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**UNIFIED INTERPRETATIONS FOR THE APPLICATION OF CHAPTER 2 OF THE
2009 MODU CODE AND THE REVISED TECHNICAL PROVISIONS FOR MEANS
OF ACCESS FOR INSPECTIONS (RESOLUTION MSC.158(78))**

1 The Maritime Safety Committee, at its ninety-sixth session (11 to 20 May 2016), approved the unified interpretations for the application of chapter 2 of the 2009 MODU Code, and the *Revised technical provisions for means of access for inspections* (resolution MSC.158(78)), prepared by the Sub-Committee on Ship Design and Construction, at its third session (18 to 22 January 2016), as set out in the annex, with a view to ensuring a uniform approach towards the application of the provisions of the 2009 MODU Code.

2 Member States are invited to apply the annexed unified interpretations and to bring them to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS FOR THE APPLICATION OF CHAPTER 2 OF THE 2009 MODU CODE AND THE REVISED TECHNICAL PROVISIONS FOR MEANS OF ACCESS FOR INSPECTIONS (RESOLUTION MSC.158(78))

2009 MODU Code

2.2.1 Means of access

Paragraph 2.2.1.2

1 Some possible alternative means of access are listed under paragraph 3.9 of the MODU Technical Provisions for means of access for inspection (MODU TP). Always subject to acceptance as equivalent by the Administration, alternative means such as an unmanned robot arm, ROVs with necessary equipment of the permanent means of access for overall and close-up inspections and thickness measurements of the deck head structure, such as deck transverses and deck longitudinals of ballast tanks and other tanks, holds and other spaces where gas hazardous atmosphere may be present, should be capable of:

- .1 safe operation in ullage space in gas-free environment; and
- .2 introduction into the place directly from a deck access.

2 When considering use of alternative means of access as addressed by paragraph 3.9 of the MODU TP, refer to IACS Recommendation No.91 "Guidelines for Approval/Acceptance of Alternative Means of Access".

Paragraph 2.2.1.3

3 This interpretation is to be contained in a section of the Means of Access (MA) Manual, as specified in the *Revised technical provisions for means of access for inspections* (resolution MSC.158(78)).

2.2.2 Safe access to holds, tanks, ballast tanks and other spaces

4 This regulation is only applicable to integral tanks. Independent tanks can be excluded. Additionally, spud cans and jack cases of self-elevating units can be excluded.

5 The wording "not intended for the carriage of oil or hazardous materials" applies only to "similar compartments", i.e. safe access can be through a pump-room, deep cofferdam, pipe tunnel, cargo hold or double hull space.

Paragraph 2.2.2.2

6 A tank of less than 35 m in length without a swash bulkhead requires only one access hatch.

7 Where rafting is indicated in the access manual as the means to gain ready access to the under deck structure, the term "*similar obstructions*" referred to in the regulation includes internal structures (e.g. webs > 1.5 m deep) which restrict the ability to raft (at the maximum water level needed for rafting of under deck structure) directly to the nearest access ladder and hatchway to deck. When rafts or boats alone, as an alternative means of access, are allowed, permanent means of access should be provided to allow safe entry and exit. This means:

- .1 access direct from the deck via a vertical ladder and small platform fitted approximately 2 m below the deck in each bay; or

- .2 access to deck from a longitudinal permanent platform having ladders to deck in each end of the tank. The platform should, for the full length of the tank, be arranged in level with, or above, the maximum water level needed for rafting of under deck structure. For this purpose, the ullage corresponding to the maximum water level should be assumed not more than 3 m from the deck plate measured at the midspan of deck transverses and in the middle length of the tank. A permanent means of access from the longitudinal permanent platform to the water level indicated above should be fitted in each bay (e.g. permanent rungs on one of the deck webs inboard of the longitudinal permanent platform).

2.2.3 Access manual

8 The access manual* is to address spaces listed in section 2.2.2 of the Code. As a minimum, the English version should be provided.

9 The access manual should contain at least the following two parts:

Part 1: Plans, instructions and inventory required by paragraphs .1.1 to .1.7 of section 2.2.3.1. This part is to be approved by the Administration or the organization recognized by the Administration.

Part 2: Form of record of inspections and maintenance, and change of inventory of portable equipment due to additions or replacement after construction. This part is to be approved for its form only at new building.

10 The following matters should be addressed in the access manual:

- .1 the access manual should clearly cover scope as specified in the regulations for use by crews, surveyors and port State control officers;
- .2 approval / re-approval procedure for the manual, i.e. any changes of the permanent, portable, movable or alternative means of access within the scope of the regulation and the Technical provisions are subject to review and approval by the Administration or by the organization recognized by the Administration;
- .3 verification of MA should be part of safety construction survey for continued effectiveness of the MA in that space which is subject to the statutory survey;
- .4 inspection of MA by the crew and/or a competent inspector of the company as a part of regular inspection and maintenance (see interpretation for paragraph 2.2.1.3);
- .5 actions to be taken if MA is found unsafe to use; and
- .6 in case of use of portable equipment, plans showing the means of access within each space indicating from where and how each area in the space can be inspected.

* Refer to IACS Recommendation No.90 "Ship Structural Access Manual".

Paragraph 2.2.3.2

11 Critical structural areas should be identified by advanced calculation techniques for structural strength and fatigue performance, if available, and feedback from the service history and design development of similar or sister units.

2.2.4 General technical specifications

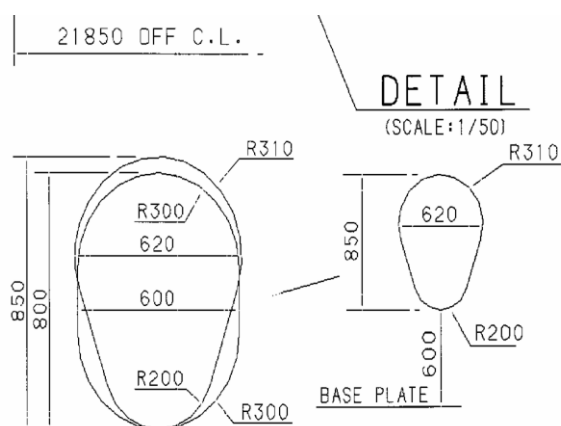
Paragraph 2.2.4.1

12 The minimum clear opening of 600 mm x 600 mm may have corner radii up to 100 mm maximum. The clear opening is specified in the *Guidelines on the means of access to structures for inspection and maintenance of oil tankers and bulk carriers* (MSC/Circ.686) to keep the opening fit for passage of personnel wearing breathing apparatus. In such a case, where as a consequence of structural analysis of a given design the stress should be reduced around the opening, it is considered appropriate to take measures to reduce the stress such as making the opening larger with increased radii, e.g. 600 mm x 800 mm with 300 mm radii, in which a clear opening of 600 mm x 600 mm with corner radii up to 100mm maximum fits.

Paragraph 2.2.4.2

13 The minimum clear opening of not less than 600 mm x 800 mm may also include an opening with corner radii of 300 mm. An opening of 600 mm in height x 800 mm in width may be accepted as access openings in vertical structures where it is not desirable to make large opening in the structural strength aspects, i.e. girders and floors in double bottom tanks.

14 Subject to verification of easy evacuation of injured person on a stretcher the vertical opening 850 mm x 620 mm with wider upper half than 600 mm, while the lower half may be less than 600 mm with the overall height not less than 850 mm is considered an acceptable alternative to the traditional opening of 600 mm x 800 mm with corner radii of 300 mm.



15 If a vertical opening is at a height of more than 600 mm, steps and handgrips are to be provided. In such arrangements it is to be demonstrated that an injured person can be easily evacuated.

Revised technical provisions for means of access for inspections (resolution MSC.158(78))

1 Preamble

16 In the context of the above requirement, the deviation should be applied only to distances between integrated PMA that are the subject of paragraph 2.1.2 of table 1.

17 Deviations should not be applied to the distances governing the installation of underdeck longitudinal walkways and dimensions that determine whether permanent access are required or not, such as height of the spaces and height to elements of the structure (e.g. cross-ties).

3 Technical provisions

Paragraph 3.1

18 The permanent means of access to a space can be credited for the permanent means of access for inspection.

Paragraphs 3.2 and 3.3

19 Sloping structures are structures that are sloped by 5 or more degrees from horizontal plane when a unit is in upright position at even-keel.

20 Guard rails should be fitted on the open side. For stand-alone passageways guard rails should be fitted on both sides of these structures.

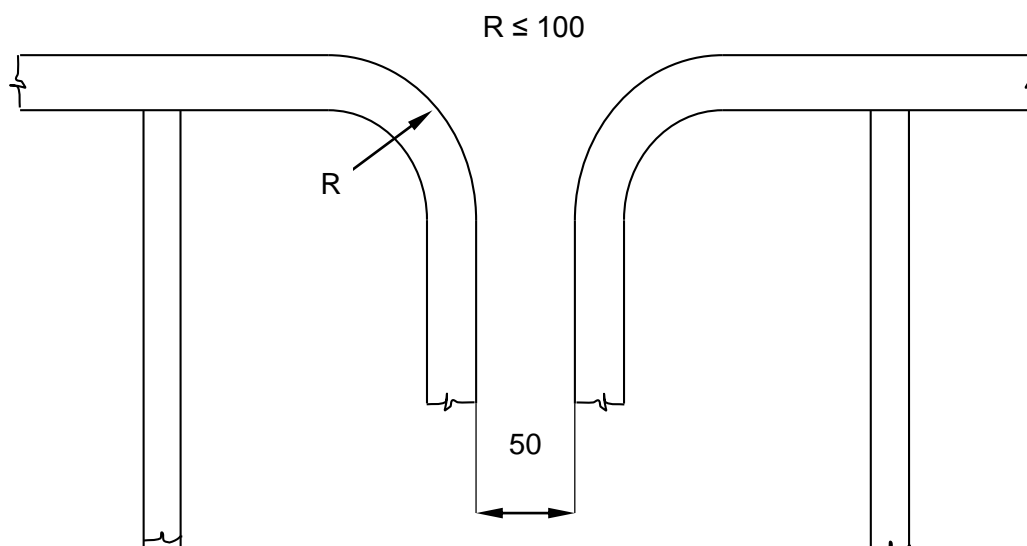
21 Discontinuous top handrails are allowed, provided the gap does not exceed 50 mm.

22 The same maximum gap is to be considered between the top handrail and other structural members (i.e. bulkhead, web frame, etc.).

23 The maximum distance between the adjacent stanchions across the handrail gaps should be 350 mm where the top and mid handrails are not connected together and 550 mm when they are connected together.

24 The maximum distance between the stanchion and other structural members should not exceed 200 mm where the top and mid handrails are not connected together and 300 mm when they are connected together.

25 When the top and mid handrails are connected by a bent rail, the outside radius of the bent part should not exceed 100 mm (see figure below).



26 Non-skid construction is such that the surface on which personnel walks provides sufficient friction to the sole of boots even if the surface is wet and covered with thin sediment.

27 "Substantial construction" is taken to refer to the designed strength as well as the residual strength during the service life of the unit. Durability of passageways together with guard rails should be ensured by the initial corrosion protection and inspection and maintenance during services.

28 For guard rails, use of alternative materials such as GRP should be subject to compatibility with the liquid carried in the tank. Non-fire resistant materials should not be used for means of access to a space with a view to securing an escape route at a high temperature.

29 Requirements for resting platforms placed between ladders are equivalent to those applicable to elevated passageways.

Paragraph 3.4

30 Where the vertical manhole is at a height of more than 600 mm above the walking level, it should be demonstrated that an injured person can be easily evacuated.

Paragraph 3.6

31 Vertical height of handrails should not be less than 890 mm from the centre of the step and two course handrails are to be provided.

32 The requirement of two square bars for treads specified in MODU TP, paragraph 3.6, is based upon the specification of construction of ladders in paragraph 3(e) of annex 1 to resolution A.272(VIII), which addresses inclined ladders. MODU TP, paragraph 3.4, allows for single rungs fitted to vertical surfaces, which is considered for a safe grip. For vertical ladders, when steel is used, the rungs are to be formed of single square bars of not less than 22 mm by 22 mm for the sake of safe grip.

33 The width of inclined ladders for access to a hold should be at least 450 mm to comply with the Australian AMSA Marine Orders Part 32, Appendix 17.

34 The width of inclined ladders other than an access to a hold should not be less than 400 mm.

35 The minimum width of vertical ladders should be 350 mm and the vertical distance between the rungs is to be equal and should be between 250 mm and 350 mm.

36 A minimum climbing clearance in width should be 600 mm other than the ladders placed between the hold frames.

37 The vertical ladders should be secured at intervals not exceeding 2.5 m apart to prevent vibration.

Paragraphs 3.7 to 3.9

38 A mechanical device such as hooks for securing at the upper end of a ladder should be considered as an appropriate securing device if a movement fore/aft and sideways can be prevented at the upper end of the ladder.

Paragraphs 3.10 and 3.11

39 See interpretation for paragraphs 2.2.4.1 and 2.2.4.2 of 2009 MODU Code (paragraphs 12 to 15 above).

Paragraphs 3.12 and 3.13

40 Either a vertical or an inclined ladder or a combination of them may be used for access to a large hold where the vertical distance is 6 m or less from the deck to the bottom of the hold.

41 Adjacent sections of vertical ladder need to be installed so that the following provisions are complied with (refer to figures A and B):

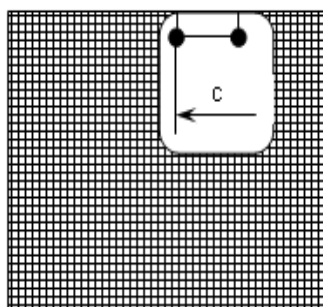
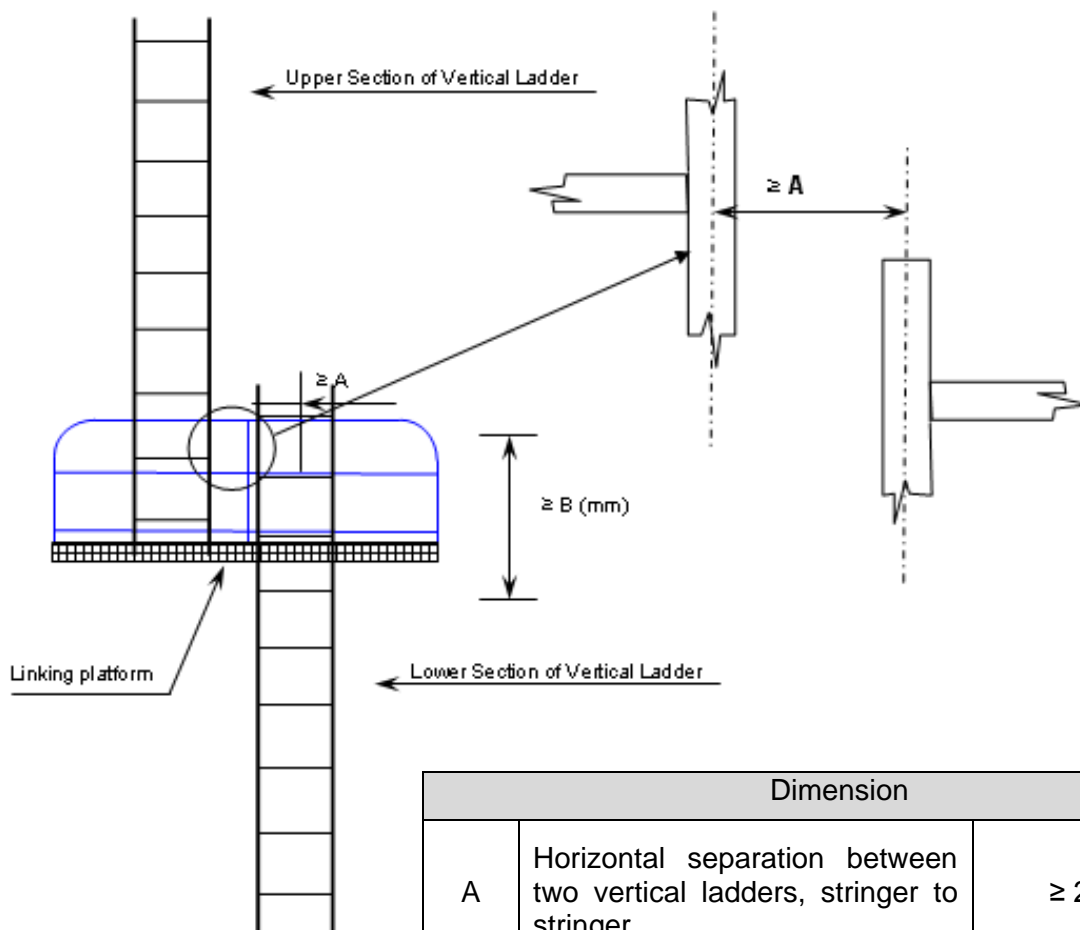
- The minimum "lateral offset" between two adjacent sections of vertical ladder, is the distance between the sections, upper and lower, so that the adjacent stringers are spaced of at least 200 mm, measured from half thickness of each stringer.
- Adjacent sections of vertical ladder should be installed so that the upper end of the lower section is vertically overlapped, in respect to the lower end of the upper section, to a height of 1500 mm in order to permit a safe transfer between ladders.
- No section of the access ladder should be terminated directly or partly above an access opening.

Paragraph 3.14

42 Deck is defined as "weather deck".

Figure "A"

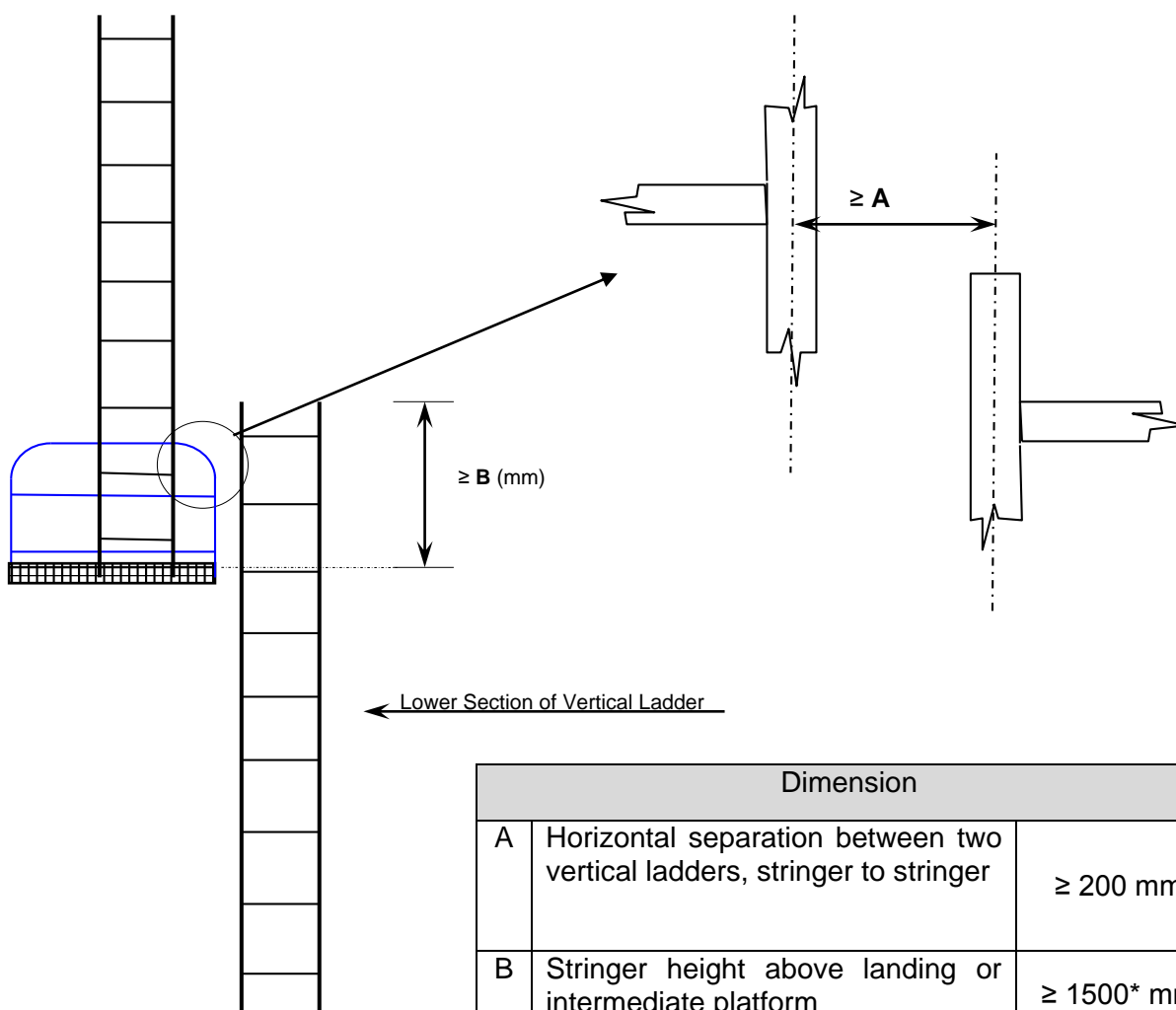
Vertical Ladder – Ladder through the linking platform



Dimension		
A	Horizontal separation between two vertical ladders, stringer to stringer	≥ 200 mm
B	Stringer height above landing or intermediate platform	$\geq 1500^*$ mm
C	Horizontal separation between ladder and platform	$100 \text{ mm} \leq C < 300$ mm
* Note: the minimum height of the handrail of resting platform is 1000 mm (Technical Provision, resolution MSC.158(78), paragraph 3.3)		

Figure "B"

Vertical Ladder – Side mount



Dimension		
A	Horizontal separation between two vertical ladders, stringer to stringer	≥ 200 mm
B	Stringer height above landing or intermediate platform	$\geq 1500^*$ mm
C	Horizontal separation between ladder and platform	$100 \text{ mm} \leq C < 300 \text{ mm}$

*Note: the minimum height of the handrail of resting platform is 1000 mm (Technical Provision, resolution MSC.158(78), paragraph 3.3)

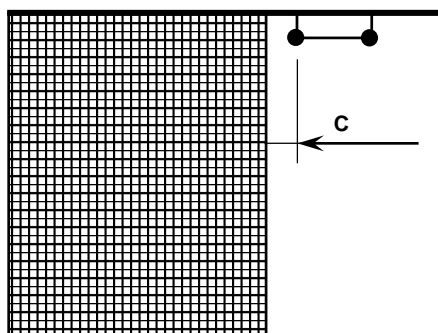


Table 1 – Means of access, paragraph 1.1

43 For tanks containing oil products other than crude oil (e.g. fuel oil, diesel oil, base oil) where lower corrosion is expected, section 1.1 of table 1 should not be applied. For tanks containing products considered corrosive (e.g. brine, drilling mud), section 1.1 should be applied.

44 Sub-paragraphs .1 to .3 define access to underdeck structure, access to the uppermost sections of transverse webs and connection between these structures.

45 Sub-paragraphs .4 to .6 define access to vertical structures only and are linked to the presence of transverse webs on longitudinal bulkheads.

46 If there are no underdeck structures (deck longitudinals and deck transverses) but there are vertical structures in the tank supporting transverse and longitudinal bulkheads, access in accordance with sub-paragraphs .1 to .6 should be provided for inspection of the upper parts of vertical structure on transverse and longitudinal bulkheads.

47 If there is no structure in the tank, section 1.1 of table 1 should not be applied.

48 The vertical distance below the overhead structure should be measured from the underside of the main deck plating to the top of the platform of the means of access at a given location.

49 The height of the tank should be measured at each tank. For a tank the height of which varies at different bays, item 1.1 should be applied to such bays of a tank that have height 6 m and over.

Table 1 – Means of access, paragraph 1.1.2

50 There is need to provide continuous longitudinal permanent means of access when the deck longitudinals and deck transverses are fitted on deck but supporting brackets are fitted under the deck.

Table 1 – Means of access, paragraph 1.1.3

51 Means of access to tanks may be used for access to the permanent means of access for inspection.

Table 1 – Means of access, paragraph 1.1.4

52 The permanent fittings required to serve alternative means of access, such as wire lift platform, that are to be used by crew and surveyors for inspection should provide at least an equal level of safety as the permanent means of access stated by the same paragraph. These means of access should be carried on board the unit and be readily available for use without the filling of water in the tank.

53 Therefore, rafting should not be acceptable under this provision.

54 Alternative means of access should be part of the Access Manual which is to be approved on behalf of the flag State.

Table 1 – Means of access paragraph 2.1

55 Paragraph 2.1.1 represents requirements for access to underdeck structures, while paragraph 2.1.2 is a requirement for access for survey and inspection of vertical structures on longitudinal bulkheads (transverse webs).

Table 1 – Means of access, paragraph 2.1.1

56 For a tank, the vertical distance between horizontal upper stringer and deck head of which varies at different sections, item 2.1.1 should be applied to such sections that fall under the criteria.

57 The continuous permanent means of access may be a wide longitudinal, which provides access to critical details on the opposite side by means of platforms as necessary on web frames. In case the vertical opening of the web frame is located in way of the open part between the wide longitudinal and the longitudinal on the opposite side, platforms should be provided on both sides of the web frames to allow safe passage through the web frame.

58 Where two access hatches are required by the 2009 MODU Code, paragraph 2.2.2.2, access ladders at each end of the tank should lead to the deck.

Table 1 – Means of access, paragraph 2.1.2

59 The continuous permanent means of access may be a wide longitudinal, which provides access to critical details on the opposite side by means of platforms as necessary on web frames. In case the vertical opening of the web is located in way of the open part between the wide longitudinal and the longitudinal on the opposite side, platforms should be provided on both sides of the web to allow safe passage through the web.

60 A "reasonable deviation", as noted in MODU TP, paragraph 1.4, of not more than 10% may be applied where the permanent means of access is integral with the structure itself.

Table 1 – Means of access, paragraph 2.2

61 Permanent means of access between the longitudinal continuous permanent means of access and the bottom of the space should be provided.

62 The height of a bilge hopper tank located outside of the parallel part of the unit should be taken as the maximum of the clear vertical distance measured from the bottom plating to the hopper plating of the tank.

63 The foremost and aftmost bilge hopper ballast tanks with raised bottom, of which the height is 6 m and over, a combination of transverse and vertical MA for access to the upper knuckle point for each transverse web should be accepted in place of the longitudinal permanent means of access.

Table 1 – Means of access, paragraph 3.1

64 Means of access should be provided to the crossdeck structures of the foremost and aftermost part of the each hold.

65 Interconnected means of access under the cross deck for access to three locations at both sides and in the vicinity of the centreline should be acceptable as the three means of access.

66 Permanent means of access fitted at three separate locations accessible independently, one at each side and one in the vicinity of the centreline, should be acceptable.

67 Special attention should be paid to the structural strength where any access opening is provided in the main deck or cross deck.

Table 1 – Means of access, paragraph 3.3

68 Particular attention should be paid to preserve the structural strength in way of access opening provided in the main deck or cross deck.

Table 1 – Means of access, paragraph 3.4

69 The movable means of access to the underdeck structure of cross deck need not necessarily be carried on board the unit. It is sufficient if it is made available when needed.
