



THE SOCIALIST REPUBLIC OF VIETNAM

QCVN 55: 2013/BGTVT

**NATIONAL TECHNICAL REGULATION
ON CLASSIFICATION AND CONSTRUCTION OF
FLOATING DOCK**

HANOI - 2013

Preamble

National Technical Regulation on Classification and Construction the Floating Dock QCVN 55: 2013/BGTVT is compiled by Vietnam Register, verified by the Ministry of Science and Technology, promulgated by the Minister of Transport under Circular No. 06/2013/TT-BGTVT dated May 2nd 2013.

QCVN 55: 2013/BGTVT is built on the basis of National Standards "Rules for floating docks" symbolled TCVN 6274:2003.

NATIONAL TECHNICAL REGULATION ON CLASSIFICATION AND CONSTRUCTION OF FLOATING DOCK

CONTENTS

	Page
I GENERAL REGULATIONS	5
1.1 Application and Scope.....	5
1.2 References, Definitions	5
II TECHNICAL REGULATIONS.....	7
Chapter 1 General	7
1.1 General.....	7
Chapter 2 Classification Survey	8
2.1 Classification Survey during Construction	8
2.2 Classification Survey not Build under survey.....	10
2.3 Periodical Survey and Occasional Survey.....	10
2.4 Preparation and assistance for survey.....	12
Chapter 3 General Arrangement	14
3.1 Safety deck.....	14
3.2 Top deck.....	14
3.3 Ventilation and Access.....	14
3.4 Cofferdam.....	14
Chapter 4 Freeboard and Stability	15
4.1 Freeboard.....	15
4.2 Stability.....	15
Chapter 5 Hull Structure	16
5.1 General.....	16
5.2 Longitudinal Strength	16
5.3 Transverse Strength.....	17
5.4 Structure detail and local strength.....	18
Chapter 6 Machinery and Instrumentation.....	24
6.1 Machinery.....	24
6.2 Indicator System.....	24
Chapter 7 Fire Protection and Extinguishing.....	25
7.1 General.....	25

7.2 Fire Protection25

7.3 Fire-extinguishing25

III REGULATIONS ON MANAGEMENT27

1.1 General.....27

1.2 Regulations on technical supervision.....27

1.3 Certification.....27

IV RESPONSIBILITIES OF ORGANIZATIONS, INDIVIDUALS28

1.1 Responsibilities of floating dock owners, operators, design companies,
yards of construction, conversions, renovations and repair of floating
docks28

1.2 Responsibilities of Vietnam Register.....28

1.3 Responsibilities of the Ministry of Transport28

V IMPLEMENTATION29

APPENDIX A SAMPLE CERTIFICATE OF DESIGN ASSESSMENT FLOATING DOCK

APPENDIX B SAMPLE OF THE CERTIFICATE HIERARCHY FLOATING DOCK

APPENDIX C SAMPLE CERTIFICATE OF TECHNICAL SAFETY FLOATING DOCK

NATIONAL TECHNICAL REGULATION ON CLASSIFICATION AND CONSTRUCTION OF FLOATING DOCK

I GENERAL REGULATIONS

1.1 Application and Scope

1.1.1 Application

- 1 The present National Technical Regulation (hereinafter referred to as "Regulation") applies to floating docks which are subject to the technical survey and classified by Vietnam Register.
- 2 Relevant requirements in QCVN 21: 2010/BGTVT "National Technical Regulation - Rules for the classification and construction of sea-going steel ships" also apply to floating docks, except otherwise specified in this Regulation.

1.1.2 Scope

The present Regulation is to apply to organizations and individuals involving in activities relating to floating docks and falling under the application as specified in 1.1.1 above, including Vietnam Register (hereinafter referred to as "VR"); floating dock owners (hereinafter referred to as "Owner"); floating dock operators, designers, builder, renovating and repairing yards.

1.2 References, Definitions

1.2.1 References

- 1 QCVN 21: 2010/BGTVT: National technical regulation-Rules for the Classification and Construction of sea-going steel ships promulgated in accordance with Circular No.12/2010/TT-BGTVT dated 21 April 2010 of the Ministry of Transportation.
- 2 QCVN 23: 2010/BGTVT: National technical regulation-Rules for Cargo handling appliances of ships promulgated in accordance with Circular No. 11/2010/TT-BGTVT dated 20 April 2010 of the Ministry of transportation.
- 3 Circular No. 032/2011/TT-BGTVT: Circular additional amendments to some articles of the regulation on register of ships at sea on Vietnam 19/04/2011 attached to decision No 51/2005/QĐ-BGTVT dated 12 October 2005 of the Ministry of Transportation.

1.2.2 Definition

1 Length

The length (L) is the distance, in meters, measured on water line when supporting a ship whose displacement is the lifting capacity between the aft end and the fore end of the bulkheads of the floating structures of the dock.

2 Breadth

The breadth (B) is the moulded breadth in metres measured at the greatest horizontal distance between the inner surfaces of the outer side plating of wing walls.

3 Depth

The Depth (D) is the moulded breadth in metres measured at the centerline from the inner surface of the bottom plating to the inner surface of the top deck plating.

4 Safety Deck

The safety deck is a watertight deck extending over the length of the wing walls and located below the top deck.

5 Top Deck

The top deck is the deck extending over the length of the wing walls to form the top of the wing walls.

6 Pontoon

The pontoon is the structure that extends between and under the wing walls to from the bottom of the dock.

7 Rest Water

The rest water is water which can not be discharged by pumps from ballast compartments.

8 Compensating Ballast Water

The compensating ballast water is ballast water for reduction of stresses and deflections in the dock structures and for adjustment of the trim and heel of the dock.

9 Lifting Capacity

The lifting capacity (Q) is the displacement of the heaviest ship it is, intended that the dock shall lift in normal service.

10 Light Displacement

The light displacement of the dock is its complete weight including all machinery, cranes, equipment, full supply of consumables for operation of the dock (fuel oil, fresh water etc.), compensating ballast water (if necessary) and rest water.

APPENDIX A
FORM OF DESIGN APPROVAL CERTIFICATE



VIETNAM REGISTER

CERTIFICATE
OF FLOATING DOCK DESIGN APPROVAL

No.:

VIETNAM REGISTER CERTIFIES THAT:

Name/ Hull No.: /

Type of design:

Hull material:

Length (L): (m); Lifting capacity (Q): (t)

Breadth (B): (m); Freeboard to top deck: (m)

Depth (D): (m); Freeboard to pontoon deck: (m)

Gross tonnage (GT):

Class notation:

Place of operation:

Approval No.:

No. of request letter: Dated:

Design company:

Floating dock owner:

Place of build:

Supervised by:

Remarks:

Issued in: Dated:

VIETNAM REGISTER

RECEIVER:

- Design company 01
- Supervising office 01
- Keep as archives at HO 01
- Keep as approval dept. 01

APPENDIX B
FORM OF CLASSIFICATION CERTIFICATE FOR FLOATING DOCK



CỤC ĐĂNG KIỂM VIỆT NAM
VIETNAM REGISTER

GIẤY CHỨNG NHẬN CẤP Ụ NỔI
CLASSIFICATION CERTIFICATE FOR FLOATING DOCK

Số:
No.

Cấp theo Quy chuẩn kỹ thuật Quốc gia -Phân cấp và đóng mới ụ nổi của Việt Nam
Issued under the provisions of the National Technical Regulation on Classification and Construction of Floating dock of VIETNAM

Tên ụ nổi:	Số phân cấp:
Name of Floating Dock	Class Number
Kiểu ụ:	Chiều dài: (m)
Type of Floating Dock	Length
Tổng dung tích:	Chiều rộng: (m)
Gross Tonnage	Breadth
Sức nâng của ụ: (tấn)	Chiều cao: (m)
Lifting Capacity: (tonnes)	Depth
Mạn khô đến boong nóc: (m)	Mạn khô đến boong pông tông: (m)
Freeboard to Top Deck	Freeboard to Pontoon Deck
Vật liệu vỏ ụ:	
Material of Hull	
Năm và nơi đóng:	
Year and Place of Build	
Chủ ụ:	
Owner	

Căn cứ kết quả kiểm tra đã tiến hành, chứng nhận rằng ụ nổi này và các trang thiết bị của ụ thỏa mãn các yêu cầu của Quy chuẩn kỹ thuật Quốc gia - Phân cấp và đóng mới ụ nổi, do đó ụ được nhận cấp/ phục hồi cấp (*) với ký hiệu dưới đây:

This is to certify that as a result of the survey performed the Floating Dock, its equipment and arrangements are found to be in compliance with the requirements of National Technical Regulation on Classification and Construction of Floating dock, based on which class with the following notation is assigned/renewed(*) to the Floating Dock:



Các hạn chế thường xuyên:

Permanent restrictions

Các đặc tính khác:

Other characteristics

Giấy chứng nhận có hiệu lực đến ngày với điều kiện phải có xác nhận trung gian phù hợp với Quy chuẩn

This Certificate is valid until Subject to intermediate confirmation in accordance with the Regulation

Cấp tại Ngày

Issued at Date

CỤC ĐĂNG KIỂM VIỆT NAM
VIETNAM REGISTER

(*) Gạch bỏ khi không thích hợp
Delete as appropriate

QCVN 55: 2013/BGTVT

XÁC NHẬN CẤP Ụ NỘI TRUNG GIAN LẦN THỨ NHẤT
FIRST INTERMEDIATE CONFIRMATION OF THE CLASS

Căn cứ kết quả kiểm tra đã tiến hành, cấp ụ nổi được xác nhận.

On the basis of the survey performed, the class is confirmed

Nơi kiểm tra:

Place

Ngày:

Date

CỤC ĐĂNG KIỂM VIỆT NAM (VR)

XÁC NHẬN CẤP Ụ NỘI TRUNG GIAN LẦN THỨ HAI
SECOND INTERMEDIATE CONFIRMATION OF THE CLASS

Căn cứ kết quả kiểm tra đã tiến hành, cấp ụ nổi được xác nhận.

On the basis of the survey performed, the class is confirmed

Nơi kiểm tra:

Place

Ngày:

Date

CỤC ĐĂNG KIỂM VIỆT NAM (VR)

XÁC NHẬN CẤP Ụ NỘI TRUNG GIAN LẦN THỨ BA
THIRD INTERMEDIATE CONFIRMATION OF THE CLASS

Căn cứ kết quả kiểm tra đã tiến hành, cấp ụ nổi được xác nhận.

On the basis of the survey performed, the class is confirmed

Nơi kiểm tra:

Place

Ngày:

Date

CỤC ĐĂNG KIỂM VIỆT NAM (VR)

XÁC NHẬN CẤP Ụ NỘI TRUNG GIAN LẦN THỨ TƯ
FOURTH INTERMEDIATE CONFIRMATION OF THE CLASS

Căn cứ kết quả kiểm tra đã tiến hành, cấp ụ nổi được xác nhận.

On the basis of the survey performed, the class is confirmed

Nơi kiểm tra:

Place

Ngày:

Date

CỤC ĐĂNG KIỂM VIỆT NAM (VR)

GIA HẠN CẤP Ụ NỘI
EXTENSION OF THE CLASS

Căn cứ kết quả kiểm tra đã tiến hành, thời hạn của GCN cấp ụ nổi được kéo dài tới:

On the basis of the survey performed, the validity of the class is extended till:

Nơi kiểm tra:

Place

Ngày:

Date

CỤC ĐĂNG KIỂM VIỆT NAM (VR)

NHỮNG LƯU Ý VÀ HẠN CHẾ TẠM THỜI
TEMPORARY RESTRICTIONS AND REMARKS

Chú ý:

Giấy chứng nhận này mất hiệu lực trong các trường hợp sau: Giấy chứng nhận hết hạn; Sau tai nạn mà ụ không báo kiểm tra; Khi vi phạm vùng hoạt động hoặc chất tải quá sức nâng của ụ; Khi tàu không tuân theo các yêu cầu hoặc hướng dẫn của Cục Đăng kiểm Việt Nam.

Notes:

The Certificate shall cease to be valid in the following cases: After the expiry of terms; After an accident, unless it is submitted to a survey; If violating the specified area of navigation or loading the dock exceeding the dock's lifting capacity; If requirements or instructions of Vietnam Register have not been complied with.

APPENDIX C

FORM OF SAFETY TECHNICAL CERTIFICATE FOR FLOATING DOCK

CỤC ĐĂNG KIỆM VIỆT NAM
VIETNAM REGISTER



CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
SOCIALIST REPUBLIC OF VIETNAM

Số:
No.

GIẤY CHỨNG NHẬN AN TOÀN KỸ THUẬT Ụ NỔI
SAFETY TECHNICAL CERTIFICATE FOR FLOATING DOCK

Tên ụ nổi:	Số phân cấp:
Name of Floating Dock	Class Number
Kiểu ụ:	Tổng dung tích:
Type of Floating Dock	Gross Tonnage
Vật liệu vỏ ụ:	Sức nâng của ụ: (tấn)
Material of Hull	Lifting Capacity (tonnes)
Năm và nơi đóng:	
Year and Place of Build	
Chủ ụ:	
Owner	

GIẤY CHỨNG NHẬN NÀY ĐƯỢC CẤP THEO NHỮNG VĂN BẢN DƯỚI ĐÂY
THIS CERTIFICATE IS ISSUED ACCORDING TO THE FOLLOWING DOCUMENTS

Giấy chứng nhận cấp ụ nổi số:
Classification Certificate for Floating Dock No.
Biên bản kiểm tra số:
Survey Reports No.

Chứng nhận rằng ụ nổi nêu trong Giấy chứng nhận này có trạng thái kỹ thuật hoàn toàn đảm bảo hoạt động an toàn trong vùng nước sau đây:

On the confirmation that the Floating Dock mentioned in this Certificate has been in good technical condition for working in the following water region:

Giấy chứng nhận này có hiệu lực đến ngày
This Certificate is valid until

Cấp tại
Issued at

Ngày
Date

CỤC ĐĂNG KIỆM VIỆT NAM
VIETNAM REGISTER

Chú ý: Giấy chứng nhận này mất hiệu lực trong các trường hợp sau: Giấy chứng nhận hết hạn; sau tai nạn mà ụ nổi không báo kiểm tra; khi vi phạm vùng hoạt động hoặc chất tải quá sức nâng của ụ không tuân theo các yêu cầu hoặc hướng dẫn của Cục Đăng kiểm Việt Nam.
Note: The Certificate shall cease to be valid in the following cases: after the expiry of terms; after an accident, unless it is submitted to a survey; if violating the specified area of navigation or loading the dock exceeding the dock's lifting capacity; if requirements or instructions of Vietnam Register have not been complied with.

II TECHNICAL REGULATIONS

CHAPTER 1 GENERAL

1.1 General

1.1.1 Application

The Regulation are framed on the understanding that floating docks will be properly loaded and handled in sheltered waters; they do not provide for special distributions or concentrations of loading. VR may also require additional strengthening to be fitted in any floating dock which in their opinion, may be subjected to severe stresses due to particular features in her design or when it is desired to make provision for exceptional loaded or ballasted conditions. In these cases particulars are to be submitted for consideration

1.1.2 Equivalency

Alternative hull construction equipment, arrangement and scantlings will be accepted by VR, provided that VR is satisfied that such construction, equipment, arrangement and scantlings are equivalent to those required Rules.

1.1.3 Other Regulations

While this Regulation covers the requirements for the Classification of new docks, the attention of owners, builders, and designers is directed to the regulations of national or local governments, or other organizations which may contain safety, health, or other standards applicable to the dock.

1.1.4 Towage Certificate

Where VR's Towage Certificate is requested by a Builder/Owner to enable a dock to be towed at sea special consideration may be required to be given to the strength, freeboard and stability, and other items as considered necessary.

1.1.5 Cranes

When the assignment of safe working load of cranes is requested by the builders or the owners, VR will assign the safe working load in accordance with QCVN 23: 2010/BGTVT.

CHAPTER 2 CLASSIFICATION SURVEY

2.1 Classification Surveys during Construction

2.1.1 General

- 1 In the Classification Survey during Construction, the hull and equipment, machinery, fire protection and detection, fire extinction, electrical installation, stability and load lines are to be examined in order to ascertain that they meet the relevant requirements of the Regulations.
- 2 The new installation of materials which contain asbestos is to be prohibited.

2.1.2 Plans and Documents

- 1 When a dock is intended to be classed with VR, plans and documents showing the scantlings, arrangements and details of the principal parts of the structure, and relevant data are to be submitted for review or approval. Plans for approval are generally to be submitted in triplicate. In general, these plans and documents are to include the following (1) and (2) where applicable:
 - (1) Plans for approval
 - (a) General arrangement plan;
 - (b) Transverse section scantlings at mid-length of dock;
 - (c) Structural plans of the wing walls and pontoons;
 - (d) Structural plans of the decks and bulkheads;
 - (e) Pumping arrangements;
 - (f) Machinery and electrical plans;
 - (g) Piping systems (diagram);
 - (h) Fire extinguishing arrangements;
 - (i) Particulars of indicator systems for tank water level and drafts;
 - (j) Particulars of deflection indicating system.
 - (2) Information
 - (a) Specifications;
 - (b) Stability calculations and hydrostatic curves;
 - (c) Calculations and data for longitudinal, transverse and local strength;
 - (d) Operating manual including ballasting manual;
 - (e) Tank arrangements showing also maximum service heads and heights of overflows and air pipes and where used in design, data showing the maximum differential service head;
 - (f) Coating specifications;
 - (g) Testing schemes;

- (h) The profile includes location and other detailed information on asbestos containing materials used on floating docks.

2.1.3 Survey during Construction

- 1 From the commencement of the work until the completion, of the dock, the Surveyors are to examine the materials, workmanship and arrangements. The surveys are required at:
 - (1) When the material tests prescribed in Part 7A and 7B of QCVN 21: 2010/BGTVT;
 - (2) When the welding procedure test and radiographic test prescribed Part 6 of QCVN 21: 2010/BGTVT;
 - (3) When designated by the Surveyors during shop work, sub-assembly work or assembly of blocks;
 - (4) When a part of dock is completed;
 - (5) When tests specified in 2.1.4 are carried out.

2.1.4 Testing

- 1 In the classification surveys, the following tests are to be carried out:

- (1) Tank testing

All tanks including those used for void tanks and cofferdams are to be separately tested by a head of water to the highest point to which the liquid will rise in service. Where the scantlings of a tank boundary are based on the maximum differential head in service, care is to be taken to ensure test heads do not exceed the design differential head. On submission of all necessary detail, air testing or hose testing may be considered as an alternative to the foregoing.

- (2) Completion trials

On the completion of the dock, trials are to be carried out to ascertain:

- (a) The freeboard to top deck with the dock flooded;
- (b) The light displacement and the lifting capacity of the dock corresponding to the minimum freeboard;
- (c) The position of the centre of gravity by an inclining test;
- (d) Any built-in permanent deflection in the initial condition. The initial condition is a condition that all tanks for consumables (fresh water, fuel oil etc.) are completely filled, but all other tanks are empty, only rest-water remaining in the ballast tanks. The travelling cranes may be parked in positions giving equal draughts forward and aft;
- (e) Correct calibration of deflection metres, by simulating the most severe intended loading condition as far as practicable.

- (3) General systems

The machinery pumps, piping remote control/automatic control instrumentation and fire-extinguishing system are to be tested at the makers in accordance with the

Regulation for the Survey and Construction of Steel Ships as applicable. VR may, however, omit the surveys or inspection in the presence of the Surveyor at the makers, subject to submission of the maker's certificate and satisfactory performance witnessed by the Surveyor after installation. All machinery and systems relating to the classification of the dock are to be functionally tested after installation in the presence of the Surveyor.

(4) **Electrical equipment**

The following tests and inspections are to be carried out for electrical equipment after installation on the docks:

- (a) Insulation resistance test;
- (b) Operation test of the essential electrical equipment;
- (c) Other tests and inspections as considered necessary by VR.

2.2 Classification Survey Not Build under Survey

2.2.1 Submission of Plans and Documents

Plans showing the main scantlings and arrangements of the actual dock and documents specified in 2.1.1 are to be submitted for approval. Records and reports relating to the construction of the dock should be submitted as may be required by VR.

2.2.2 Survey

In all cases the full requirements of 2.3.3 are to be carried out. During the survey, the Surveyors are to satisfy themselves regarding the workmanship and verify the approved scantlings and arrangements. For this purpose, and in order to ascertain the amount of any deterioration, parts of the structure will require to be drilled as necessary. Docks of recent construction will receive special consideration.

2.3 Periodical Survey and Occasional Survey

2.3.1 General

- 1 To retain its class with VR, a dock in normal service is to be subjected to periodical surveys and survey of alternations, damages and repairs in accordance with the provisions in the following 2.3.2 to 2.3.4.
- 2 The requirements of Part 1B QCVN 21: 2010/BGTVT also apply as may be relevant to docks, unless otherwise specified in 2.3 of this Chapter..

2.3.2 Intermediate Surveys

- 1 Intermediate Surveys are to be carried out within six months either way of the date 30 months after completion of the Registration Survey or the previous Special Survey (see 1.1.3 and 4.2 Part 1B of QCVN 21: 2010/BGTVT).
- 2 At each intermediate survey the following parts are to be examined and placed in good condition:
 - (1) Pontoon, safety and top decks, wing wall plating above the light waterline, keel and

side blocks and their foundations;

- (2) Vents and overflow pipes, air pipes extending below decks to form air cushions and overboard scuppers;
 - (3) Companionways, ladders, and guardrails and other means of protection that might be provided for access to all spaces;
 - (4) Deflection indicating system;
 - (5) Arrangement of fire protection and extinguishing;
 - (6) Machinery, pumps and other equipment.
- 3 The boilers are to be examined at each intermediate survey in accordance with the provisions of Chapter 7 Part 1B of QCVN 21: 2010/BGTVT.

2.3.3 Special Survey

- 1 Special Surveys are to be carried out within 3 months before or on the expiry date of the Classification Certificate. Special Surveys may be postponed until maximum 3 months after the expiry date, subject to the approval by VR.
- 2 Special survey is to include compliance with all Intermediate Survey requirements, and the Surveyor is to satisfy himself, by examination, that all means of protection to openings are in good condition and are readily accessible. Effect is also to be given to the following requirements:
 - (1) Pontoon and wing wall tanks are to be cleaned, examined internally, and water tested to the satisfaction of the Surveyor. At the discretion of the Surveyor, fuel oil tanks forming part of the main structure need not be examined internally until the dock is more than 15 years old;
 - (2) Spaces above safety deck are to be examined internally, removing linings, etc. where necessary for inspection. Air pipes extending below deck to form air cushions are also to be examined;
 - (3) Where the surface of plating is covered with cement, composition, or wood sheathing, the covering is to be removed as may be required for examination of the plating;
 - (4) The thickness of any part of the structure where wastage is evident may be required by the Surveyor to be determined by an approved method. Where necessary the structure is to be renewed.
- 3 At the Special Survey after the dock is 20 years old, and at 10 years intervals thereafter, in addition to the requirements of the preceding 2, the thicknesses of the structure are to be determined by an approved method to assess the general condition. Two belts of gaugings are to be made within the 0.4L mid-length of the dock.
- 4 Survey of the outer bottom below the light waterline is to be carried out at each special survey. The inspection may be carried out by some combination of:
 - (1) Heeling of the dock for partial examination of the bottom;
 - (2) Ultrasonic measurement of plate thickness;

- (3) Underwater photography;
- (4) Underwater television;
- (5) Examination by diver.

For the extension of intervals of the examination below the waterline, special consideration may be given by VR taking into account the dock's conditions.

- 5 Surveys of boilers are to be in accordance with the requirements of Chapter 7, Part 1B of QCVN 21: 2010/BGTVT. Surveys of machinery, piping, valves, pumps, and electrical equipment are to be in accordance with the relevant requirements of Chapter 5, Part 1B of QCVN 21: 2010/BGTVT as far as applicable.

2.3.4 Damage and Alteration

Damage or alteration to structure, machinery, or equipment, which affects or may affect classification, is to be submitted by the owners or their representatives for examination by the Surveyor.

2.4 Preparation for Surveys and Others

2.4.1 Preparation for Surveys and Others

- 1 All such preparations as required for the survey to be carried out as well as those which may be required by the Surveyor as necessary in accordance with the requirements in the Regulation are to be made by the applicant of the survey. The preparations are to include provisions of an easy and safe access, necessary facilities and necessary records for the execution of the survey. Inspection, measuring and test equipment, which Surveyors rely on to make decisions affecting classification are to be individually identified and calibrated to a standard deemed appropriate by VR. However, the Surveyor may accept simple measuring equipment (e.g. rulers, measuring tapes, weld gauges, micrometers) without individual identification or confirmation of calibration, provided they are of standard commercial design, properly maintained and periodically compared with other similar equipment or test pieces. The Surveyor may also accept equipment fitted on board a dock and used in examination of equipment on board a dock (e.g. pressure, temperature or rpm gauges and meters) based either on calibration records or comparison of readings with multiple instruments.
- 2 The applicant for the survey is to arrange a supervisor who is well conversant with the survey items intended for the preparation of the survey to provide the necessary assistance to the Surveyor according to his requests during the survey.
- 3 Prior to the commencement of survey and measurement, a survey planning meeting is to be held by the surveyor(s), the dock's owner or an appropriately qualified representative appointed by the dock's owner and the thickness measurement company representative, where involved, so as to ensure the safe and efficient conduct of the survey and measurement work to be carried out.
- 4 The survey may be suspended where necessary preparations have not been made, any appropriate attendant mentioned in the previous -2 is not present, or the Surveyor considers that the safety for execution of the survey is not ensured.
- 5 Where repairs are deemed necessary as a result of the survey, the Surveyor will notify his recommendations to the applicant of the survey. Upon this notification, the repair is to be

made to the satisfaction of the Surveyor.

6 Replacement of fittings, equipments and parts, etc.

In where it is necessary to replace any fittings, equipment or parts, etc. used onboard, replacements are to comply with the regulations to be applied during ship construction. However, in cases where new requirements are specified or where deemed necessary by VR, VR may require that such replacements comply with any new requirements in effect at the time the relevant replacement work is carried out. In addition, replacements are not to use any materials which contain asbestos.

CHAPTER 3 GENERAL ARRANGEMENT

3.1 Safety Deck

A safety deck is to be fitted at such a height below the top deck that when all tanks below the safety deck are flooded but with no load on the keel blocks, there is a reasonable freeboard from the top deck to the waterline. Alternative arrangements to fitting a safety deck, such as the provision of an air cushion, will be given special consideration. Special consideration will also be given to the need for a safety deck in relation to the depth of water in which the deck operates.

3.2 Top Deck

The dock is to be provided with a weathertight top deck, weathertight in this case meaning the ability to exclude water other than that due to rainfall in way of necessary access openings.

3.3 Ventilation and Access

All tanks are to have vent or overflow pipes that terminate well above the water line at the maximum draught when the dock is submerged. All compartments are to be provided with manholes for access and openings are to be arranged to provide adequate ventilation and access to all parts of the structure.

3.4 Cofferdam

Compartments carrying oil are to be separated cofferdams from those carrying fresh or feed water.

CHAPTER 4 FREEBOARD AND STABILITY

4.1 Freeboard

4.1.1 Freeboard to Top Deck

When the dock is submerged to its maximum draught, the freeboard to the top deck is generally not to be less than 1.0 m.

4.1.2 Freeboard to Pontoon Deck

The freeboard to the pontoon deck with the dock in its final working condition with a ship corresponding to the lifting capacity of the dock on the blocks is not to be less than 300 mm at the centreline and not less than 75 mm at the inner wing walls. The dock cranes may be positioned so as to produce no trim.

4.1.3 Freeboard in Unsheltered Waters

If the dock's port of operation is not sheltered against waves, greater freeboards than given by 4.1.1 and 4.1.2 may be required.

4.2 Stability

The stabilization of the floating shaft shall be in accordance with the provisions of Part 10 "INTACT STABILITY" of QCVN 21: 2010/BGTVT.

CHAPTER 5 HULL STRUCTURE

5.1 General

5.1.1 Material

- 1 This chapter applies to the docks mainly constructed with the hull structural rolled steels specified in Part 7A "Material" QCVN 21: 2010/BGTVT or equivalent. Where the higher tensile steels are used, its structure is to be to the satisfaction of VR.
- 2 Grade A steels specified in Part 7A QCVN 21: 2010/BGTVT may be used for the main structures of the hull. Grade D steels will, however, be required for the main structural members such as the deck plates, shell plates and their girders within 0.4L amid-length, where the thickness exceeds 30 mm.
- 3 If the dock is to be operated in a site with air temperatures regularly below 0 °C in the winter season, the notch toughness of the steels will be given special consideration.

5.1.2 Welding

Welding and weld connections are to comply with the requirements in Part 6 "Welding" QCVN 21: 2010/BGTVT, as far as applicable to the docks. Alternatively, welding may be in accordance with another recognized standard provided all related requirements of the standard are also complied with.

5.1.3 Corrosion Protection

All external and internal surfaces of the hull structures except in oil tanks are to be protected against corrosion by paint of suitable composition or other effective means. Where special protective coatings are applied to the external and internal surfaces, or other specially, effective methods of corrosion control are adopted, reductions in scantlings will be specially considered.

5.1.4 General Construction

- 1 The requirements in this chapter apply to the steel docks of the following types:
 - (1) Caisson type; dock in which the bottom pontoon and both dock wings are continuous and inseparable;
 - (2) Sectional pontoon type; dock in which the dock wings are continuous and the bottom consists of individual discontinuous pontoons. The pontoons are permanently or detachably connected to the dock wings.
- 2 To avoid the excessive stress concentration, the structural members of the dock are to be continuous as far as possible.

5.2 Longitudinal Strength

5.2.1 Longitudinal Strength

The longitudinal strength of the dock is to be calculated for the most severe expected docking and transient conditions during normal operations. Such condition may be generally assumed that a ship having a weight equal to the maximum lifting capacity of the

dock and the shortest ship's length (L_S) expected is supported on the keel blocks, the centre of the ship's length being positioned at the mid-length of the dock, and the freeboard at the pontoon deck is as described in 4.1.2. The level of water ballast is to be constant over the length (L). The level of compensating ballast water may, however, be determined with the normal operation manual where it is intended that normal operation of the dock is to be by differential ballast conditions by special agreement with VR.

5.2.2 Towing Condition

Special consideration will be given to the longitudinal strength where it is intended to tow the dock in unprotected waters, including particulars of the season and the duration and area of the towing operation.

5.2.3 Ship Weight Curve

The weight curve of the ship is to be taken as a rectangle with a superimposed parabola of half the area of the rectangle, the length of each area being L_S .

5.2.4 Permissible Stresses

For the loading conditions defined in 5.2.1 the longitudinal bending stresses are not to exceed 142 N/mm^2 and the shear stresses are not to exceed 98 N/mm^2 .

5.2.5 Section Modulus

When calculating the section modulus of the hull structure, the sectional area of all effective continuous longitudinal strength members are to be included. The section modulus of the hull structure at its mid-length is to be maintained within $0.4L$ a mid-length of the dock, unless a larger extension or special strengthening is necessitated by the bending moment curve.

5.2.6 Approximate Formula of Required Section Modulus

Notwithstanding the requirements of 5.2.1, 5.2.3 and 5.2.4, the section modulus required for the hull structure may be generally determined from the formula where the lifting capacity of the dock is not exceeds 40,000 tons.

$$Z = 2.35 Q L \text{ (cm}^3\text{)}$$

Where:

Q : the maximum lifting capacity in tons.

5.2.7 Operation Manual

Information on the loading conditions for the longitudinal strength is to be contained in the operation manual. Where governing bending moments and/or shear forces may occur at less than the maximum lifting capacity, such conditions are to be investigated, and contained in the operation manual.

5.2.8 Deflection Control

The maximum allowable deflection of the dock is to be submitted for approval. This deflection is not to exceed that corresponding to a stress of 142 N/mm^2 when lifting the ship defined in 5.2.1. As for deflection monitoring measures, see 6.2.

5.3 Transverse Strength

5.3.1 Loading Condition

- 1 The transverse strength of the dock is to be calculated for the most severe expected docking and transient conditions during normal operations, and is to be examined at least for the conditions as follows;
 - (1) The docked ship conditions: as described in 5.2.1. It is assumed that the docked ship normally is supported by the keel blocks only.
 - (2) The transient condition: the dock emerging out of water with a typical ship fully supported on the blocks and the pontoon deck subjected to a water head just below top of docking blocks, with corresponding ballast water in the tanks.

5.3.2 Permissible Stress

Under the loading conditions in 5.3.1 the compressive or tensile stresses in transverse members are not to exceed 170 N/mm². The shear stresses in the transverse members are not to exceed 98 N/mm².

5.3.3 Approximate Formula

Where the maximum lifting capacity of the dock does not exceed 40,000 tons, calculations of the transverse strength may be omitted if the thickness of the top and bottom plates of the pontoon is not less than that given below:

- (1) Caisson type; obtained from the following formula.

$$0.0047B^2 \text{ (mm)}$$

- (2) Sectional pontoon type; given by the above or obtained from the following formula, whichever is greater;

$$0.033 \frac{Ql_p}{Ld_p} \text{ (mm)}$$

where :

Q : the maximum lifting capacity in tons

l_p : length of the sectional pontoon measured alongside the centre line of the dock in metres

d_p : depth of the pontoon at the centre in metres.

5.4 Structural Detail and Local Strength

5.4.1 Structural Arrangement

A centerline girder or longitudinal member is to provide adequate support for the keel blocks. Side girders or transverse members are to be arranged to support the side blocks.

5.4.2 Buckling

The structural panels and members of the hull structures are to be adequately stiffened to

prevent buckling.

5.4.3 Tank and Shell Plates

The thickness of the tank and shell plates is not to be less than obtained from the following formula. The minimum thickness is, however, to be 6.5 mm for the tank plates and 7 mm for the shell plates.

$$3.6S\sqrt{h} + 2,5 \quad (\text{mm})$$

Where:

S: spacing of stiffeners, frames etc., in metres

h = 2.5 m or the followings, whichever is greater.

For tanks:

Vertical distance measured from the lower edge of plate to the mid-point of the distance between the top of tanks and the top of overflow pipes in metres. As an alternative the maximum differential head defined in 5.4.7 may be used for the ballast tanks;

For cofferdams and void spaces:

Vertical distance measured from lower edge of plate to the maximum immersion water line in metres.

5.4.4 Tank Stiffener and Frame

The section modulus of tank stiffeners and frames is not to be less than obtained from the following formula:

$$6.65 CShl^2 \quad (\text{cm}^3)$$

Where:

S: spacing of stiffeners, frames etc. in metres

l: span of stiffeners, frames etc. in metres

h = 2.5 m or the followings, whichever is greater:

For tanks:

Vertical distance measured from the mid-point of l for vertical stiffeners of S for horizontal stiffeners to the midpoint of the distance between the top of tanks and the top of overflow pipes in metres. As an alternative, the maximum differential head defined in 5.4.7 may be used for the ballast tanks;

For cofferdams and void spaces:

Vertical distance measured from the midpoint of l for vertical frames etc. or S for longitudinal frames etc. to the maximum immersion water line in metres.

C: Coefficient given in Table 5.1, according to the type of end connections.

Table 5.1 Values of C

The other end of stiffeners	One end of stiffeners		
	Connection by brackets	Lug-connection or supported by girders	End of stiffener unattached
Connection by brackets	0.70	0.85	1.30
Lug-connection or supported by girders	0.85	1.00	1.50
End of stiffener unattached	1.30	1.50	1.50

5.4.5 Girder, Web Frame etc.

- 1 The section modulus of the girders, web frames etc. supporting the tank stiffeners or frames is not to be less than obtained from the following formula:

$$7.13Shl^2 \quad (\text{cm}^3)$$

Where:

S: breadth of the area supported by the girders, web frames etc. in metres

h = 2.5 m or the followings, whichever is greater.

For tanks:

Vertical distance measured from the mid-point of l for vertical girders etc. or S for horizontal girders etc. to the mid-point of the distance between the top of tanks and the top of overflow pipes in metres. As an alternative, the maximum differential head defined, in 5.4.7 may be used for ballast tanks;

For void spaces, cofferdams:

Vertical distance measured from the mid-point of l for vertical girders etc. or S for horizontal girders etc. to the maximum immersion water line in metres.

- 2 Thickness of web plates is not to be less than obtained from the following formula:

$$10S_1 \quad (\text{mm})$$

Where:

S₁: stiffener space or depth of web plates, whichever is less in metres.

5.4.6 Cross Tie

The sectional area of cross ties, where fitted between the stiffeners, frames, girders, web frames etc. is not to be less than obtained from the following formula:

$$2.2Sbh \quad (\text{cm}^2)$$

Where:

S: space of the stiffeners etc. supported by the cross tie in metres

b: distance between the mid-point of two adjacent spans of stiffeners etc. supported

by the cross tie in metres.

h: the maximum head in metres to be determined in accordance with the requirements of 5.4.5 or 5.4.6 as applicable.

5.4.7 Maximum Differential Head

Where the maximum differential head is used for the design basis of the ballast tanks, hydrostatic data is to be submitted for approval to show the differential head based on the highest levels to which water will rise on each side of the structure in service. The differential head on the design is to be determined with a suitable margin to an actual differential head in service. Necessary data on operating the dock within such design limits are to be included in the operating manual.

5.4.8 Top Deck

- 1 Thickness of the top deck plates is not to be less than obtained from the following formula or 7 mm; whichever is greater.

$$10S \text{ (mm)}$$

Where:

S: beam space (m).

- 2 Section modulus of the top deck beam is not to be less than obtained from the following formula:

$$CSl^2 \text{ (cm}^3\text{)}$$

Where:

C: 14.5 for longitudinal beam within 0.4l amid-length, 5.4 for transverse beam and longitudinal beam at the fore and aft end. For longitudinal beam other than the aforesaid, C may be gradually from 14.5 to 5.4.;

S: space of beam in metres

l: span of beam in metres

- 3 Section modulus of the transverse girder of the top deck is not to be less than obtained from the following formula.:

$$6.1bl^2 \text{ (cm}^3\text{)}$$

Where:

b: distance between the mid-points of two adjacent spans of the beams supported by the girder in metres

l: span of girder in metres

5.4.9 Safety Deck

- 1 Scantlings of the safety deck as constructed as the tanks are to be in accordance with the requirements defined in 5.4.3, 5.4.4 and 5.4.5.
- 2 Scantling of the safety deck as constructed as other than the tanks are to be as follows;:

- (1) Thickness of the deck plates is not to be less than 6,5 mm or obtained from the following formula.:

$$1.25 S\sqrt{h} + 2.5 \quad (\text{mm})$$

Where:

S: beam space in metres

h: deck loads in kN/m².

- (2) Section modulus of the deck beam is not to be less than obtained from the following formula:

$$0.43Shl^2 \quad (\text{cm}^3)$$

Where:

S: beam space in metres

h: deck loads in kN/m²;

l: span of beam in metres

- (3) Section modulus of the deck girders is not to be less than obtained from the following formula:

$$0.484bhl^2 \quad (\text{cm}^3)$$

Where:

b: distance between the mid-points of two adjacent spans of the beams supported by the girders in metres

l: span of the girder in metres

h: deck load in kN/m².

5.4.10 Non-water Tight Structures

The thickness of the web plates of the non-water tight structures such as the centre girder, side girders and solid floors of the pontoon, and the non-water tight bulkheads, is not to be less than obtained from the following formula in general:

$$10S_1 \quad (\text{mm})$$

Where:

S₁: space of stiffener in metres (m).

5.4.11 Keel Block and Supporting Structure

The keel blocks and their supporting structures are to be generally designed to the following loads:

$$P = 0.15Q/L \quad (\text{kN/m})$$

Where:

P: loads to the keel blocks and supporting structures over the whole length of the dock.

Q: the maximum lifting capacity of the dock in tons.

5.4.12 Platforms

The minimum load on the platforms of dock ends is to be 5.88 kN/m^2 , the factor of safety being not less than 4.

5.4.13 Swing Bridge

The minimum load on the swing bridge at dock ends is to be 3.92 kN/m^2 , the factor of safety being not less than 4.

CHAPTER 6 MACHINERY AND INSTRUMENTATION**6.1 Machinery****6.1.1 Machinery**

The pressure vessels other than those belonging to Group 3 and essential machinery such as generator driving and auxiliary machinery which are necessary for operations of the docks, are generally to be in accordance with the relevant provisions of QCVN 21: 2010/BGTVT.

6.1.2 Piping System

- 1 The piping systems are generally to be in accordance with the relevant provisions of QCVN 21: 2010/BGTVT as far as applicable.
- 2 The dock is to have at least two water ballast pumps. The arrangements for de-ballasting are to be such that in case of failure to the one pump an alternative pumping is available for each ballast tank.

6.1.3 Electrical Equipment

- 1 Electrical equipment to be installed in the manner of minimizing the risks due to electrical cause such as electric shocks, fires etc. on reference to the requirements of Part 4 of QCVN 21: 2010/BGTVT.
- 2 Electrical machinery and cables are to be those conformed to an applicable standard accepted by VR, and suitable to be used safely and effectively under the conditions of the environment where they are installed.
- 3 Electric circuits are to be protected against accidental overcurrents including short circuit, These protecting devices are to be capable of breaking a fault circuit, eliminating the expansion of the faults and the hazards of fire and securing to serve electric power to essential driving sources, lights, internal communications and alarm devices.

6.2 Indicator System

Deflection meter or acceptable alternatives, tank level, draught, and trim indicators are to be provided to enable the operation of the dock to be properly controlled.

CHAPTER 7 FIRE PROTECTION AND EXTINGUISHING

7.1 General

The requirements of this Chapter apply to the minimum fire protection and extinction for the docks and do not cover equipment fitted for fighting fires that may occur on ships in the dock. Attention should also be given to any relevant statutory requirements of the National Authority of the country in which the dock is to operate. Compliance with such statutory requirements may, at the discretion of VR, be accepted as meeting the requirements of this Chapter.

7.2 Fire Protection

7.2.1 Accommodation

Accommodation, control station and service spaces are to be arranged so that the risk of fire will be reduced to a minimum. Deck houses are to be of steel or equivalent materials. Deck coverings on the decks forming the crown of machinery spaces are to be of a type which will not readily ignite.

7.2.2 Machinery Space

Boundary walls of the machinery spaces and interior stairways below the top deck to be of steel or equivalent materials.

7.2.3 Paints

In accommodation, control station, service and machinery spaces, paints, varnished and similar preparations having a nitrocellulose or other highly inflammable bases are not to be used.

7.3 Fire-extinguishing

7.3.1 Fire System

The fire pumps, associated piping and fire main are to be so designed that a minimum pressure can be maintained sufficient to produce at least 12 m jet throw through adjacent nozzles of sizes required by 7.3.2. A fire main is to be provided on each dock wing. Two separate means of water supply are to be provided for the fire main. At least, one mean of water supply is to be of an adequate shoreside supply or an independent driven emergency pump is to be provided with the dock.

7.3.2 Hydrant, Hose and Nozzle

- 1 The number and position of the hydrants are to be such that at least two jets of water not emanating from the same hydrant, one of which is to be from a single length of hose, may reach any part of the dock except the water ballast tanks under any operating conditions.
- 2 In spaces containing machinery with a total power of 735,5 kW and over, two hydrants are to be provided, and in spaces where the total power of the machinery is less, one hydrant will be accepted. Where, in either of the above cases, fire fighting from within a small compartment is impracticable due to limitations in space, the hydrants required may be situated outside and adjacent to the compartment entrance.

- 3 The fire hoses are to be sufficient in length to protect a jet of water to any of the spaces in which they may be required to be used. The hoses are not to exceed 18 metres in length with a nozzle in size of 12 mm or over.

7.3.3 International Shore Connection

It is recommended that the top deck of the dock is provided with the international shore connection specified in Chapter 22, Part 5 QCVN 21: 2010/BGTVT to supply water to the docking ship's extinguisher from the dock's pump.

7.3.4 Portable Extinguisher

- 1 Portable extinguishers are to be placed onboard in places with risk of fire. Within the accommodation portable extinguishers are to be so placed that at least one extinguisher will be accessible from any part of the accommodation. The total number of extinguishers required within the accommodation area will depend on its size and arrangement.
- 2 Portable extinguishers are to be provided in machinery spaces as well as spaces with electric motors and switchboards etc. for pumps, warping capstans etc. Number and location will depend on the size and arrangement of the spaces.

7.3.5 Fire Smothering Gas System

Where provision is made for the injection of gas into machinery spaces for fire-extinguishing purposes, the necessary pipes for conveying the gas are to be provided with control valves or cocks which are to be so placed that they will be easily accessible and not readily cut off from use by an outbreak of fire. Suitable provision is to be made to prevent inadvertent admission of the gas to any compartment.

III REGULATIONS ON MANAGEMENT

1.1 General

Where compliance with this Regulation is made, floating dock will have an additional notation appended to class notation specified in Chapter 2 of Part 1A QCVN 21: 2010/BGTVT.

1.2 Regulations on technical supervision

Floating docks are to be subject to surveys specified in Chapter 2 Section II of this Regulation.

1.3 Certification

1.3.1 Certificate

If the requirements of this Regulation are satisfied, the floating dock will be issued a certificate of design approval, a classification certificate and a floating dock safety certificate depending on the specific requirements.

1.3.2 Certification Procedure

Procedure for granting the certificate obtained according to circular No.032/2011/TT-BGTVT. Sample certificate of design assessment certificate hierarchy and floating dock to be retrieved according to Annex A, B and C of this Regulation.

IV RESPONSIBILITIES OF ORGANIZATIONS, INDIVIDUALS

1.1 Responsibilities of floating dock owners, operators, design companies, yards of construction, conversions, renovations and repair of floating docks

1.1.1 Floating dock owners, operators

- 1 To apply all relevant requirements in this Regulation for floating dock being constructed, converted, renovated, repaired and during operation in order to ensure and maintain good technical condition of floating dock.

1.1.2 Floating dock design companies

- 1 To design floating dock in accordance with this Regulation.
- 2 To prepare sufficient design documents as required and submit those in accordance with this Regulation.

1.1.3 Yards of construction, conversion, renovation and repair of floating docks

- 1 Are to be capable in terms of warehouse, manufacturing shop, building facilities etc. and competent manpower to meet requirement for new manufacture, conversions, renovations/modernization and repairs of the floating docks.
- 2 Are to comply, in addition to approved design, with standards of quality, safety and environmental protection while manufacturing, converting, renovating and repairing the floating docks.
- 3 Are to undergo VR's supervision on the quality, safety and environmental protection during new manufacture, converting, renovation and repairing of floating docks.

1.2 Responsibilities of Vietnam Register

1.2.1 Design approval, technical supervision

To assign surveyors having competence and of sufficient standard to carry out the approval of design documents, inspecting and testing during manufacture, conversions, renovations/modernization and repairs of the floating dock in accordance with technical requirements specified in this Regulation.

1.2.2 To give instructions for implementation/application

To give instructions for the application of requirements of this Regulation to floating dock owners, operators, design companies, yards of construction, conversions, renovations and repair of ship lift platforms, inspection offices of Vietnam Register throughout the country.

1.2.3 To amend and supplement the Regulation

Based on the fact, Vietnam Register is to have responsibility to petition the Ministry of Transport for amendment, supplementation of the Regulation on a yearly basis.

1.3 Responsibilities of the Ministry of Transport

The Ministry of Transport (Science and Technology department) is responsible for verifying on the regular or random basis the implementation of this Regulation by relating organizations.

V IMPLEMENTATION

- 1.1** It is the responsibility of Vietnam Register to manage the survey system, technical supervision, classification and technical registration of floating docks. It is also to include organizing the printing, dissemination and instructions for the application of this Regulation for organizations and individuals falling within the scope of this Regulation.
- 1.2** In case of inconsistency between the requirements in this Regulation and those in other rules, standards or technical regulations relating to floating docks, the requirements of this Regulation is to prevail over those of others.
- 1.3** In case the documents referred to in this Regulation are amended, implemented or replaced, the latter is to prevail over the former.
- 1.4** This Regulation and its amendment applies to floating docks constructed on or after effective date of this Regulation.