



## Marina design



AS 3962:2020

This Australian Standard® was prepared by CE-030, Maritime Structures. It was approved on behalf of the Council of Standards Australia on 21 February 2020.

This Standard was published on 6 March 2020.

The following are represented on Committee CE-030:

- Australasian Fire and Emergency Service Authorities Council
- Boating Industry Association
- Department of Transport (WA)
- Engineers Australia
- Fire Protection Association Australia
- Marina Industries Association
- Queensland Transport
- Roads & Maritime Services
- Royal Institution of Naval Architects
- Sailing Australia
- Superyacht Australia

This Standard was issued in draft form for comment as DR AS 3962:2019.

#### **Keeping Standards up-to-date**

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

[www.standards.org.au](http://www.standards.org.au)

ISBN 978 1 76072 746 8



## Marina design

Originates as AS 3962—1991.  
Previous edition 2001.  
Third edition 2020.

### **COPYRIGHT**

© Standards Australia Limited 2020

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

## Preface

This Standard was prepared by the Standards Australia Committee, CE-030, Maritime Structures, to supersede AS 3962—2001, *Guidelines for design of marinas*.

The objective of this Standard is to provide designers, manufacturers and operators of marina and vessel berthing facilities with requirements for recreational marinas and small commercial vessels up to 50 m in length. Requirements are also given for on-shore facilities such as dry boat storage, boatlifts, boat ramps and associated parking facilities.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by “C” preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

## Contents

Preface .....	ii
<b>Section 1 Scope and general</b> .....	<b>1</b>
1.1 Scope .....	1
1.2 Normative references .....	1
1.3 Terms and definitions .....	2
<b>Section 2 Investigations</b> .....	<b>6</b>
2.1 Surveys .....	9
2.1.1 General .....	9
2.1.2 Hydrographic survey .....	9
2.1.3 Terrestrial surveys .....	9
2.1.4 "As constructed" documents .....	9
2.2 Geotechnical .....	10
2.2.1 Geotechnical parameters .....	10
2.2.2 Excavation of material .....	10
2.3 Wind, hydrodynamics and sediment movement assessments .....	10
2.3.1 Sources of data .....	10
2.3.2 Data required and collection methods .....	11
<b>Section 3 Dimensional criteria</b> .....	<b>14</b>
3.1 Channel widths .....	14
3.1.1 Entrance channel .....	14
3.1.2 Internal channels and fairways .....	14
3.2 Water depths .....	17
3.2.1 Entrance channel .....	17
3.2.2 Internal channels and fairways .....	18
3.2.3 At berths .....	18
3.3 Berth sizes .....	18
3.3.1 Overview .....	18
3.3.2 Berth widths and length .....	19
3.3.3 Mooring piles in double berths .....	20
3.4 Berths for hire charter yachts and power boats .....	20
3.5 Walkways, fingers, mooring and boarding points .....	20
3.5.1 General .....	20
3.5.2 Walkways .....	21
3.5.3 Edge barrier protection on primary walkways for people with disabilities .....	21
3.5.4 Fingers .....	21
3.5.5 Mooring points .....	21
3.5.6 Boarding points at accessible berths .....	22
3.6 Gangway requirements .....	22
3.6.1 Width .....	22
3.6.2 Maximum slope .....	22
3.6.3 Surface profile .....	23
3.6.4 Slip resistance .....	23
3.6.5 Handrails .....	23
3.7 Floating platforms/pontoons and edge safety barriers .....	24
3.8 Edge safety barrier protection to accessible marina berths and end of gangways .....	24
<b>Section 4 Loading and stability</b> .....	<b>25</b>
4.1 General .....	25
4.2 Load combinations for limit state design .....	25
4.3 Access to structure .....	26
4.3.1 Unrestricted access .....	26
4.3.2 Restricted access .....	26
4.4 Dead loads .....	26
4.5 Gangway live loads .....	26

4.5.1	Gangways for unrestricted access.....	26
4.5.2	Gangways for restricted access.....	26
4.5.3	Flotation and stability.....	26
4.6	Fixed structure live loads.....	26
4.6.1	Structures for unrestricted access.....	26
4.6.2	Structures for restricted access.....	27
4.7	Floating structure live loads.....	27
4.7.1	General.....	27
4.7.2	Structural live loads.....	27
4.7.3	Flotation and stability loads.....	27
4.8	Environmental loads.....	28
4.8.1	General.....	28
4.8.2	Wave loads.....	28
4.8.3	Wind loads.....	30
4.8.4	Current loads.....	32
4.9	Berthing and mooring loads.....	33
4.10	Cleats and bollards.....	34
4.11	Anchor loads.....	34
4.12	Lateral displacement load on gangway.....	34
4.13	Stability.....	34
4.13.1	General.....	34
4.13.2	Stability criteria.....	35
4.14	Pile heights.....	35
4.15	Positive flotation.....	35
4.15.1	Method 1 — Interconnected pontoons.....	35
4.15.2	Method 2 — Individual, independent pontoons.....	35
4.16	Design life.....	36
<b>Section 5</b>	<b>Design considerations.....</b>	<b>37</b>
5.1	Pontoon marina systems.....	37
5.1.1	General.....	37
5.1.2	Access from water.....	37
5.2	Material considerations.....	37
5.2.1	General.....	37
5.2.2	Concrete.....	37
5.2.3	Steel.....	37
5.2.4	Aluminium.....	38
5.2.5	Timber.....	38
5.2.6	Other materials.....	38
5.3	Piles.....	38
5.4	Navigation aids.....	38
<b>Section 6</b>	<b>Services.....</b>	<b>39</b>
6.1	General.....	39
6.2	Firefighting.....	39
6.2.1	General.....	39
6.2.2	Fire hose reels.....	40
6.2.3	Fire hydrants.....	41
6.2.4	Portable Fire extinguishers.....	42
6.2.5	Fire alarms.....	42
6.2.6	Firefighting chemicals.....	42
6.2.7	Maintenance of equipment.....	42
6.2.8	Protection of equipment.....	42
6.2.9	Emergency plan.....	42
6.3	Waste management.....	43
6.3.1	General.....	43
6.3.2	Liquid waste.....	43
6.3.3	Solid waste.....	43
6.4	Lighting.....	43

6.5	Stormwater control and disposal .....	43
6.6	Electricity .....	44
6.7	Water outlets .....	44
6.8	Telephones .....	44
6.9	Fuel supply .....	44
	6.9.1 General .....	44
	6.9.2 Risk mitigation .....	45
6.10	Sanitary facilities and shower .....	45
<b>Section 7</b>	<b>Onshore boat facilities</b> .....	<b>46</b>
7.1	General .....	46
7.2	Boat ramps .....	46
	7.2.1 General .....	46
	7.2.2 Location and alignment .....	46
	7.2.3 Boat ramp configuration .....	46
	7.2.4 Parking areas .....	48
7.3	Dry storage .....	49
7.4	Launching and retrieval facilities .....	49
	7.4.1 General .....	49
	7.4.2 Selection of retrieval system .....	50
	7.4.3 Design .....	50
<b>Section 8</b>	<b>Traffic and parking</b> .....	<b>51</b>
8.1	Traffic .....	51
8.2	Parking .....	51
	8.2.1 General .....	51
	8.2.2 Boat storage parking guide .....	51
	8.2.3 Accessible parking .....	52
<b>Appendix A</b>	<b>(normative) Metacentric height method of stability calculation</b> .....	<b>53</b>
<b>Appendix B</b>	<b>(informative) Marina services and facilities</b> .....	<b>58</b>
<b>Bibliography</b>	.....	<b>61</b>

NOTES

Currently in preview, click buy full version

# Australian Standard®

## Marina design

### Section 1 Scope and general

#### 1.1 Scope

This Standard sets out requirements for the design of marinas suitable for vessels up to 50 m in length.

The Standard covers fixed berth and floating pontoon marina systems, single pontoons and floating wave attenuators. Requirements are also given for on-shore facilities such as dry boat storage, boat lifts, boat ramps and associated parking facilities.

The Standard covers berths, pontoons and marinas located in coastal waters, lakes, rivers and dams.

NOTE Refer to relevant authorities for additional requirements for assessment of the environmental impact of marinas.

#### 1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS/NZS 1170.0, *Structural design actions, Part 0: General principles*

AS/NZS 1170.1, *Structural design actions, Part 1: Permanent, imposed and other actions*

AS 1428.1, *Design for access and mobility, Part 1: General requirements for access*

AS 1657, *Fixed platforms, walkways, stairways and ladders — Design, construction and installation*

AS 1720.1, *Timber Structures, Part 1: Design Methods*

AS 1851, *Routine service of fire protection systems and equipment (all parts)*

AS 2419.1, *Fire hydrant installation, Part 1: System design, installation and commissioning*

AS 2441, *Installation of fire hose reels*

AS 2444, *Portable fire extinguishers and fire blankets — Selection and location*

AS 3004.1, *Electrical installations — Marinas and boats, Part 1: Marinas*

AS 3600, *Concrete structures*

AS 3745, *Planning for emergencies in facilities*

AS 4100, *Steel structures*

AS 4586, *Slip resistance classification of new pedestrian surface materials*

AS 4997, *Guidelines for the design of maritime structures*

AS/NZS 1664.1, *Aluminium structures, Part 1: Limit state design*

AS/NZS 1664.2, *Aluminium structures, Part 2: Allowable stress design*

AS/NZS 3000, *Electrical installations*