

Pressure Attenuators

AS/NZS 3500.2.2021 – Clause 6.11.3

Project Scope

Revision and Renewal of Venting Provisions 6.10 AAVs and 6.11 Pressure Attenuators of 3500 Part 2
2018

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Pressure Attenuators

AS/NZS 3500.2.2021 – Clause 6.11.3

Group 7 Venting Provisions 6.10 AAVs and 6.11 Pressure Attenuators of 3500 Part 2 2018

A case for change

Introduction

Subject AS/NZS 3500.2.2021 – Clause 6.11.3

Changes to AS/NZS 3500.2.2021 have been proposed by Standards Australia WS-014 committee. This change was supported by WS-014 on my advice. This change intends to remove the need to have Pressure Attenuators accessible when installed behind a single sheet plasterboard wall or ceiling.

There is a problem in this section of the existing standard 6.11.3 for both the national regulators and the industry so it is important that a change be made.

I put to you the reason for change and a way to enable that to take place without impinging on the overall NCC performance provisions.

To that end a complete rewrite of both section 6.10 AAVs and 6.11 Pressure Attenuators was undertaken.

A substantial commitment was made by Studor in this project to support the standards in delivering best practice outcomes to the industry, and to the consumers of the services offered by the industry. There are benefits to be made with the changes proposed, and more importantly a safer more efficient national uniform plumbing construction outcome.

The ABCB is seeking stakeholder support from the PCC to overturn this change.

It is my understanding that a question has been raised regarding whether or not to have direct access to installed Pressure Attenuators. This issue of access is partly driven by a common inconsistent approach, driven by a poorly worded and out-dated definition in the Glossary of Terms, when applying the definition of accessible when dealing with 6.11.3.

The reality is, that nationally the practice is to not require access for Attenuators.

In the existing standard the term “accessible ” is discretionary. The use of the word “MAY” clearly demonstrates that point.

A recent problem in Sydney has arisen due to an interpretation on site which removed the discretionary element and placed the interpretation of “May” to a “Must” or “Shall”. This was never the intent.

The need for a more national uniform approach is required when dealing with Pressure Attenuators in what is a national plumbing standard.

I thank you for the opportunity to resubmit our proposal for consideration.

General comment

Pressure Attenuators were introduced into AS/NZS3500.2 in 2003. I was on the standards committee at this time. I was also on the committee when AAVs were first introduced. So I am aware of the tendency to be risk-averse.

I was also part of the National Plumbing Regulators Forum, a group of progressive national regulators who were charged with the development of the Plumbing Code of Australia. To that end I have a clear understanding of both the performance approach and the Deemed to Comply as they were intended. There is a trend to interpret the Deemed to Comply pathway as an inflexible absolute, which it is not.

The proposed change in this process was to remove the requirement to have all attenuators openly accessible. This change is aimed at delivering a clear clarification for what is a mixed inconsistent and incorrect interpretation of the existing Deemed to Comply provisions of the regulatory process.

Further; it has been said that there is overwhelming support from regulators and the industry to overturn the outcome of a transparent open regulatory review process delivered by WS-014. I cannot speak for the Regulators, but Studor have two credible industry technical specialists measuring industry practices by working with the industry on a daily basis, they know what is happening, and clearly a no change option to existing inconsistent regulatory direction in relation to Pressure Attenuators 6.11.3 is not supported by fact.

The issue

The proposed change was intended to address the issue of whether or not to have direct access to all installed Pressure Attenuators. Perhaps we could have been more descriptive in our intent.

To make judgement in regards to Pressure Attenuators there has to be an appreciation of the impact of any decision made, knowledge of the size of the issue, and the need for a nationally agreed application of the standard.

None the less, the discussion should be about efficient compliance, common sense and at the same time ensuring the designed performance, the designed amenity, consumer protection, and the efficient cost of regulation compliance are all met.

The term in question here is Accessible!

In the existing standard the term "accessible" is discretionary. The use of the word "MAY" clearly demonstrates that point. It is designed for a common sense approach to be applied. That was the intent!

The application of this nationally is a mess.

I put it to you that, if the Attenuator is installed behind a single sheet of plaster then it is accessible. And the States, Territories and industry agree, I can safely say that because, that is what has been happening nationally since 2003 when Attenuators first arrived.

It should be noted that since the introduction of Pressure Attenuators into Australian Standards in 2003 they have been installed behind single sheet plasterboard wall and ceilings with no access panels. From this time there has been no issue from regulators, inspectors or local authorities.

Pressure Attenuators, not a normal plumbing valve.

- These valves are unique because they are only installed in known set locations.
- These locations are clearly specified in the standard. This is the only valve that has that obligation under regulation.
- I would put it to you, that it is accessible because the location is always known.
- We are talking about clearly compliant designs only. (There are many valves and drainage maintenance openings in a building not required to have access even when their locations are unknown)
- The valves are proven and they deliver the intended design purpose without fault and that is a known fact, and to support that I invite you to consider the factual data below.

Pressure Attenuators in Australia and New Zealand

To make an informed decision you need to understand the full impact of any decision made. These figures below are in confidence and to be used for this discussion only.

There are approximately 19,630 Attenuators installed in Australia and New Zealand today. All of those installs are without access panels!

There has never been a nationally consistent approach.

The following table shows the number of Attenuators installed in each State and Territory of Australia and New Zealand. There are currently developments in planning and under construction around Australia with hundreds of attenuators to be installed.

Note; The quantity of installs shown in RED are reliable but an estimate only because the records were not fully complete over that time, but the number shown in table 2013/21 are actual known installs.

The numbers are not insignificant.

State / Territory	Attenuators installed 2004 to 2013 Estimated	Attenuators installed 2013 to 2021 Actual	Total installed for each state and territory
NSW	3086	5114	8200
VIC	2240	3860	6100
QLD	1105	2095	3200
NT	111	339	450
NZL	99	301	400
SA	63	237	300
ACT	181	219	400
TAS	49	201	250
WA	174	156	330
Total	7,107	12,522	19,630

Pressure Attenuators facts, reliability and performance.

- The attenuator is not rated or classed as a mechanical device.
- Globally there are over 52,000 Attenuators installed today.
- Globally there are less than 3 known failures and 4 unsubstantiated reported failures. There have been no Attenuator product failures in Australia or New Zealand since their introduction in January 2003 some 18 years ago.
- The performance and reliability outcomes are a product of more than 20 years of research and continuing development underwritten by Heriot Watt University Edinburgh.
- The installation practice within AS/NZS3500.2 based on the Heriot Watt "Best Practice Guide", delivers compliance to the maximum loading capacity of Sanitary Drainage systems within the Australian codes.
- The failure rate of attenuators is less than 0.0135% measured over the full known operational period of 18 Years.
- Further to all the above, they have been installed in Australia and New Zealand without any known failure of operational performance required by the NCC from 2004 when first introduced via the AS/NZS3500.2 Sanitary Plumbing and Drainage 2003.
- They are currently used as intended in Active Vented Systems.
- They are also retrofitted for a problem fix into Sanitary Drainage systems including traditional vented systems, single stack systems, modified venting systems as well as RVASS which have failed.
- Globally Pressure Attenuators are installed without access panels as noted in Appendix A.

Pressure Attenuators and Active Venting.

Attenuators were invented and designed predominantly by Professor John Swaffield from Heriot Watt University. John Swaffield was called in by the world Health Organisation and the World Plumbing Council to investigate the SARS outbreak in Hong Kong, and determine its origin and how it spread.

From this experience Attenuators were born as a better method for dealing with positive transients in high-rise stack systems.

Up until his passing, John Swaffield was recognised globally as one of the world's leading experts on stack and drainage systems. Millions of data points, testing and simulation have gone into the design and performance of Attenuators, they are not some hastily put together product with hope that it works. They are a designed product with set placement and performance parameters.

It must also be stated that whilst some people's opinion is that these products are mechanical devices, they are not rated or classified as such.

This unique type of venting system, incorporating AAVs to alleviate negative pressures and Pressure Attenuators to deliver protection against positive transients is a collective known as "Active Venting".

This technology has the ability to prevent the drainage system from transporting sewerage vapour into our living air space, and will be critical with a growing risk of global pandemics in hospitals and other community living spaces, as active reviews will determine. A current UK research project is underway to check on the issue with the spread of SARS-CoV-2 (COVID 19), which is the same virus family as SARS-CoV that hit Hong Kong back in late 2002. This virus was found to have spread from the plumbing system within Amoy Gardens Apartments.

Many existing sewerage vent terminals compliant with AS/NZS3500.2 terminate adjacent to or within close proximity of air conditioning air intakes and comply. Depending on those research outcomes, Australia is well placed to take an active position through the plumbing regulatory space. Further change may come.

Summary

On reflection a more workable solution for a change we were seeking could have been proposed.

Both the regulators and the industry have a problem. The problem to some extent is clearly visible to the industry by the inconsistent approach delivered from regulators in each state and territory.

This issue is not small, the 19,360 installs of Attenuators behind plaster sheet walls demonstrates the problem both parties have.

It is conceded the purpose of our original position, that was to remove the need for access panels for Pressure Attenuators, could have been more clearly defined.

We have this chance to make change that is clear and precise and will deliver a no risk outcome for all.

The proposed change will deliver a nationally consistent interpretation from the regulators, it will also ensure the performance provisions are met, and the critical amenity ensuring consumer safety and protection is delivered.

To that end it is suggested a more precise targeted wording in "Note" format to WS-014 and the PCC group be considered for incorporation into Clause 6.11.3 Pressure Attenuators.

This proposed modification should enable the required access to the installed system, and deliver a direct workable efficient guide for the industry to have confidence in. It will also enable the regulators to be more nationally consistent with their direction to the industry.

A suggested Solution

I have worked with Studor technical experts to develop a workable and practical solution. These solutions do not seek to have all Attenuators accessible which is mirrored by existing install practice.

The wording in each option has been assessed by a wordsmith expert experienced in developing text used for engineering and trade publications.

The assessment does require at least 100 words to deliver a known proven readability outcome for the target audience of AS/NZS3500.2. Which is a mix of Plumbing Contractors and design engineers. To achieve that end the wording was embedded in the 3500.2 standard.

I have attached three draft options below.

1. Have a "Note:" incorporated into the Standard section relating to Attenuators, or
2. Have an additional clause incorporated into the standard, or
3. A stand-alone note incorporated into 6.11.3. (Recommended)

Following that process Options 1 and 2 were judged to be unsuitable and scoring above year 12 levels. Even though option 2 and 3 have identical wording option 2 is embedded into the ABC's of the standard and that is where its score is generated. If extracted as a stand-alone Note, then its readability or chance of simple understanding is increased because it is read as a stand-alone direction.

Option 1.

~~Note; An Accessible Pressure Attenuator:-~~

~~A Pressure Attenuator is deemed to be accessible when located behind a single the plasterboard sheet wall or ceiling without an access panel if the location of the Pressure Attenuator is recorded on the final plans for the building.~~

~~If the Pressure Attenuator is located behind a concrete wall or block wall or any other restriction, then it will require an access panel, door, cover or similar option.-~~

Option 2.

~~Pressure attenuators shall be—~~

- ~~(a) connected to stacks by means of 45° or sweep junctions;~~
- ~~(b) positioned above the point of connection in either a vertical or horizontal orientation; and~~
- ~~(c) adequately supported with allowance for thermal movement.~~
- ~~(d) Attenuators shall be installed as close as possible to the stack, and with minimum changes of direction, in accordance with (a), the maximum distance of pipework from the stack to the attenuator shall not exceed (2) meters.~~
- ~~(e) Attenuators installed behind any material other than single sheet plasterboard, may require an access panel, door, cover or similar option.~~

~~Connections to the stack, other than those immediately above the base of the stack or offset, shall be above the branch discharge pipes at that floor level.~~

~~NOTE: A typical connection of stack to pressure attenuators is shown in Figure 6.11.2.~~

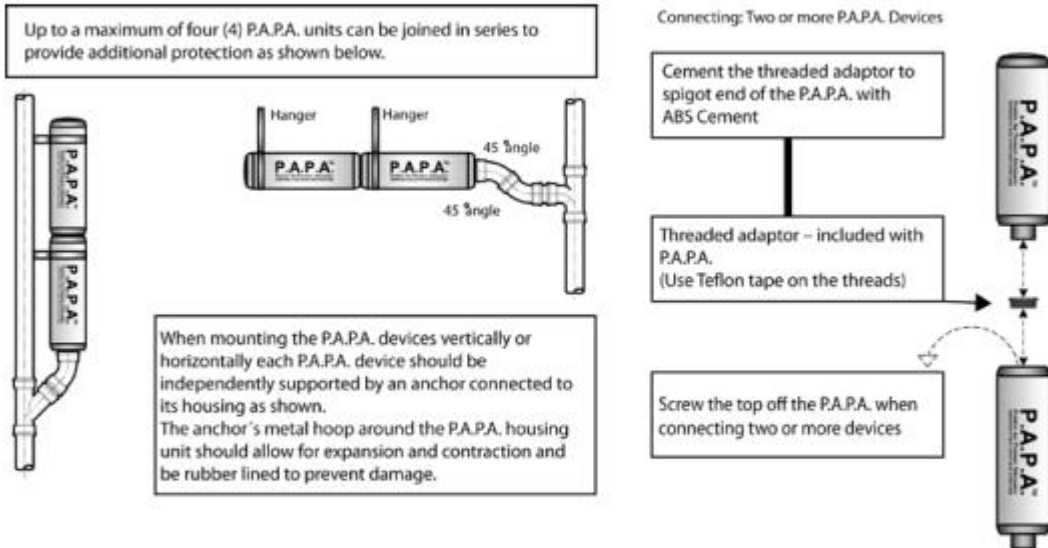
Option 3. (Recommended)

Note: Attenuators installed behind any material other than single sheet plasterboard, shall require an access panel, door, cover or similar option.

Appendix A.

Installation of the P.A.P.A.™ Device

Installation: Two or More P.A.P.A. Devices



Note: The P.A.P.A. must be installed after the System's pressure test, in an accessible location.

Note: Accessible; in regard to the P.A.P.A. device is defined as noting the location of the P.A.P.A. device on the final plans for the building. The P.A.P.A. may be located behind the sheetrock wall or ceiling without an access panel. If the P.A.P.A. is located behind a concrete wall or block wall an access panel is required.