to the determination of the strength of stiffeners and primary supporting members in which abrupt changes in the cross section do not occur along their length.~~

Fig. 3 ~~Variable Cross Section Stiffener~~ (Void)



EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 July 2024.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.