

Australian Standard[®]

Fire hydrant installations

**Part 1: System design, installation and
commissioning**



This Australian Standard® was prepared by Committee FP-009, Fire Hydrant Installations. It was approved on behalf of the Council of Standards Australia on 20 October 2005. This Standard was published on 26 November 2005.

The following are represented on Committee FP-009:

- Association of Hydraulic Services Consultants Australia
 - Australasian Fire Authorities Council
 - Australian Building Codes Board
 - Certification Interests (Australia)
 - Copper Development Centre—Australia
 - Department of Defence (Australia)
 - Fire Protection Association Australia
 - Institution of Engineers Australia
 - Plastics Industry Pipe Association of Australia
 - Property Council of Australia
 - Water Services Association of Australia
-

This Standard was issued in draft form for comment as DR 03223.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting **www.standards.org.au**

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at **mail@standards.org.au**, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

Fire hydrant installations

Part 1: System design, installation and commissioning

Originated as AS 2419—1980.
Revised and redesignated AS 2419.1—1988.
Fourth edition 2005.
Reissued incorporating Amendment No. 1 (June 2007).

COPYRIGHT

© Standards Australia

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.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia
ISBN 0 7337 7010 X

PREFACE

This Standard was prepared by the Standards Australia Committee FP-009, Fire Hydrant Installations, to supersede AS 2419.1—1994.

This Standard incorporates Amendment No. 1 (June 2007). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The changes to the previous edition of this Standard comprise the following:

- (a) A stated objective.
- (b) Clarification of intent.
- (c) A restructure of the document into more user friendly equipment-specific sections.
- (d) Incorporation of all revisions contained in Amendment No. 1, which expanded the requirements for fire hydrant system design, acceptable sources of water supply, water supply capacities and general revisions to account for advances in technology for materials, methods of installation and firefighting requirements.
- (e) Inclusion of a commentary to some clauses.

This Standard will be referenced in the Building Code of Australia 2006; thereby superseding AS 2419.1—1994, which will be withdrawn 12 months from the date of publication of this Standard.

Commentary is for information only and does not need to be followed for compliance with the Standard.

Notes to the text contain information and guidance. They are not an integral part of the Standard.

Illustrations in this Standard are purely diagrammatic and are intended to show functional requirements only, not methods of construction.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the Appendix to which they apply. A 'normative' Appendix is an integral part of a Standard, whereas an 'informative' Appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
FOREWORD.....	5
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	6
1.2 OBJECTIVE.....	6
1.3 NORMATIVE REFERENCES.....	6
1.4 DEFINITIONS	6
1.5 SYMBOLS	8
SECTION 2 SYSTEM DESIGN	
2.1 DESIGN CONCEPT.....	9
2.2 DESIGN PARAMETERS.....	10
2.3 REQUIRED SYSTEM PERFORMANCE.....	11
SECTION 3 LOCATION AND OTHER PROVISIONS	
3.1 GENERAL	15
3.2 LOCATION OF ON-SITE FIRE HYDRANTS	15
3.3 OPEN YARD PROTECTION	22
3.4 MARINAS.....	23
3.5 FIRE HYDRANT ACCESSIBILITY AND CLEARANCE.....	23
3.6 FIRE HYDRANT CABINETS, ENCLOSURES OR RECESSES	25
SECTION 4 WATER SUPPLIES	
4.1 ACCEPTABLE SOURCES OF WATER SUPPLY	26
4.2 MINIMUM WATER SUPPLY QUANTITY	26
4.3 ON-SITE WATER STORAGE.....	26
SECTION 5 WATER STORAGE	
5.1 GENERAL	28
5.2 WATER SUPPLIES TO STORAGE TANKS	28
5.3 EFFECTIVE CAPACITY.....	29
5.4 STORAGE TANK CONNECTIONS, VALVES AND ACCESSORIES	32
SECTION 6 PUMPSETS	
6.1 GENERAL	38
6.2 PUMPSET CONFIGURATIONS	38
6.3 ELECTRIC DRIVER ISOLATING SWITCHES	38
6.4 PUMPROOM	38
SECTION 7 FIRE BRIGADE BOOSTER ASSEMBLY	
7.1 GENERAL	40
7.2 WHEN A BOOSTER ASSEMBLY IS REQUIRED.....	40
7.3 LOCATION.....	40
7.4 FIRE BRIGADE BOOSTER ASSEMBLY ARRANGEMENT.....	43
7.5 BOOSTER IN PARALLEL WITH PUMPS.....	47
7.6 BOOSTERS IN SERIES (RELAY) WITH PUMPS	47
7.7 FIRE BRIGADE RELAY PUMPS	49
7.8 FIRE BRIGADE BOOSTER ASSEMBLY ENCLOSURE.....	49
7.9 FIRE BRIGADE BOOSTER ASSEMBLY CABINET OR ENCLOSURE DOORS..	50

7.10	SIGNAGE	50
7.11	BLOCK PLAN	51
SECTION 8 PIPEWORK AND VALVES		
8.1	PIPES, VALVES AND FITTINGS	55
8.2	PIPE AND PIPE FITTING SPECIFICATIONS	55
8.3	METAL PIPE JOINTS	57
8.4	HYDROSTATIC PRESSURE TEST	58
8.5	PIPEWORK DESIGN	58
8.6	SYSTEM PROTECTION AND IDENTIFICATION	63
8.7	SUPPORT OF FIRE HYDRANT PIPEWORK	65
8.8	THRUST BLOCKS AND ANCHORS	68
SECTION 9 ANCILLARY EQUIPMENT		
9.1	GENERAL	69
9.2	FIRE HOSE	69
9.3	PRESSURE GAUGES.....	69
9.4	BACKFLOW PREVENTION	70
SECTION 10 COMMISSIONING		
10.1	GENERAL	71
10.2	HYDROSTATIC TESTS.....	71
10.3	COMMISSIONING TESTS	71
10.4	SYSTEMS THAT INCORPORATE A BOOSTER	72
10.5	SYSTEMS THAT INCORPORATE A PUMP	72
10.6	SYSTEMS THAT INCORPORATE A TANK	72
10.7	RECORDING OF COMMISSIONING (VERIFICATION) TESTS	72
APPENDICES		
A	NORMATIVE REFERENCES	74
B	FIRE HYDRANTS IN ACCESSWAYS WITHIN A PRIVATE DEVELOPMENT ..	76
C	FIRE HYDRANT INSTALLATION WATER SUPPLY FLOW CHART.....	77
D	FIRE BRIGADE APPLIANCES AND STRATEGIES.....	78
E	DETAILS OF EQUIPMENT CONNECTED TO A FIRE HYDRANT	81
F	DETERMINATION OF WATER SYSTEM SUPPLY PRESSURE	83
G	BIBLIOGRAPHY	89
H	SPECIAL HAZARDS	90

FOREWORD

The availability of fire hydrants is essential to fire protection. Fire hydrants may be used to control the spread of fire, protect neighbouring properties and extinguish an outbreak of fire, or extinguish a fire controlled by an automatic fire protection system, such as sprinkler, gaseous and foam systems.

Although fire hydrants are installed within properties for use by the fire brigade, they may also be used by trained personnel.

An adequate source of water is a fundamental consideration in the design of a fire hydrant installation and may comprise water from more than one source. A source based on a 4 h duration at the flow rates given in this Standard is regarded as the minimum safe quantity to enable fire brigades to commence an initial attack to limit fire spread, protect neighbouring properties and extinguish the fire.

Fire hydrant systems need to be regularly inspected, tested and maintained to ensure continued readiness for use. Where pump sets are installed, regular maintenance is essential.

Fire brigade equipment and firefighting procedures may vary between and within states and should be considered in the fire hydrant system design.

STANDARDS AUSTRALIA

Australian Standard Fire hydrant installations

Part 1: System design, installation and commissioning

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements for the design, installation, and commissioning of fire hydrant systems to protect properties. It applies to fire hydrant systems installed to protect buildings, structures, storage yards, marinas and associated moored vessels, wharves, and plant. This Standard also applies to street fire hydrants used in lieu of on-site fire hydrants or to supplement the coverage afforded by street fire hydrants.

A1 | This Standard does not apply to (but may be referenced during design for) the protection of special hazards such as flammable and combustible liquid installation (see Note 4).

NOTES:

- 1 Requirements for maintenance of fire hydrant installations are given in AS 1851 (see Appendix G).
- 2 Appendix C sets out a flow chart for a fire hydrant system design based on the type and capability of the water supply.
- 3 Hose couplings and the regions in which they are used in Australia are given in Appendix E.
- A1 | 4 General guidance for fire hydrant installations in special hazard areas is given in Appendix H.

1.2 OBJECTIVE

The objective of this Standard is to specify minimum requirements for the design, installation and commissioning of fire hydrant systems which—

- (a) will augment the efficient extinguishment of fire within the boundaries of the site;
- (b) can be utilized to minimize fire spread within or between one property or building and another;
- (c) can be used by trained firefighting personnel; and
- (d) are compatible with the local fire brigade's firefighting equipment.

1.3 NORMATIVE REFERENCES

The normative documents referenced in this Standard are listed in Appendix A.

NOTE: Documents referenced for informative purposes are listed in Appendix G.

1.4 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 2484.2, AS/NZS 3500.0 and those below apply.