

AS 3778.4.6-2007 vs ISO 4377:2012(E)

Summary

Highly theoretical/academic standard - Little practical value/relevance for hydrometrics.

Recommendation –

I recommend that the technical committee

- *accept the updated ISO in full to replace current AS*

(This recommendation was reached following further discussion with Working Group members)

Note the following issues with the updated ISO

- a) there are references to EU Water Framework Directive (Directive 2000/60/EC). regarding fish movement – if possible, a relevant Australian reference should be made
- b) AS makes reference to term “gauge well” as does ISO on occasions (e 8.2.6, 8.2.8, 8.3.2 where both are used in the same clause)) but primarily ISO uses the term “stilling well” - either term is acceptable but its usage should be standardised
- c) agreement on whether can or shall should be used (eg 7)

Outline

As outlined in ISO 4377:2012(E)'s Foreword

“This fourth edition cancels and replaces the third edition (ISO 4377:2002), which has been technically revised to update the treatment of uncertainty to be consistent with the other standards relating to flow measurement structures.”

This is primarily evident in

- Section 4 - the addition of new symbols
- Section 11, the almost totally revised plus t
- Section 12 he additional examples

- Annexes A and B – new

Other than that, there are few major differences.

Some of the difference include:

There has been a modernisation of the text to include new technologies

6.2.2.7 – inclusion of reference to ADCPs

and more general information

6.1.2 (k) reference to silt removal

7. Section on Algal growth

Some areas are less specific:

6.3.2 AS- The crest shall be formed by an embedded stainless steel insert with bevelled edges to conform with the surface of the weir block. The insert shall be in the form of a removable bar-section, typically by lying along the downstream face of the weir with its edge bevelled at to align it with the upstream face at a gradient of 1:2

ISO - The crest shall be formed by using smooth material resistant to erosion and corrosion, for example, an embedded stainless steel insert with bevelled edges to conform with the surface of the weir block

7 As – In such cases, the metal crest shall be removed, dressed and refitted

ISO - In such cases, the crest shall be repaired in-situ or removed and replaced.

8.2.4 no less and gauged vs not less and measured

Some areas are more specific:

6.3.4 AS - mean dimensional values and their standard deviations at confidence limits computed

ISO - mean dimensional values and their standard deviations (SD) at the 68 % confidence limits computed

8.2.1 AS - Periodic checks on the measurement of the head in the approach channel shall be made

ISO - Periodic checks on the measurement of the head in the approach channel shall be made. This shall be made using a staff gauge, or dipping device (see 8.1) located adjacent to the intake pipe or water level sensor tube. It is essential that the manual head measurement point is truly representative of

the water level at the intake pipe or recorder tube. Check measurements shall also be made periodically within the stilling well or tube to ensure that the water level in the stilling well agrees with external reference measurement. If there is a significant difference, there may be a need to undertake maintenance, e.g. flush stilling well or undertake further investigation to explain differences.

8.2.6 - details on determining whether the crest tapping is performing satisfactorily

8.2.7 – new clause in ISO

8.2.8 (Clause 8.2.7 in AS) - details on minimum distance between invert of the intake pipe and the bottom of the well

8.2.9 - recommendation on the area of the intake pipe

Some areas are less clear

8.2.6 AS The static head at the separation pocket behind the crest of the weir shall be – implies behind?

ISO - The static head at the separation pocket immediately downstream of the crest of the weir shall be – implies in front?

8.3.2 AS – “shall be set up”

ISO – “can be set up”