AS 3778.4.4—1991
ISO 8333:1985
Reconfirmed 2019

AS 3778.4.4—1991

Australian Standard®

Measurement of water flow in open channels

Method 4.4: Measurement using flow gauging structures—V-shaped broad-crested weirs

This Australian Standard® was prepared by Committee CE-024, Measurement of Water Flow in Open Channels and Closed Conduits. It was approved on behalf of the Council of Standards Australia on 12 July 1991.
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- Australian Water and Wastewater Association
- Board of Works, Melbourne
- Department of Water Resources, N.S.W.
- Engineering and Water Supply Department of South Australia
- Forestry Commission, N.S.W.
- Institute of Instrumentation and Control
- Monash University
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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 3778.4.4—1991
Measurement of water flow in open channels
Method 4.4: Measurement using flow gauging structures—
V-shaped broad-crested weirs

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Technical Committee CE-024 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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NOTES

Australian Standard®

Measurement of water flow in open channels

Method 4.4: Measurement using flow gauging structures—V-shaped broad-crested weirs

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PREFACE

This Standard was prepared by the Standards Australia Committee on Measurement of Water Flow in Open Channels and Closed Conduits. It is identical with and has been reproduced from ISO 8333:1985, *Liquid flow measurement in open channels by weirs and flumes—V-shaped broad-crested weirs.*

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This Standard is one of a series which deals with methods of measurement of water flow in open channels. The series when complete will consist of the following parts:

Part 1: *Vocabulary and symbols*
Part 2.1: *General—Guidelines for the selection of methods of measurement*
Part 2.2: *General—Establishment and operation of a gauging station*
Part 2.3: *General—Determination of the stage-discharge relation*
Part 2.4: *General—Estimation of uncertainty of a flow-rate measurement*
Part 2.5: *General—Guidelines for the selection of flow gauging structures*
Part 3: *Velocity-area methods*
Method 3.1: *Measurement by current-meters and floats*
Method 3.2: *Measurement by moving-boat method*
Method 3.3: *Measurement by slope-area method*
Method 3.4: *Collection and processing of data for determination of errors in measurement*
Method 3.5: *Investigation of total error*
Method 3.6: *Measurement of flow in tidal channels*
Method 3.7: *Measurement by ultrasonic (acoustic) method*
Method 3.8: *Electromagnetic method using a full-channel-width coil*
Part 4: *Measurement using flow gauging structures.*
Method 4.1: *Thin-plate weirs*
Method 4.2: *Rectangular broad-crested weirs*
Method 4.3: *Round-nose horizontal broad-crested weirs*
Method 4.4: *V-shaped broad-crested weirs* (this Standard)
Method 4.5: *Triangular profile weirs*
Method 4.6: *Flat-V weirs*
Method 4.7: *Rectangular, trapezoidal and U-shaped flumes*
Method 4.8: *Trapezoidal profile weirs*
Method 4.9: *Parshall and Saniiri flumes*
Method 4.10: *End-depth method for estimation of flow in rectangular channels with a free overfall*
Method 4.11: *End-depth method for estimation of flow in non-rectangular channels with a free overfall (approximate method)*
Part 5: *Dilution methods*
Method 5.1: *Constant-rate injection method for the measurement of steady flow*
Method 5.2: *Integration method for the measurement of steady flow*
Part 6.1: *Measuring devices, instruments and equipment—Rotating element current-meters*
Part 6.2: *Measuring devices, instruments and equipment—Direct depth sounding and suspension equipment*
Part 6.3: *Measuring devices, instruments and equipment—Calibration of rotating element current-meters in straight open tanks*
Part 6.4: *Measuring devices, instruments and equipment—Echo sounders for water depth measurements*
Part 6.5: *Measuring devices, instruments and equipment—Water level measuring devices*
Part 6.6: *Measuring devices, instruments and equipment—Cableway system for stream gauging*
Part 6.7: *Measuring devices, instruments and equipment—Ultrasonic (acoustic) velocity meters*
Part 6.8: *Measuring devices, instruments and equipment—Position fixing equipment for hydrometric boats*

For the purposes of this Australian Standard, the ISO text should be modified as follows:

(i) Wherever the words 'International Standard' appear, referring to this Standard, they should be read as 'Australian Standard'.

(ii) Wherever the word 'fluid' appears, it should be read as 'water'.

(iii) Substitute a full point (.) for a comma (,) as a decimal marker.

(iv) The references to other publications should be replaced by references to Australian Standards as follows:

Reference to International Standard ISO		*Australian Standard* AS	
		3778	Measurement of water flow in open channels
772	Liquid flow measurement in open channels—Vocabulary and symbols	3778.1	Part 1: Vocabulary and symbols
5168	Measurement of fluid flow—Estimation of uncertainty of a flow-rate measurement	3778.2.4	Part 2.4: General—Estimation of uncertainty of a flow-rate measurement
4374	Liquid flow measurement in open channels—Round-nose horizontal broad-crested weirs	3778.4.3	Part 4: Measurement using flow gauging structures Method 4.3: Round-nose horizontal broad-crested weirs
4373	Measurement of liquid flow in open channels—Water level measuring devices	—	

Measurement of water flow in open channels

Part 4:
Measurement using flow gauging structures

Method 4.4:
V-shaped broad-crested weirs

1 Scope and field of application

This International Standard specifies a method for the measurement of subcritical flow in small rivers and artificial channels using V-shaped broad-crested weirs.

The advantages of this type of weir are described in clause 8.

NOTE – A comparison of the different types of weirs and flumes will form the subject of a future International Standard.

2 References

ISO 772, *Liquid flow measurement in open channels – Vocabulary and symbols.*

ISO 4373, *Measurement of liquid flow in open channels – Water level measuring devices.*

ISO 4374, *Liquid flow measurement in open channels – Round-nose horizontal crest weirs.*

ISO 5168, *Measurement of fluid flow – Estimation of uncertainty of a flow-rate measurement.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 772 apply.

4 Units of measurement

The units of measurement used in this International Standard are SI units.

5 Installation

5.1 Selection of site

A preliminary survey shall be made of the physical and hydraulic features of the proposed site to check that it conforms (or may be made to conform) to the requirements necessary for measurement using the weir.

Particular attention shall be paid to the following features in selecting the site of the weir:

a) the availability of an adequate length of channel of regular cross-section;

b) the existing velocity distribution;

c) the avoidance of channels having gradients greater than 1 in 250;

d) the consequential effects of any increased upstream water level due to the measuring structure;

e) the consequential conditions downstream, including such influences as tides, confluences with other streams, sluice gates, mill dams and other controlling features which might cause drowning;

f) the impermeability of the ground on which the structure is to be founded, and the necessity for piling, grouting or other sealing in river installations;

g) the necessity for flood banks to confine the maximum discharge to the channel;