To : All Surveyors and whom it may concern

No   : 2022-10-E
Date : 2022. 8. 24

Subject	9.164 Notice for Amendments to the KR Technical Rules (Pt.7 Ships of Special Service)
Application	Pt.7 Ships of Special Service : On or after 1st September 2022 (the contract date for ship construction)

1. Please be informed that the partial amendments have been made to the 'Pt.7 Ships of Special Service', as below and you are kindly requested to apply these amendments on the relevant works.

= Below =

1) Pt.7 Ships of Special Service : requirements for Pure Car Carrier

2. Furthermore, please be informed that these amendments will be included in 2023 edition for Rule and Guidance.

Attachments : Circular 9.164(E) ----- 1 copy. (The End)

Amendments of the Rules / Guidance

Pt. 7 Ship of Special Service

KR
KOREAN REGISTER

2022. 8

Hull Rule Development Team

- Main Amendments -

1. Effective Date : 1 September 2022 (based on contracted date for construction)

Present	Amendment	Note
〈Newly added〉	〈Rules〉 # CHAPTER 7 Car Ferries and Roll-On/Roll-off Ships ### Section 5 Pure Car Carrier (New) **501. Application 【See Guidance】** This Section applies to Pure Car Carrier (hereinafter PCC) not less than 150 m in length, with multiple car-decks. The scantlings and arrangements are to be as required by Pt 3 except as otherwise specified in this Section.	

Present	Amendment	Note
<u>〈Newly added〉</u>	〈Guidance〉 CHAPTER 7　Car Ferries and Roll-On/Roll-off Ships <u>Section 5　Pure Car Carrier (New)</u>	

<u>501. Application 【See Rule】</u>

<u>This section provides the requirements for evaluation of plating and stiffeners for **PCC**. The offered scantling is to be greater than or equal to the required scantling based on requirements provided in **502 ~ 507** of this section.</u>

<u>502. Minimum thickness of shell plating above freeboard deck</u>

<u>The thickness of shell plating above freeboard deck is not to be less than:</u>

$$\underline{t = 1.0 + 0.5\sqrt{KL'}} \qquad \text{(mm)}$$

<u>L' = length of ship (m), but need not be taken greater than 230 m.</u>

<u>503. Thickness of side shell plating above freeboard deck</u>

<u>The thickness of side shell plating from the freeboard deck to the level at 4.6 m above is not to be less than:</u>

$$\underline{t = C_1 C_2 S\sqrt{(0.05L' + h_1)\frac{D}{D+4.6}} + 1.5} \qquad \text{(mm)}$$

<u>C_1 = coefficient defined in **Pt 3, Ch 4, Table 3.4.1** of the Rules.</u>
<u>C_2 = coefficient defined in **Pt 3, Ch 4, Table 3.4.1** of the Rules.</u>
<u>S = spacing of frames (m)</u>
<u>L' = length defined in **502**.</u>
<u>h_1 = height defined in **Pt 3, Ch 4, 302** of the Rules.</u>

<u>504. Side longitudinals above freeboard deck</u>

<u>The section modulus of side longitudinals above the freeboard deck is not to be less than that obtained from the following formula, whichever is the greater:</u>

$$\underline{Z_1 = 100\,CShl^2} \qquad \text{(cm}^3\text{)}$$
$$\underline{Z_2 = C'K\sqrt{L'}\,Sl^2} \qquad \text{(cm}^3\text{)}$$

Present	Amendment	Note

〈Newly added〉	$S=$ spacing of longitudinals (m).
	$l=$ distance between the web frames or between the transverse bulkhead and the web frame including the length of connection (m).
	$L'=$ length defined in **502**.
	$h=$ vertical distance from the side longitudinal concerned to a point $d+0.038L'$ above baseline (m).
	$C=$ coefficient as defined in **Pt 3, Ch 8, 401** of the Rules.
	$C'=$ coefficient given by the following:
	    $C'=0.8$ for longitudinals from the freeboard deck to the level at 4.6 m above
	    $C'=0.5$ elsewhere
	
	505. Bulkhead stiffeners of deep tank
	The scantlings are to be in accordance with the requirements in **Pt 3, Ch 15, 203** of the Rules. The section modulus for h_3, however, is not to be less than:
	
	$$Z=125\,C_1C_2C_3C_4Sh\,l^2\quad(\text{cm}^3)$$
	
	$C_1=$ coefficient defined in **Pt 3, Ch 15, 202** of the Rules.
	$C_2=$ coefficient taken equal to:
	
	$$C_2=\frac{K}{22.5}$$
	
	$C_3=$ coefficient defined in **Pt 3, Ch 15, 203** of the Rules.
	$C_4=$ coefficient taken equal to:
	
	    $C_4=1.2$ for vertical stiffeners
	    $C_4=1.0$ for horizontal stiffeners
	
	$S=$ spacing of stiffeners (m)
	$l=$ span of stiffeners, as defined in **Pt 3, Ch 14, 303** of the Rules (m).	

Present	Amendment	Note
〈Newly added〉	**506. Thickness of vehicle deck** The thickness of vehicle deck is to be in accordance with the requirements in **301. 1**. The value of C, however, is to be substituted by the value defined in following **Table 7.7.11**.	

Table 7.7.11　Coefficient C

Frames			Vehicles used for cargo handling	Other vehicles
Longitudinal strength member	Midship part of strength deck (0.4L)	Longitudinal framing	$4.6\sqrt{K}$	$\dfrac{17.83\sqrt{K}}{\sqrt{24-K\alpha}}$ but, in no case is it to be less than $5\sqrt{K}$
		Transverse framing	$4.9\sqrt{K}$	$\dfrac{123.6\sqrt{K}}{\sqrt{576-K^2\alpha^2}}$ but, in no case is it to be less than $5\sqrt{K}$
	Fore and aft end part		$4.6\sqrt{K}$	$5.2\sqrt{K}$
Elsewhere			$4.6\sqrt{K}$	$5.2\sqrt{K}$

α : either α_1 or α_2 according to value of y. However, value of α is not to be less than β.

$$\alpha_1 = 15.36 f_D\left(\frac{y-y_B}{Y}\right) \quad \text{for } y_B \leq y \qquad\qquad \alpha_2 = 15.36 f_B\left(\frac{y_B-y}{y_B}\right) \quad \text{for } y_B > y$$

β : coefficient determined according to values of L as specified below:

　　$\beta = 6/a$　　　when L is not greater than 230 m

　　$\beta = 10.5/a$　　when L is not less than 400 m

　　For intermediate value of L, β is to be obtained by linear interpolation.

y : distance (m) from the baseline to the lower edge of plating when the plating under consideration is under y_B or to the upper edge of plating when the plating under consideration is above y_B.

Y : the greater of the values defined in **Pt 3, Ch 3, 203.**, (5) (a) and (b)

a : $\sqrt{K}$ when high tensile steels are used for not less than 80 % of side shell plating at the transverse section amidship and 1.0 for other parts.

y_B : vertical distance from the baseline to the horizontal neutral axis of the hull transverse section (m).

f_D, f_B : factors defined in **Pt 3, Ch 1, 124.** of the Rules, but not less than 0.5 in longitudinal framing system of midship part of strength deck

Note : For the intermediate parts between midship part and fore/aft end part, C is to be determined by linear interpolation.

Present	Amendment	Note
〈Newly added〉	**507. Scantlings of vehicle deck beams** The section modulus for vehicle deck beams is not to be less than;	

507. Scantlings of vehicle deck beams

The section modulus for vehicle deck beams is not to be less than;

$$Z = 0.92 C_1 C_2 M \quad (\text{cm}^3)$$

$C_1 =$ coefficient defined in **301. 2**

$C_2 =$ coefficient defined in **Table 7.7.12**

$M =$ moment defined in **301. 2**

Table 7.7.12   Coefficient C_2

Frames \ Vehicles		Vehicles used for cargo handling	Other vehicles
Longitudinal beam	Midship part of strength deck (0.4L)	$\dfrac{86.4K}{24-0.544K\alpha}$ but, in no case is it to be less than $4.8K$	$\dfrac{110.4K}{24-K\alpha}$ but, in no case is it to be less than $5.52K$
	Fore and aft end part	$3.6K$	$4.6K$
Elsewhere		$3.6K$	$4.6K$

α : either α_1 or α_2 according to value of y. However, value of α is not to be less than β.

$$\alpha_1 = 15.36 f_D \left(\frac{y - y_B}{Y'} \right) \quad \text{for } y_B \leq y \qquad\qquad \alpha_2 = 15.36 f_B \left(\frac{y_B - y}{y_B} \right) \quad \text{for } y_B > y$$

β : coefficient determined according to values of L as specified below:

    $\beta = 6/a$ when L is not greater than 230 m $\beta = 10.5/a$ when L is not less than 400 m

    For intermediate value of L, β is to be obtained by linear interpolation.

y : Vertical distance (m) from the baseline to the beam under consideration

Y' : the greater of the values defined in **Pt 3, Ch 3, 203.**, (5) (a) and (b)

a : $\sqrt{K}$ when high tensile steels are used for not less than 80 % of side shell plating at the transverse section amidship and 1.0 for other parts.

y_B : vertical distance from the baseline to the horizontal neutral axis of the hull transverse section (m).

f_D, f_B : factors defined in **Pt 3, Ch 1, 124** of the Rules, but not less than 0.5 in longitudinal framing system of midship part of strength deck

Note : For the intermediate parts between midship part and fore/aft end part, C is to be determined by linear interpolation.