Tanker Q&As and CIs on the IACS CSR Knowledge Centre

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
38	4/3.6.1.3	Question	knuckle and the support	2006/4/5	Generally, the distance between the knuckle and the support is not to be greater than 50mm.The following underlined wording to be added. Generally, the distance between the knuckle and the support is not to be greater than 100mm. Where distance is greater than 100mm, special attention is to be paid.	We prefer to keep the 50mm limit, but note that the present text provides for acceptance of alternative configurations. Other configurations with a distance in excess of 50mm may be accepted with due consideration to stress level and fatigue stresses.	
118	4/2.4.1	CI	Net properties for bulb profiles	2006/9/1	4/2.4.1.4 and 5 specify a simplified procedure for how to determine net properties for bulb profiles using necessary input from Table 4.2.1 (HP bulb profiles) and Table 4.2.2 (JIS bulb profiles). 1) Please confirm that net properties for bulb profiles not covered by Table 4.2.1/4.2.2 shall be calculated by accurate methods deducting corrosion margin as shown in Figure 4.2.12. 2) Can accurate calculations in accordance with Figure 4.2.12 also be accepted for the HP and JIS Bulb profiles or is 4/2.4.1.4 and 5 mandatory for those ? 3) In an actual case the simplified procedure was found conservative underestimating net section modulus by 15%. For actual stiffener (HP320x12) Table 4.2.1 is reported to overestimate the area reduction ab.15% and moment of inertia reduction about 20%. The table should be consider revised.	1)That is correct. 2)Yes, more accurate calculation of profile properties can be accepted in lieu of results obtained by procedure given in 4/2.4.1.1 and 5, provided the corrosion margin is deducted as shown in Figure 4.2.12. 3)Noted, update of Table 4.2.1 and 4.2.2 will be considered.	
122	Fig. 4.2.12	Question	Corrosion additions for profile shapes	2006/9/1	In the case of Angle and Flat bar profiles, the corner radius is not considered (only right angled corners are considered). Is it possible to apply the same principle to modify the sectional area in the case of profile shapes actually used in the shipyard?	Figure 4.2.12 depicts how the corrosion additions are deducted, i.e. one half of the corrosion addition is to be deducted from all exposed surfaces. For the angles bars, corrosion additions may be deducted from all exposed surfaces of the actual exact shape, without converting to the built-up shape.	
163	4/2.4.2	Question	Properties of local support members	2006/10/9	In this section, actual moment of inertia calculation for stiffener having inclination angle between stiffener web and attached plate is not provided. Don't we have to consider the inclination angle for moment of inertia for compliance with the requirement of Inet as given in Section10/2.2.2.1?	Where the inclination angle between stiffener web and attached plate is less than 75 degrees, this angle is to be also considered for moment of inertia in a similar manner as that for section modulus as given in Secton 4/2.4.2.3. We will consider a Rule change to reflect this.	
165	4/2.5.1, 4/2.5.2	Question	Properties of primary support members	2006/10/9	For primary support members, there are no specific description of shear area, section modulus and moment of inertia where the angle between the web and the attached plate is less than 90 degrees. Understand that the actual shear (web) area as given in Section 4/2.5.1 and the section modulus as given in Section 4/2.5.2 are to be adjusted in a similar manner as indicated in Section 4/2.4.2 for local support members. Please confirm.	Your understanding is correct. We will consider a rule change to reflect this.	

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166	4/3.4.3.3	Question	Connection between primary and local support members	2006/10/23	When web stiffener is not fitted, i.e. Aw-net=0, the load W1 transmitted through shear connection will be taken W1=W*(alpha_a+1) and the load W2 transmitted through PSM web stiffener will be taken W2=W*(-alpha_a). In this case, can we interpret that W1=W, W2=0?	Correct. The expression W1=W*(alpha_a+....) only applies in case the PSM web stiffener is connected to the longitudinal stiffener. In case the PSM web stiffener is not connected to the longitudinal stiffener, W1=W as indicated in Section 4/3.4.3.3. Also, W2=0 in such case. We noticed that the current Rules are not clear in this connection. We will consider updates of the Rules to improve clarity.	
229	4/3.2.5.1	Question	Tp net	2006/11/13	Sniped ends tp-net Question: Please kindly confirm, that the denominator 1000 must be squared in the formula for tp-net.	We confirmed. The formula should be:"tp-net = c1*sqrt((1000l-s/2)*sPk/10^6)"The formula will be corrected at the next corrigenda.	
230	4/3.2.6.1 & Fig 4.3.2	Question	end connections	2006/11/13	Understand that the "end connections" mentioned next to "end brackets" in the first sentence of Section 4/3.2.6.1 includes the connection with web stiffeners or tripping brackets, regardless of whether the web stiffeners or tripping brackets are used for the span correction or not. Please confirm.	Your understanding is correct. Please note that, as indicated in the same paragraph, in areas where the shear stress is less than 60 percent of the allowable limit, alternative arrangements may be accepted.	
233	4/3.3.2.2	Question	end connections	2006/11/8	End connection of primary support members.The prescription "Brackets are generally to be radiused or well-rounded at their toes" does not correspond to the practice in the actual design. This description should be deleted.	The description is general and should not or is not intended to exclude designs without radiused or rounded toes.	
234	4/3.3.3.1	Question	end connections	2006/11/14	End connection of primary support membersThe prescription "The two arms of a bracket are to be of approximately equal lengths" is inconsistent with the description "bracket with a length to heigth ratio of 1.5 is effective to lessen the bending span" in Section 4/2.1.4. The sentence "The two arms of a bracket..." should be deleted.	We note your comments. We will delete the sentence "The two arms of a bracket are to be of approximately equal lengths" at the next rule change.	
325	Table 4.2.1	Question	corrosion addition	2006/1/2	The values for the correction of the areas are up to 15% above the accurate values.- What is the background?- Is this necessary?We recommend deltaA=1,12*hstf (mm**2 per mm corrosion)	This problem has been higlighted. The futur Rule Change will propose to remove the text from 4/2.4.1.3 to 4/2.4.1.5 including the tables, as considered as redundant with the net section properties of bulb profiles defined geometrically by the Figure 4.2.12.	
326	Table 4.2.1	Question	net plastic section modulus	2007/1/5	Section 4.2.4.3: The formula for the effective net plastic section modulus results in very conservative values vs. direct calculations. - What is the background? In our opinion direct calculations of section moduli are acceptable.	The intention of prescribing the rule capacity model is to ensure common application of the requirements. Substitution of Rule calculation by direct calculation methods is not acceptable. As a simpification the rule formulation assumes that the plastic neutral axis resides at the junction between plate and attached stiffener. The formula is therefore a summation of the moment of area about the plastic neutral axis with two corrections: 1)The factor fw accounts for the reduction in effectiveness of the web in carrying normal stress due to web shear. 2)The factor gamma accounts for reduction in effectiveness of the flange due to asymettric bending for unsymmetrical stiffeners.	

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394	4/1.1.5.2	Question	ballast loading condition	2007/2/20	It is specified in 4/1.1.5.2 that the minimum design ballast draught is not to be greater than the minimum ballast draught "Tbal" for any ballast loading condition in the loading manual including both departure and arrival conditions. Does the above "any ballast loading condition in the loading manual" include the ballast water exchange conditions? In other words, is it required in CSR Tankers that any ballast water condition should be carried out in the greater than the above "Tbal" at amidships?	Yes. The wording "any ballast condition" in the definition of "Tbal" includes ballast water exchange conditions. The minimum design ballast draught is to be determined so that the draft is not greater than the minimum ballast draught including ballast water exchange conditions.	
458 attc	4/2.1.1	Question	Double Skin Construction	2007/7/13	Wing ballast tank space is “Double Skin Construction”, and therefore effective bending span of the stiffeners in this space is in general to be obtained in accordance with Figure 4.2.1 for “Double Skin Construction”. However, if an access opening is provided (see attached figure), is it necessary for the stiffener in way of the opening to consider as “Single Skin” and obtain the effective bending span in accordance with Figure 4.2.2?	The mid stiffener as indicated in the attached sketch may be considered as “double skin construction” for the purpose of determining the effective bending span and effective shear span in accordance with Figure 4.2.1 and Figure 4.2.4, respectively, provided that the opening is only in way of one stiffener and that the opening edge, on the side of the stiffener under consideration, is stiffened with a vertical stiffener spanning between the horizontal stiffeners above and below.	Y
463	4/3.2.6.1	Question	block fabrication butt	2009/3/31	Section 4/3.2.6.1 states "Air, drain holes, scallops AND BLOCK FABRICATION BUTTS are to be kept at least 200mm clear of the toes of end brackets , end connections and other areas of high stress concentration measured along the length of the stiffener toward the mid-span and 50mm measured along the length in the opposite direction". [1] In this connection, we presume that if scollop in way of block fabrication butt is closed, this requirement will not apply. Please confirm. [2] If so, the wording "and block fabrication butts" is not necessary and can be removed. Please advise.	If the shear stress is less than 60 percent of the allowable limit then air, drain holes, scallops and block fabrication butts can be located in the area inside 200mm clear of the toes of end brackets, end connections and other areas of high stress and 50mm measured along the length of the opposite direction regardless of whether the openings or the scallops are closed or not closed. If the air, drain holes, and scallops are not closed, the opening is to be deducted for shear stress calculation.	
466	4/Figure 4.3.6	Question	Definition of "dw"	2007/6/12	In the lower part of Figure 4.3.6, "dw" is defined as "minimum depth of the primary support member web stiffener/backing bracket, in mm”. However, “dw” in Figure 4.3.6.(a) is not taken as the minimum depth but is taken as the full depth of the flat bar. This is also not consistent with dw” in Figure 4.3.6.(c), which is taken as the minimum depth at the cutout. It may be more consistent and understandable if “dw” in Figure 4.3.6.(a) is measured similarly to Figure 4.3.6.(c).	We agree that “dw” in Figure 4.3.6.(a) should be taken at the cutout similarly to Figure 4.3.6.(c), i.e. dw=dwc in such case. We will update Figure 4.3.6.(a).	
480 attc	Fig 4.3.1	Question	Stiffeners	2009/4/8	Where a discontinuous stiffener is connected to the stiffener fitted on the back side of the bulkhead or deck, presume that "l-bkt" may be measured including the back side stiffener as shown in the attached Figure. Please confirm.	l-bkt is to be measured excluding the back side stiffener.	Y
599	4/3.2.3.4	Question	Similar requirements of CSR, DNV & LR Rules	2008/1/10	Understand that the requirement of CSR 4/3.2.3.4 is coming from DNV Rules Pt.3 Ch.1 Sec.3 C200 and LR Rules Pt.3 Ch.10 3.4.1. Both DNV and LR source Rules have similar requirements such as: DNV Rules: “In case of different arm lengths a1 and a2, the sum is not to be less than 2a and each arm not less than 0.75a” LR Rules: “a+b>=2.0L, a>=0.8L, b>=0.8L” In view of the above, could you consider similar provision also for CSR 4/3.2.3.4?	Your proposal is noted and will be considered in connection with next revision of the rules.	

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644	Table 4.1.1	Question	Primary Support Members	2008/2/4	According to Table 4.1.1, definition of “Primary Support Members” is as follows: “Members of the beam, girder or stringer type which ensure the overall structural integrity of the HULL ENVELOPE and TANK BOUNDARIES, e.g. double bottom floors and girders, transverse side structure, deck transverses, bulkhead stringers and vertical webs on longitudinal bulkheads”. 1. Based on this definition, understand that deep supporting members (e.g. girders, webs, transverses etc.) fitted on NON-TIGHT BOUNDARIES (e.g. one fitted on wash bulkheads and one fitted on engine room flats etc,) need NOT be treated as “Primary Support Members”. Please confirm. 2. If the above understanding is correct, also understand that the minimum thickness requirements (Table 8.2.2, 8.3.1, 8.4.1, 8.5.1) and the proportion (slenderness) requirements (10/2.3) need NOT be applied to the deep supporting members fitted on non-tight boundaries. Please confirm.	1) The deep supporting members fitted on NON-TIGHT BOUNDARIES are also primary support members. 2) The minimum thickness and proportion (slenderness) requirements are applicable.	
698	4/3.4.3.11	Question	Primary Support Members	2008/3/14	4/3.4.3.11 indicates that "For the welding in way of the shear connection the size is not to be less than that required for the primary support member web plate for the location under consideration" - We understand that the required primary support member plate is based on shear stress of shear connection to the primary support member in 4/3.4.3.5. Considering the weld size req't for the connection just between primary support member and long'l stiffener, we think it will be enough to consider the req't in 4/3.4.3.5 only for the required web plate thickness in application for 4/3.4.3.11. Please confirm if the required plate is based on the above as well as all other requirements such as bending & shear req't of primary support member itself.	We confirm the size of weld shall comply with both 4/3.4.3.11 and 4/3.4.3.5.	
577 attc	Text 4/2	CI	Evaluation of shear strength of primary support member	2008/3/28	Please clarify how to evaluate shear strength of primary support member with curved or shallow brackets	Please see attached file: 3.1 - (CIP) Common Interpretation April 2008	Y
731 attc	4/3.4.2.1	Question	Breadth of the Cut-Out	2008/5/7	1. Sec4/ 3.4.2.1 states that "Cut-outs are to have rounded corners and the corner radii are to be as large as practicable, with a minimum of 20 percent of the breadth of the cut-out or 25mm … ". When the breadth of the actual cut-out differs from that of the standard cut-out as shown the attached sketch, how should the breadth of the actual cut-out be defined? (Wa, Wb or (Wa+Wb)/2) 2. Does the requirement for corner radii apply to all of parts "a","b","c" or only to "a" and "c" in the attached sketch?	1. For definition of 'breadth', see attachment. 2. The requirement apply to 'a' and 'c' only.	Y

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754	Table 4.1.1	Question	“superstructure” and “deck house”	2008/8/29	The following definitions of “superstructure” and “deck house” in Table 4.1.1 of CSR Tanker seem to be incorrect in light of the definitions in 1966 ICLL: Superstructure: A decked structure on the freeboard deck extending for at least 92 percent of the breadth of the ship Deck house: A structure on the freeboard or superstructure deck not extending from side to side of the ship Please revise the definition. For your reference, the following definitions in CSR Bulk Carriers are in line with 1966 ICLL: A superstructure is a decked structure on the free-board deck, extending from side to side of the ship or with the side plating not being inboard of the shell plating more than 0.04B. A deckhouse is a decked structure other than a superstructure, located on the freeboard deck or above.	The definitions of "superstructure" and "deck house" will be updated in accordance with ICLL definitions.	
791 attc	Text 4/3.2.6.1	Question	block joint	2009/3/31	(1) With regard to the knuckled block joints, block butt arrangements shown in Fig.(a) are very common. Since builders generally arrange the knuckled block joint at a nearby PSM as much as possible from the view point of strength, we think that the current requirement is impractical. Therefore, we ask that you please remove the wording “block fabrication butts” from 4/3.2.6.1. (2) We consider that block butt, scallop and drain hole arrangements shown in Fig.(b) have no problem because web stiffeners and tripping brackets are different from end brackets. (3) In the double skin constructions, are those block butt, scallop and drain hole arrangements shown in Fig.(c) acceptable? In such cases, web stiffener without bracket is provided and block butt is kept more than 200mm clear of end connection. However this block butt is kept less than 200mm clear of the bending span point. (4) In the double skin constructions, are those block butt, scallop and drain hole arrangements shown in Fig.(d) acceptable? In such cases, web stiffener with soft toe for fatigue design(not for span correction) is provided and block butt is kept more than 200mm clear of the bending span point. However this block butt is kept less than 200mm clear of the soft toe.	Please refer to the answer in KC ID **463.**	Y
809	4/3.2.5.1	CI	fatigue stress	2009/8/29	These are comments to the present rules CSR tank. Please forward this to relevant party. 1) Section 4 3.2.5 Sniped ends; The formula 3.2.5.1 seems to be wrong. The correct version I think should be : t = c1*sqrt((l-s/2000)*(s*P*k)/1000) I also have the following comments to this formula that can be forwarded for IACS consideration if you find them interesting. 2) c1 for AC2 should maybe be taken as 1.1, corresponding to yield at a region of 3t. 3) Due to fatigue issues the factor for high strength k can safely be removed from the formula above.	Item 1) & 2) has already been identified and will be corrected. Item 3) This requirement is not fatigue related and as such the material factor should remain.	

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864	4/2.3.1	Question	corrugated bulkhead	2008/12/11	Regarding the actual section modulus of corrugated bulkhead, it appears there is no rule in CSR-OT, how to calculate the section modulus for strength evaluation. Could you advise us whether full flange width can be used for calculation of corrugation for strength evaluation in CSR-OT?	We can confirm that the full flange width (i.e. one half pitch of corrugation) is to be used for calculation of corrugation for strength evaluation in CSR-OT.	
936	Figure 4.2.12, 4/2.4.1, 2.4.2 & 2.4.3	CI	net sectional properties	2009/10/23	In these sub-sections (2.4.1 to 2.4.3) formulas are given for the calculation of net sectional properties. There is additionally a figure (Fig. 4.2.12) showing how stiffeners are "corroded"; this figure explicitly shows that the flange ends are also corroded. The formulas in the Rules however do not reflect this principle. Please clarify?	The net sectional properties are to be calculated by corroding the member all over including the ends of the flange. The Rule text will be amended to clarify this intention.	
946	4/3.2.5.1	Question	sloshing pressure	2009/10/23	Q1. Is Section 4/3.2.5.1 applicable to sloshing pressure in accordance with Section 8/6.2.4.1 and 8/6.2.5.3? In this connection, please note that our major concern is web stiffeners on the primary support members since there are many such stiffeners with sniped ends. Please also note that the definition of "P" in Section 4/3.2.5.1 refer to Table 8.2.5, Section 8/3.9.2.2 and 8/4.8.1.2 but neither 8/6.2.4.1 nor 8/6.2.5.3. Please clarify. If affirmative, the rule text needs to be updated. Q2. If the above answer is affirmative, please also clarify which "C1" factor is to be used for sloshing pressure (e.g. 1.2 for AC1 or 1.0 for AC2)?	A1: The requirements are applicable to sloshing pressure. The Rules will be amended to clarify this. A2: On the basis of the principle in Section 2/5.4.1.8 a C1 factor of C1=1.2 should be utilised.	
985	4/3.4.1.4	RCP	soft heel requirements	2009/10/23	Section 4/3.4.1.4 indicates "a soft heel is not required at the intersection with watertight bulkheads, where a back bracket is fitted or where the primary support member web is welded to the stiffener face plate". In this connection, while the above sentence specifies permissible omission of soft heel at intersection with "watertight bulkheads", we presume that the same provision can be also applied for the intersection with ordinary primary support members, where a back bracket is fitted or where the primary support member web is welded to the stiffener face plate, Please note that the last part of the above sentence also indicates "primary support member web is welded to the stiffener face plate", which may not be at "watertight bulkheads". Please confirm, and update the Rule text, as appropriate. If it should be limited to watertight bulkhead intersection only, please advise the reason.	We agree with your interpretation. The Rules will be amended at the next opportunity.	

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986	4/3.2.3.3	CI	net bracket thickness	2009/10/23	CSR-T Sec.4/3.2.3.3 specifies that minimum net bracket thickness is not to be less than 6mm and need not be greater than 13.5mm. According to the CSR Technical Background, this requirement is based on DNV Rules Pt.3 Ch.1 Sec.3 C200. However, there is the following discrepancy between the CSR-T and the DNV Rules. DNV Rules: gross thickness. CSR-T: net thickness. Therefore, please confirm that the net bracket thickness requirement given in CSR-T Sec.4/3.2.3.3 is the correct interpretation of the CSR-T. If this requirement is intended to be the gross bracket thickness as in the DNV Rules, please change the CSR-T.	The formula is taken from the Rules of DNV and has been modified as described in the background document. The minimum and maximum thicknesses are kept to maintain general robustness and reasonable thicknesses.	
996 attc	Table C.1.7 & Fig 4.1.4	CI	Cut-outs in lower stool	2010/3/8	We understand that normal cut-out type for the cloud mark area in the attachment is not acceptable if web stiffener is omitted as described in note 6 of Table C.1.7. However, KC 139 is not clear defining inner longitudinal bulkheads as quoted below; Quote "Note 6 in Table C.1.7 does not apply to inner longitudinal bulkheads" Unquote Our understanding is that inner longitudinal bulkhead in the above means the longitudinal bulkhead as shown in Fig. 4.1.4 and considering the inner hull definition in Table 4.1.1 & MARPOL req't, Note 6 in Table C.1.7 is also applicable to the cloud mark area since the concerned area is boundary between cargo and ballast tank. Please confirm.	In Note 6 of Fig.C.1.7, optimized slots are required in way of flat-barless connections for the inner bottom and hopper, but not the centerline bulkhead. It could be argued that the stool is categorized as part of the longitudinal bulkhead. But considering that the stool is open to the double bottom ballast tank we would categorise it as being part of the inner bottom. The lateral pressure in way of the stool is expected to be close to that on the hopper or inner bottom. Ordinary slots may be permitted if satisfactory fatigue life is demonstrated.	Y
1015	4/2.1.1.8	Question	Effective bending span of flat bar stiffeners	2010/2/12	Rule Ref. : CSR for Tankers/Sec.4/2.1.1.8 Please advise whether Sec.4/2.1.1.8 and Figure 4.2.3 could be applicable to flat bar stiffeners of the same configuration with Figure 4.2.3. They mention 'face plate', so the application to flat bar stiffeners seems to be unclear.	This paragraph is only applicable to stiffeners with a face plate.	
1016	4/2.3.4.3	Question	Effective width of primary supporting members with curved face plates	2010/3/8	The effective width of primary supporting members with curved face plates can be taken in Rules Sec 4/2.3.4.3 provided radial brackets are fitted on the flange side or attached plating are supported by cylindrical stiffeners. The effective width of the curved face plates is much bigger than the effective width of the flat surface plates based on Sec 4/2.3.2. Effective width of primary supporting members from Sec 4/2.3.2 is too small in comparison to the pre-CSR (33% of unsupported span). Is it possible that the longitudinal stiffeners on the side shell plate are considered as cylindrical stiffeners in this case? Your prompt reply on this matter would be highly appreciated	Use of the effective area concept for a curved plate should strictly limited to those as defined in the rules 4/2.3.4. As explained in the technical background, the efficiency of the curved plate in terms of bending moment has been considered in the formulation. Therefore longitudinal stiffeners on the flat side shell are not considered as effective as cylindrical stiffeners for a curved plate. It was intended to take a conservative estimate for effective breadth for flat plate.	

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1076	Text 4/3.3.2.2, 4/3.3.3.4	Question	Free edges length of the brackets at the end of PSM	2010/11/4	Could this conclusion be made that when free edge length is greater than 1.5m, free edge should be stiffened according to CSR-DHOT SECTION 4.3/PAGE 6 3.3.2.2 The ends of brackets are generally to be soft-toed. The free edges of the brackets are to be stiffened. Scantlings and details are given in 3.3.3. and 3.3.3.4 Face plates of brackets (typical brackets similar to those indicated in Figure 4.2.7b) are to have a net cross-sectional area, Af-net, which is not to be less than: Where: lbkt-edge length of free edge of bracket, in m. For brackets that are curved the length of the free edge may be taken as the length of the tangent at the midpoint of the free edge. If lbkt-edge is greater than 1.5m, 40 percent of the face plate area is to be in a stiffener fitted parallel to the free edge and a maximum 0.15m from the edge tbkt-net minimum net bracket thickness, in mm, as defined in 3.2.3.3	Your understanding is not correct. The Rules state that the free edges of the bracket are to be stiffened. In addition, if the length of the free edge of the bracket is greater than 1.5m, then 40 percent of the face plate area is to be in a stiffener fitted parallel to the free edge and a maximum 0.15m from the edge. If the free edge of the bracket, l_bkt-edge, is greater than 1.5m, then "40 % of the face plate" is to be calculated by 0.4 x PSM's face plate area.	
1078 attc	Tanker Figure 4.2.16	Question	Definition of distance between opening edge and slot for CSR Tanker	2010/11/4	Definition of distance between opening edge and slot for CSR Tanker? (Original request: Please refer to attachment)	The requirements concerning small openings such as lightening holes are provided in the Rules Section 4/3.5.1 to 3.5.4. We will however retain your comment for consideration during the harmonisation of the two CSR Rules.	Y
1098	4.3/3.2.3	Question	Definition of length for bracketed connection	2011/10/5	The CSR-DHOT required the end bracket arm length in SECTION 4.3/3.2.3 Bracketed connections. This arm length includes the height of the attached stiffener and the height of the bracket. (lbkt=hstf+the height of the bracket) But according to SECTION 4.3/3.3.3 Brackets, the arm lengths of brackets mentioned above is obviously equal to the height of the bracket. (lbkt=the height of the bracket) So I suggested clear clauses to be issued.	Paragraph 4.3/3.2.3 is concerning Local Support Members. Height of the stiffener is included in lbkt only when the bracket and stiffener is on the same side. Paragraph 4.3/3.3.3 is concerning Primary Support Members. In 4.3/3.2.3, The term “lbkt” is, in general, defined including the height of the stiffener (lbkt=hstf+actual height of bracket) In 4.3/3.3.3, the actual bracket height is required to be not less than web depth of PSM member. For LSMs Rules require in 3.2.3.4 that “lbkt” is not less than 2 times the depth of stiffener web. For PSMs Rules require in 3.3.3.1 that actual bracket height are not less than web depth of PSM member. Your question will be retained and passed to harmonisation project for further consideration and clarification.	

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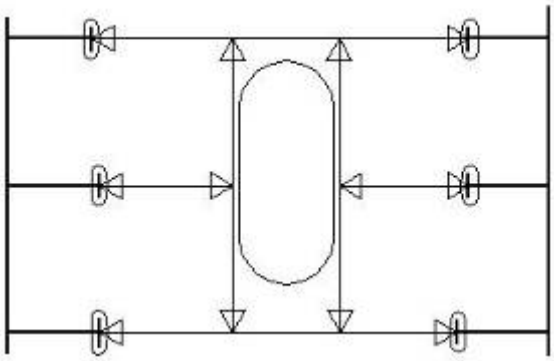
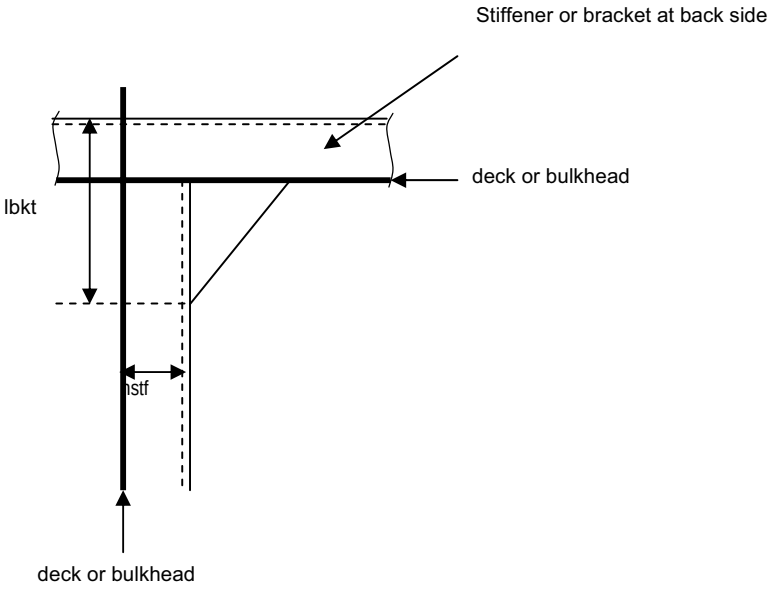
1104	4/3.6.1.2	Interpretation	Interpretation for the knuckle reinforcement	2011/5/16	Knuckle reinforcement 4/3.6.1.2: Please clarify 1) "In general" means mandatory requirement ? 2) "shallow knuckle" is there any reference angle ?	Item 1) In general means that it is a general text included to clarify that some knuckles are, in general, exempted from the requirements of knuckle reinforcement because of their configuration and the manner in which they are loaded. However, it does refer to the experience of shipbuilding standard that has been proven to be a good practice. Item 2) There is no reference angle. Each case should be considered on the basis of configuration and loading.	
1106	4/3.3.4.1	Interpretation	To confirm if the bracket toe greater than thickness of the bracket can be acceptable if fine mesh analyses is carried out and results found within the critieria.	2011/9/21	Bracket toes 4/3.3.4.1: The toes of brackets are not to land on unstiffened plating. Notch effects at the toes of brackets may be reduced by making the toe concave or otherwise tapering it off. In general, the toe height is not to be greater than the thickness of the bracket toe, but need not be less than 15mm. The end brackets of large primary support members are to be soft-toed. Where any end bracket has a face plate, it is to be sniped and tapered at an angle not greater than 30. Question : There is no alternative solution for general design guidance for bracket toe so alternativly the bracket toe greater than thickness of the bracket can be acceptable if fine mesh analyses is carried out and found results within the critieria. Please confirm.	The bracket toe height greater than thickness of the bracket toe can be acceptable if fine mesh analyses is carried out in accordance with Appendix B and found results within the critieria.	

KC#458

Figure for KC ID 458



KC#480


Stiffener or bracket at back side
deck or bulkhead
lbkt
lstf
deck or bulkhead

CI-T 4 (Mar. 2008) Optional shear check for primary support members with curved brackets or shallow brackets

Rule Section

4/2.1.5 Effective shear span of primary support members
4/2.5 Geometrical Properties of Primary Support Members

Description

Procedure for the optional shear check for primary support members with curved brackets or shallow brackets.

Common Procedure

1. General

1. In general, shear check is to be carried out at the end of shear span, Section A, with offered shear depth excluding the bracket part in accordance with 4/2.1.5 and Figure 4.2.8.

2. If the shear requirement is satisfied at this section, then no further shear check is necessary. If a curved bracket or a shallow bracket is fitted as shown in the above figure, and the offered shear requirement is NOT satisfied, then the procedure as per item 3 may be applied.

3. The shear requirement is considered to be satisfied if the shear requirement is satisfied by following two additional shear checks concurrently:

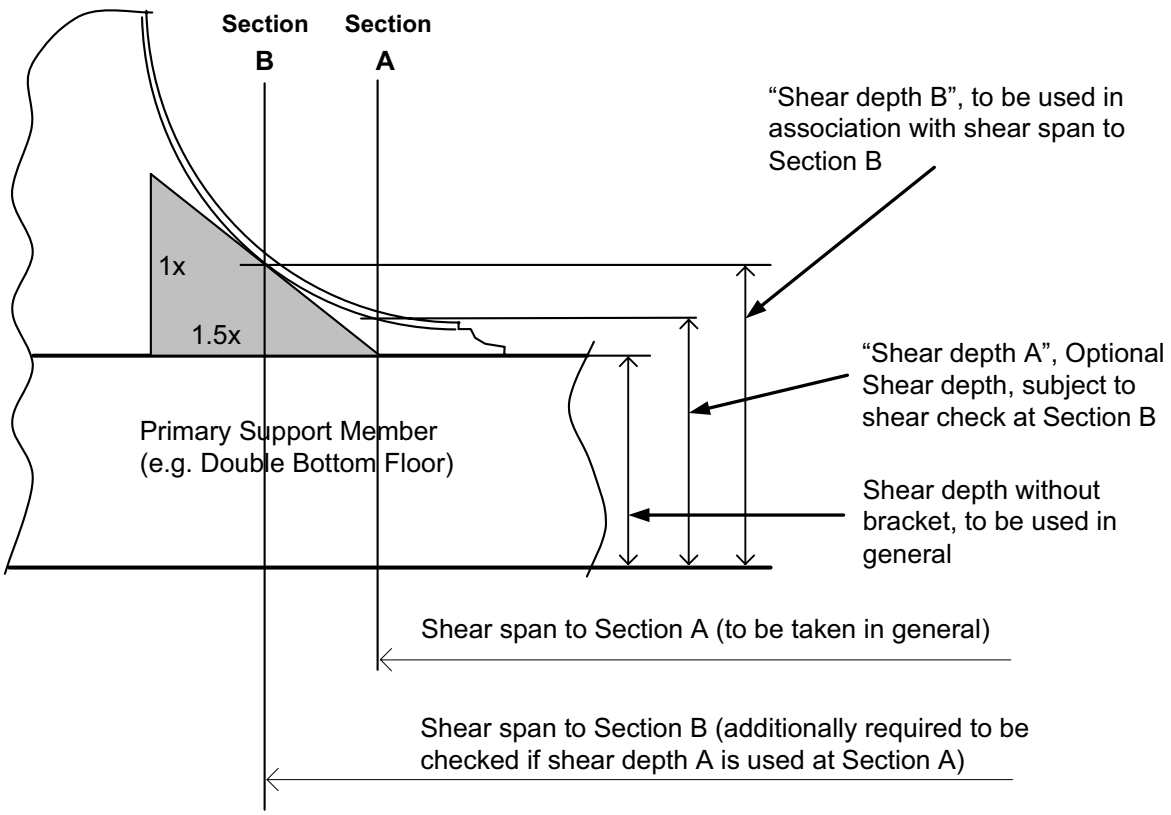
(a) Check the shear requirement at Section A with the shear span measured to Section A and the offered shear depth including the bracket part web “shear depth A”.

(b) Check the shear requirement at Section B with the shear span measured to Section B and the offered shear depth including the bracket part “shear depth B”. At this section, the effective shear area may be calculated in accordance with 4/2.5.1.4 with the following formula considering the sloping face plate:

$$A_{w\text{-}net50} = 0.01\, h_n\, t_{w\text{-}net50} + 1.3\, A_{f\text{-}net50} \sin 2\theta \sin\theta$$

Figure

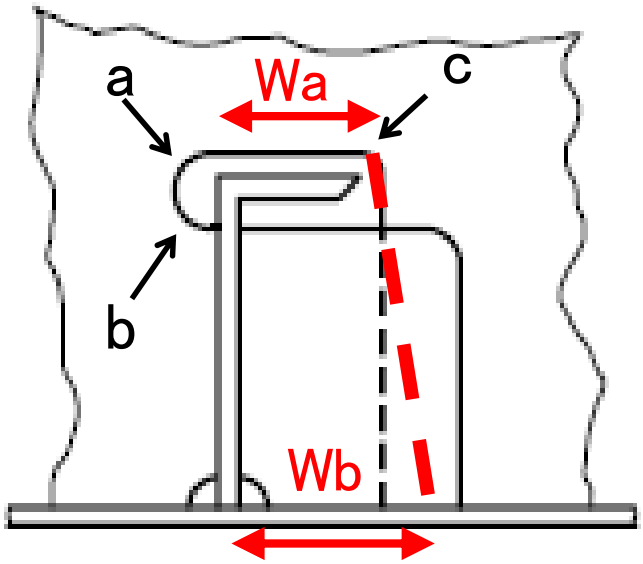
Definition of shear span

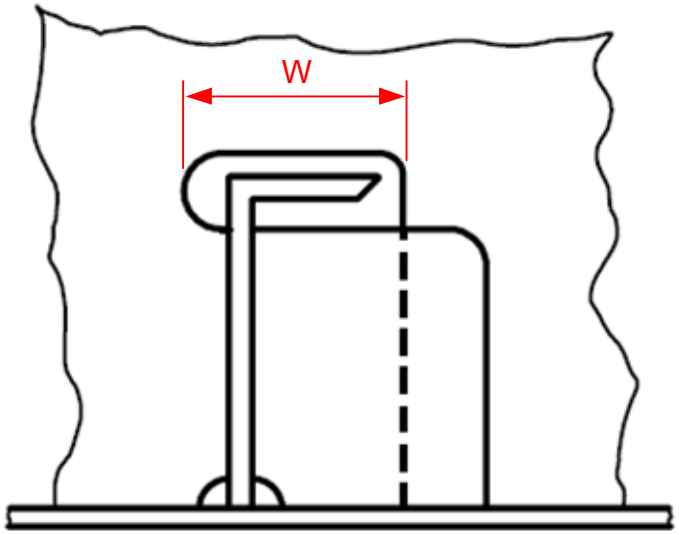


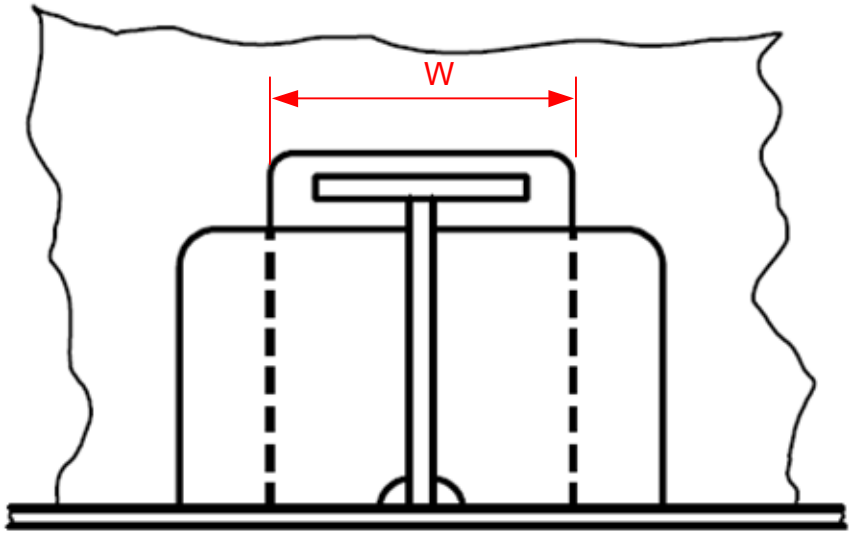
Implementation date

This CI is effective from 1 April 2008.

KC#731




W


W

KC#791

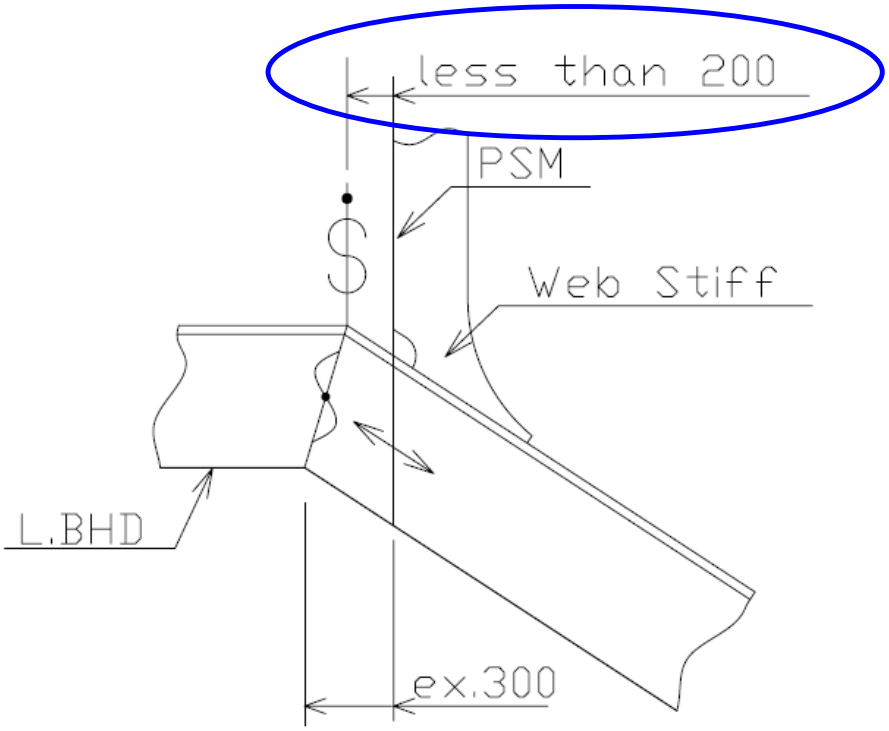


Fig.(a) Knuckled block joint

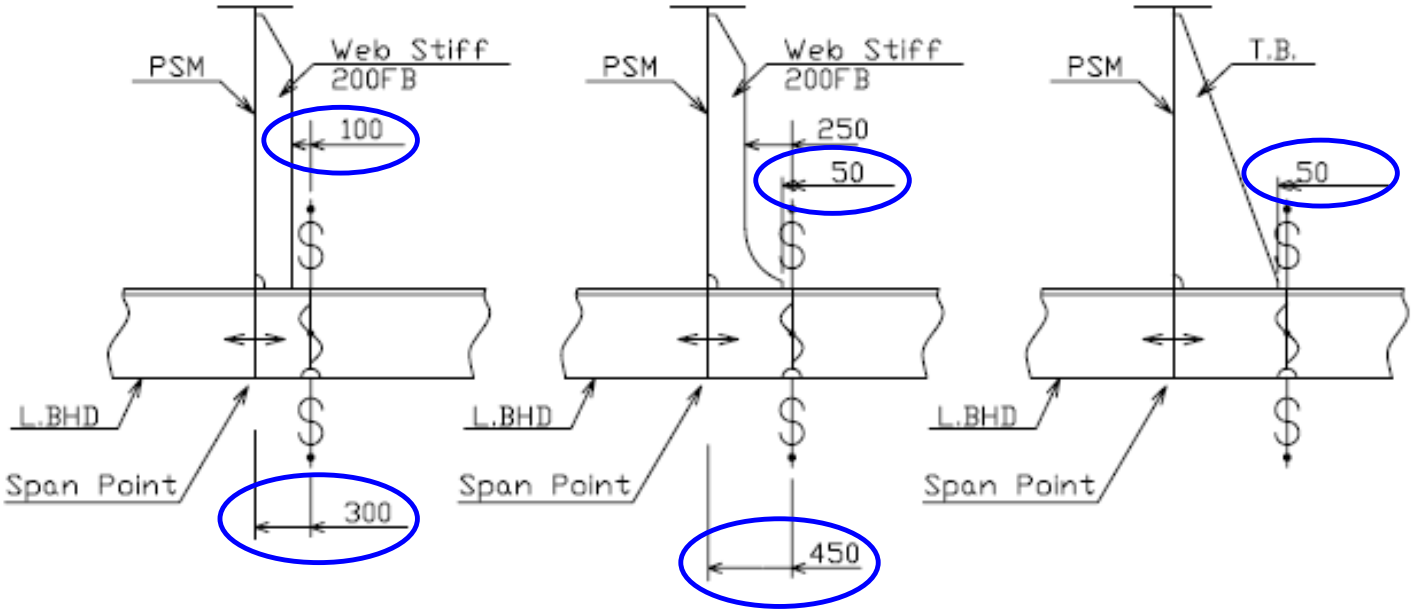


Fig.(b) Block butt arrangements in single skin constructions

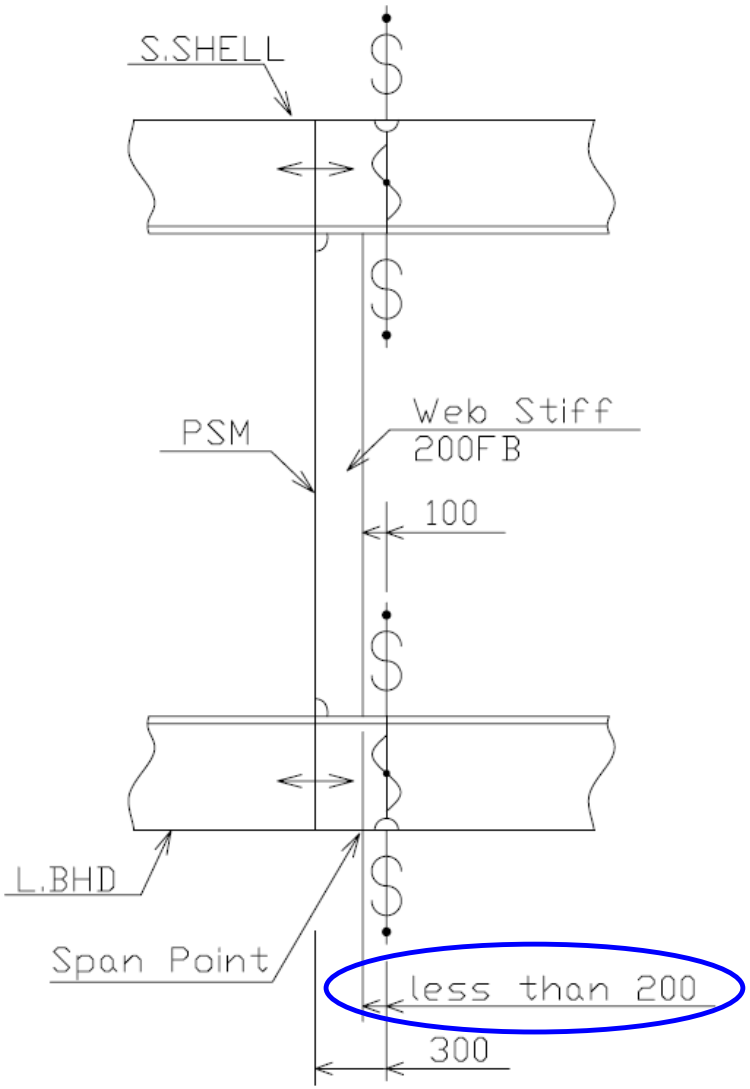


Fig.(c) Block butt arrangement in double skin construction(1)

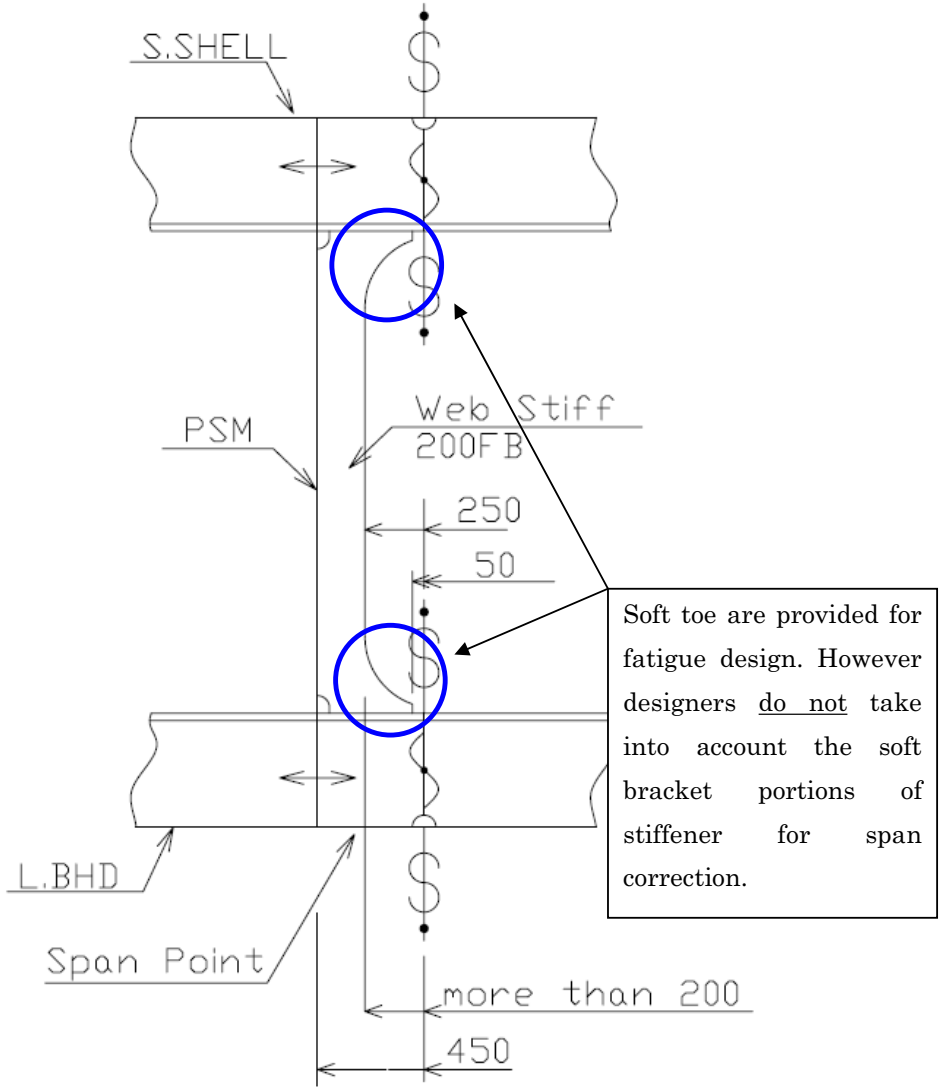
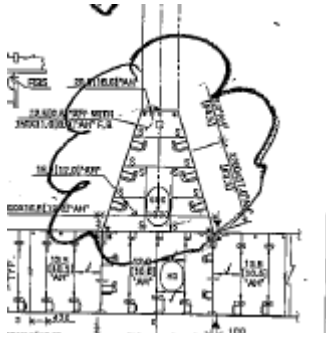


Fig.(d) Block butt arrangement in double skin construction(2)

KC#996



KC#1078

CSR-BC required the distance between opening edge and slot 'a>=φ'.

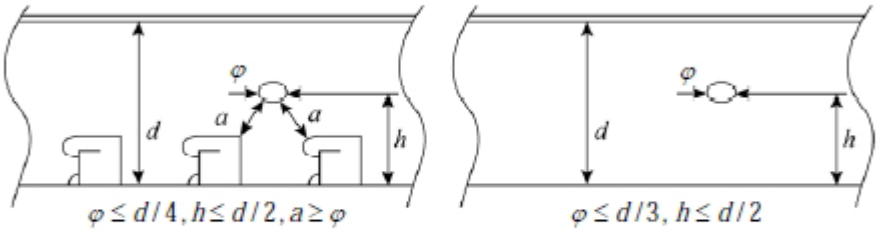


Figure 15: Location and dimensions of lightening holes

Where lightening holes are cut in the brackets, the distance from the circumference of the hole to the free flange of brackets is not to be less than the diameter of the lightening hole.

While there is no such requirement for tanker.

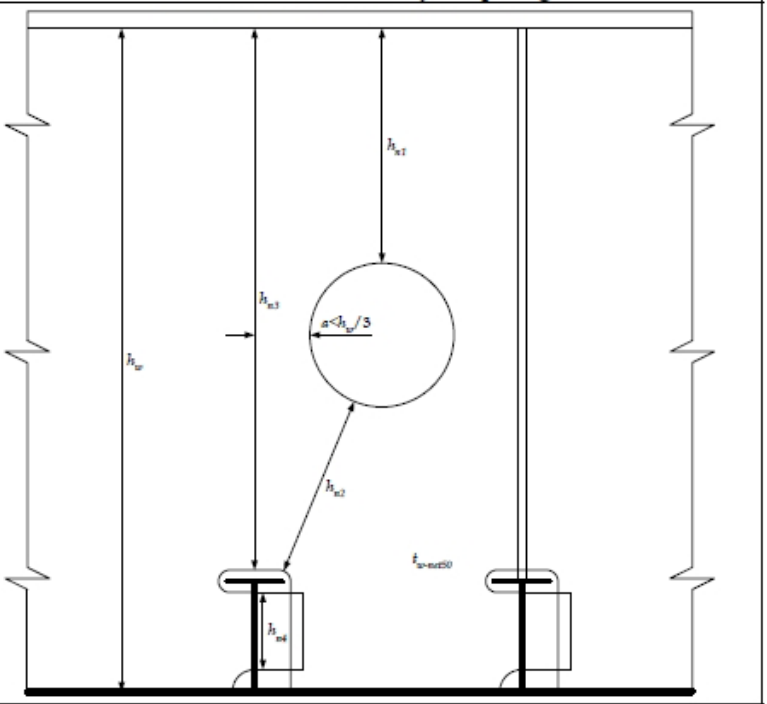
$t_{w\text{-}grs}$ gross web thickness, in mm

t_{corr} corrosion addition, as given in *Section 6/3.2*, in mm

φ_w angle between the web and attached plating, see *Figure 4.2.14*, in degrees. φ_w is to be taken as 90 degrees if the angle is greater than or equal to 75 degrees

(RCN 2, effective from 1 July 2008)

Figure 4.2.16
Effective Shear Area in way of Openings

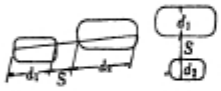
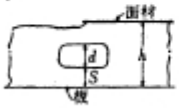
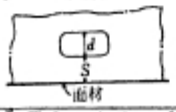
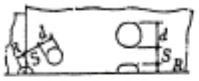
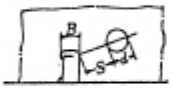


Note
The figure shows effective web height for a single skin primary support member. The effective web height of a double skin primary support member follows the same principles.

2.5.1.3 Where an opening is located at a distance less than $h_w/3$ from the cross-section considered, h_n is to be taken as the smaller of the net height and the net distance through the opening. See *Figure 4.2.16*.

The minimum distance below is obtained from a Japanese publication named '造船設計便覽' by 関西造船協會.

表14（1） 孔と孔，又は孔と部材の縁との最小距離（S）

	S	
	A区域	B区域
（1）孔と孔 	$\frac{d_1+d_2}{2}$	d_1+d_2
（2）孔と板 	*1 $\frac{d}{2}$	*1 d
（3）孔と面材 	d	$2d$
（4）孔とスカラップ，セレーション 	$\frac{d+R}{2}$	$d+R$
（5）孔と切欠き 	$\frac{d+B}{2}$	$d+B$
（6）切欠きと切欠き 	*2 $S_1 \geqq 2B$ $S_2 \geqq 2d$ かつ $S_1 \geqq 2B$	—

注）

1. 一般に，孔のまわりに同厚の二重張り又は半鋼を設けるときは，二重張り板又は半鋼の幅の ½ だけ S を減じてもよい．ただし，標準の ½ より小さくしてはいけない．
2. *1 板の反対側に，ウエブと同一面内に部材があるときは，適当に斟酌してよい．

その部材のセレーションと同等の深さの孔については，S に制限はない．

*2，カラープレートを設ける場合

$S_3 \geqq B$　$S_4 \geqq 2B$　$S_5 \geqq B$

表14（2） 特殊な孔の補強例

（1）孔の長さが孔の深さの2倍以内で孔の深さが許容深さを超える場合

（2）孔の深さが許容範囲内にあっても長さが深さの2倍を超える場合は，開孔上下部の局部曲げに対して補強を行う．

（3）孔の深さも長さも許容範囲を超える場合は，開孔上下部の局部曲げに対する補強，孔のために失われた断面積に対する補強及び開孔前後縁に対する補強を行う．

I wonder would you like to limit the distance between opening edge and slot for CSR tankers?