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FIRE HYDRANT INSTALLATIONS
Part 1—SYSTEM DESIGN, INSTALLATION, AND COMMISSIONING

This Australian Standard was prepared by Committee FP/9, Fire Hydrant Installations. It was approved on behalf of the Council of the Standards Association of Australia on 29 March 1988 and published on 17 June 1988.

The following interests are represented on Committee FP/9:

Australian Fire Protection Association
Australian Uniform Building Regulations Coordinating Council
Board of Fire Commissioners, New South Wales
Bush Fire Council of New South Wales
Commonwealth Fire Board
Confederation of Australian Industry
Department of Administrative Services
Department of Defence
Department of Transport and Communications
Fire Protection Industry Association of Australia
Institution of Engineers, Australia
Insurance Council of Australia
Melbourne and Metropolitan Board of Works
Metropolitan Fire Brigades Board, Melbourne
Water Board, Sydney
Western Australian Fire Brigades Board

Additional interests participating in preparation of Standard:

Australian Assembly of Fire Authorities

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AUSTRALIAN STANDARD

FIRE HYDRANT INSTALLATIONS

Part 1
SYSTEM DESIGN, INSTALLATION, AND COMMISSIONING

AS 2419.1—1988

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PREFACE

This Standard was prepared by the Association's Committee on Fire Hydrant Installations, to supersede AS 2419—1980, *Installation of fire hydrants.*

The Standard specifies requirements for the installation of fire hydrants within properties. It does not include hydrants which are installed by water supply authorities on street mains.

The changes in this Standard include a revision and expansion of the requirements for hydrant system design and acceptable sources of water supply, alternative duration requirements for water supply capacities, and general revisions so as to encompass advances in technology for materials and methods of installation.

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FOREWORD

The availability of hydrants is essential to fire protection. Hydrants may be used to quell an initial outbreak of fire, quench a dying fire controlled by an automatic protection system, or provide the sole fire fighting facility, e.g. after other means have been unsuccessful.

Hydrants are installed within properties for use by fire brigades or trained occupants. If equipped with hoses, hydrants may also be used by untrained persons in the early stages of a fire, or until the fire brigade arrives.

An adequate supply of water is a fundamental consideration in the design of a fire hydrant installation. This supply must be available at all times, but may comprise water from more than one source. A volume based on a 4-hour duration at the flow rates given in this Standard is regarded as the minimum safe quantity to enable fire brigades to extinguish a major fire and, if necessary, protect neighbouring properties.

This volume of water should normally be directly available from town mains adjacent to the property. If town mains are absent or inadequate, the supply should be from suitable water storages, rivers, lakes, etc, combined with pumps where necessary. In cases where an adequate supply of water is available, but not immediately adjacent to the property, consideration can be given to transfer of the water to the hydrant installation by means of fire brigade equipment, subject to approval by the fire brigade.

Regardless of its source, a supply of water must be directly connected to the hydrant installation for immediate use, whether it be the full 4-hour supply or a reduced supply supplemented by the fire brigade.

Hydrant systems should also be regularly inspected, tested, and maintained to ensure continued readiness for use. Where pumpsets are installed, regular maintenance is essential.

STANDARDS ASSOCIATION OF 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 within properties.

NOTE: Appendix A includes charts for fire nozzle discharge calculations and pressure losses in fire hose; Appendix C sets out a flow chart for water supply system design, and Appendix D provides guidance on fire hydrant installations for special hazards.

Requirements for maintenance of fire hydrant installations are given in AS 1851.4.

1.2 REFERENCED DOCUMENTS. A list of the documents referred to in this Standard is given in Appendix E.

1.3 DEFINITIONS. For the purpose of this Standard, the definitions below apply.

1.3.1 Approved and approval—approved by, or the approval of, the Regulatory Authority.

1.3.2 Fire brigade booster connection—a connecting device enabling the fire brigade to pressurize or pump water into a fire hydrant system.

1.3.3 Fire hydrant—an assembly installed in a water pipeline which provides a valved outlet to permit a controlled supply of water to be taken from the pipeline for firefighting.

1.3.4 Fire-resistance level (FRL)—the fire-resistance grading periods in minutes, determined for:

(a) structural adequacy;

(b) integrity; and

(c) insulation,

expressed in that order, i.e. FRL XX, YY, ZZ.

1.3.5 High-rise installation—a fire hydrant installation in a building where the floor of the topmost storey, excluding a storey containing only heating, ventilation, lift or other equipment, water tanks, or similar service units, is more than 25 m above the floor of the lowest storey providing egress to a road or open area.

1.3.6 Hydrant valve—a valve controlling flow of water from the fire hydrant outlet with provision for attachment of a fire hose.

1.3.7 Low-rise installation—a fire hydrant installation in a single or multistorey building other than a high-rise structure.

1.3.8 Regulatory Authority—a Minister of the Crown, a government department or other public authority having power to issue regulations, orders, or other instructions having the force of law in respect of any subject covered by this Standard.

NOTE: There may be one or more Regulatory Authorities for any particular installation, or even for some aspect of it. Fire brigades have the necessary expertise to assist the Regulatory Authority in interpreting and applying the requirements of this Standard.

1.3.9 Residual pressure—water pressure available at a hydrant outlet at a particular flow rate.

SECTION 2. BASIC REQUIREMENTS

2.1 PROVISION OF HYDRANTS WITHIN PROPERTIES. Fire hydrants shall be provided within properties as required by the Regulatory Authority. Such hydrants may be required internally, externally, or on roofs.

NOTE: The requirements for fire hydrants to be provided within buildings are determined by building regulations in force at the building locality, whereas the requirement to provide fire hydrants externally to protect either buildings not requiring internal fire hydrants or plant, etc in open areas is determined by the local fire brigade.

2.2 TYPE OF SYSTEM. The hydrant system shall be a wet-pipe system having its supply valve open and water pressure maintained at all times, or be arranged so that the water supply is boosted by the operation of approved devices.

NOTES:

1. The Regulatory Authority may permit a combination of these types in a single installation.
2. In areas subject to freezing, a dry-pipe hydrant system may be approved provided that fire hose reels are not connected to the system and that provision is made for rapid release of air from all parts of the pipework.

2.3 PLANS AND SPECIFICATIONS. Where a fire hydrant installation is required by the Regulatory Authority, plans showing the hydrant system shall be furnished to the Regulatory Authority for approval.

NOTE: The plans should—

(a) be drawn to scale;

(b) clearly indicate sizes, locations, levels, and connections of all pipes, hose reels, hydrant points, and valves, and include details of any water storages, pumps, and boosters;

(c) show partitions, doorways, storage arrangements, racks, equipment, plant, and machinery which may restrict normal hose coverage through the building and plant; and

(d) be accompanied by material specifications and calculation schedules detailing water supply and system demand characteristics.

When installation is completed, a block plan shall be provided showing the *as constructed* locations of all mains, isolating valves, and hydrants.

2.4 QUALIFIED TRADESPEOPLE. Installation of hydrant systems shall be undertaken, or supervised, by qualified tradespeople recognized for this class of work by the Regulatory Authority.