

NEWSLETTER

Association of Consulting Structural Engineers Victoria (Reg No: A0026069J) www.acsev.org.au
Foundation and Footing Society Victoria (Reg No:A0025791G) www.footingsgroup.org



ACSEV Structural Excellence Awards 2018

ACSEV is proud to be involved with three universities this year, offering annual structural excellence awards to the high performing students in civil engineering at **RMIT University, Swinburne University and Monash University**. The award is instituted

- To allow ACSEV to foster relations with various universities;
- To encourage student engineers to pursue studies in the structural engineering field;
- To introduce students to ACSEV and the services we provide to structural engineers; and
- To grow and evolve as a relevant organisation.



Jenny Norrish, Treasurer ACSEV, introduced the award at the universities this year, and elaborated on the purpose of this award. The first of the awards will be presented at the Annual General Meeting (AGM) on 17th October 2018. Welcoming all members to AGM to witness this proud moment . Please book in advance as seats are limited.

NEWS

- *Next Government to consider Engineers Bill*
- *ACSEV Annual General Meeting on 17th October at Box Hill Golf Club*
- *FFSV Annual General Meeting on 31st October at Box Hill Golf Club*
- *ACSEV partnering with Austbrokers Countrywide*
- *ACSEV Student Awards 2018 to be distributed on AGM*

Inside this issue

President's messages.....	p2/3
Opinion.....	p7
Technical article.....	p12
Book review.....	p14
Research article.....	p15
Brown Report.....	p21



Join ACSEV and earn your CPD.

A perfect place for peer networking and improving practice knowledge.
8 evening seminars, 1 site visit, and a workshop in an year presented by experts from industry and academia.

NEW MEMBERS WELCOME

Please contact membership officer Francis Hsieh (9561 9431) for more details.
Membership form can be downloaded from http://www.acsev.org.au/images/signup_form.pdf

Monthly meetings at Box Hill Golf Club every third Wednesday



Karl Apted
karl@apted.com.au

2017-2018

President:	Karl Apted
Vice President:	Brad Little
Treasurer:	Jenny Norrish
Secretary:	Anthony Leily
Past-President	Richard Eckhuas
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	Len Dalziel
	Robert Nestic
	Minhtri Nguyen
	David Lyon
	Richard Rees
Part-time/Country:	Richard Fooks
	Philip Vawdrey

“ We hope that whoever forms Government in November will listen to all interested parties and consider the implications of registering engineers and what the overall effect could be on the profession and other related parties”

President’s Message

Dear Association members,

It is that time of the year again, the ACSEV Annual General Meeting. Whilst the AGM may not be the most interesting meeting of the year (apologies to our technical presenter Ed Samo, I am referring meeting not the presentation), it is a very important part of the year as the Association elects Committee Members and Office Bearers to assist in running and representing the Association (and performing many roles including finances, membership, technical meetings, annual dinners).

I would like to thank all our Committee Members this year for the efforts in representing and assisting running ACSEV on your behalf.

I particularly would like to thank our retiring Vice President Brad Little for his contributions to ACSEV, especially in his research into the registration of engineers. Also thank you to those retiring from Committee Minhtri Nguyen for his work on committee and as editor of the newsletter.

The Association is always keen to have input and help from interested members. Please consider assisting and helping the Association by becoming a Committee members.

I encourage all members of our Association to contact the Committee and Office Bearers with any questions, issues, concerns, or even comments on how we are running the Association on your behalf. Any suggestions or comments as to how you would like to see the Association operate are sought. Please send to acsev@acsev.org.au.

At the AGM we also look forward to again awarding our Students Award, which we have not offered this for some time.

ACSEV does not oppose the principle of registration of engineers but has concerns as to how the registration is implemented, transitioned from the VBA, and its affect on engineers (especially already registered engineers under the Victorian Building Act).

We hope that whoever forms Government in November will listen to all interested parties and consider the implications of registering engineers and what the overall effect could be on the profession and other related parties. We hope that ACSEV can provide a voice in assisting with any proposals regarding

the registration Engineers in Victoria.

Please contact the Committee for further information (or even if only to tell us what we are doing wrong).

The next meeting in October will be the AGM and a presentation from Ed Samo regarding building litigation issues. Refer flyer which will be sent shortly, for further details.

We note that there will also be the end of year dinner in November, this year to be held at the Veneto Club in Bulleen.

Australian Technical Evaluation Network (ATEN) Program:

I would also like to thank Swinburne University for inviting ACSEV to be part of consortium proposing and being involved with the new Australian Technical Evaluation Network (ATEN) program.

ACSEV has agreed to offer support for this program, with the Committee offering funding and support in kind from ACSEV Members. The Victorian Building Authority has recently agreed to also fund and become part of this program.

The purpose of the ATEN program is to setup and adopt a system of approving and testing products in a uniform and independent manner which will then give manufacturers, specifiers, builders/installers and end users a high level of confidence in materials that have been assessed and evaluated.

The Combined Foundations and Footings Society Victoria and ACSEV meeting covering AS2870 Issues, Proposed Testing of Waffle Slabs, and the use of alternate solutions as part of the National Construction Code. This meeting was well attended, the largest meeting of the year. Thank you to our presenters Steve Buratto, Patrick Irwin, Luke Tymensen, and Russell Brown. There was also a presentation from Professor Lam Pham from Swinburne University regarding the use and acceptance of alternate solutions in the National Construction Code.

The next meeting in October will the AGM and presentation by Ed Samo regarding building litigation

I look forward to seeing members at our AGM and dinner.

Regards,

Karl Apted



Luke Tymensen
luke@hcgeotech.com.au

2017-2018

- Chairman: Luke Tymensen
- Vice Chairman: Steve Burratto
- Secretary: John Southwell
- Treasurer: Francis Hsieh
- Asst Treasurer: Ramon Leoncio
- General Committee:
- Simon Anderson
- Russell Brown
- Scott Emmett
- Tim Gibney
- Andre Merheb
- Xavier Smolders
- David Tuaine
- Philip Vawdrey
- Bernie Weberuss

Chairperson’s message

Dear Members,

What a fantastic turnout at the combined FFSV / ACSEV meeting. We had around 100 people for dinner and close to 300 people attend the meeting.

The presentations for the evening were a look at AS2870-2011 and the issues that we all have to deal with from Steve Buratto and Patrick Irwin. Steve also provided a page for attendees to look and to provide feedback in regards to what constitutes failure. This is a common thread that keeps coming up. Every-one seems to have their own ideas on what constitutes a failure and how to measure it. There are arguments as to what is and what isn't in AS2870-2011 regarding failure.

The second speakers were Russell Brown and I, regarding the waffle pod project. Russell outlined why the calculations suggest that the project will be a success while I outlined the reasons for wanting to do the project and the various stakeholders that should / will be / are interested.

There has been further progress made in regards to a site that we can use. A meeting with Victoria University has been arranged to discuss the finer points as to how the project will work. There is also a meeting being arranged with a local council where we would like to also install some of these slabs to be used as basketball areas in council reserves. This will enable us to monitor these for a lengthy period of time.

It was mentioned by several sources that this was one of the largest attendances for a

meeting from both groups. Hopefully this means that the information being presented is of interest to our members and that they are using the meetings as a time to network with other professionals. It is a great way to make new contacts and to find answers to some of the problems that we all encounter in our day to day jobs.

The final meeting for the year is the AGM. At the AGM Steve Buratto will provide the findings to the sheet that he handed out at the combined meeting. Swinburne University will also discuss their role in the waffle slab project and how it will benefit members and industry alike.

As this will be the last meeting for the year, I encourage all interested parties to come along and to network with other professionals.

I also encourage any interested parties to speak to a committee member about joining the committee for the next year. They will be able to outline to you the requirements and benefits of being a committee member.

See you all at the next meeting, the AGM on Wednesday 31st October, 2018.

Sincerely,
 Luke Tymensen

“ Everyone seems to have their own ideas on what constitutes a failure and how to measure it. There are arguments as to what is and what isn't in AS2870-2011 regarding failure ”

FFSV ANNUAL GENERAL MEETING

31st October 2018

Venue: Box Hill Golf Club (202 Station Street, Box Hill, Vic. Melway 61-D3)

ACSEV New Partnership – Austbrokers Countrywide

Jenny Norrish, Treasurer ACSEV



Professional Indemnity Benefits:

5% Rebate off your Premium
Pre-filled Proposal Forms

ACSEV is pleased to announce a new partnership with a leading insurance and financial services provider, Austbrokers Countrywide. As a local Professional Risks specialist, Countrywide already look after Professional Indemnity policies for over 3,000 consultant professionals and have 80 staff located in Scoresby.

A key to our partnership is a 5% Rebate on insurance premiums. In the first year this rebate will be paid directly to members, then from 2020 it will help fund ACSEV initiatives like risk management, legal advice, and potential association-wide protections such as top-up insurance or a run-off cover fund.

We have struck this agreement to help members not only access high quality Professional Indemnity Insurance at the best price, but also give ACSEV members access to contract review and risk management services from the team at Countrywide.

For those who missed our meeting on Wednesday 19/09, Countrywide presented us with an online professional indemnity proposal which they can pre-populate with all our existing details. This can be re-used every year making your renewal so much easier.

Benefits to ACSEV Members:

- 5% Rebate on your premium!
- Pre-filled online proposal, no more blank forms or printed forms
- Advice on Insurance and Industry Compliance – VBA, Contract Reviews
- Advice on Key Risks – Non-Compliant Building Products, Run-Off Cover and Subcontractor Errors
- Risk Management with both technical articles and technical talks coming in 2019
- Access to full Insurance Broking Services for both Business and Personal Insurance

What next? Register your Interest:

We know all members will have their insurance renewals at different points throughout the year, so to register your interest or gain advice immediately simply email Countrywide today with

- Your most recent Professional Indemnity Proposal
- Your current Policy Schedule or Certificate of Currency

Countrywide will review your policy and load up a pre-completed proposal form ready for your renewal date in 2018-19. This is an exciting new partnership for ACSEV and we are looking forward to sharing the benefit with all members.

Contact:



Wade Cadman
Account Manager - Professional Risks..
Email wadec@abcountrywide.com.au
Phone (03) 9835 1379

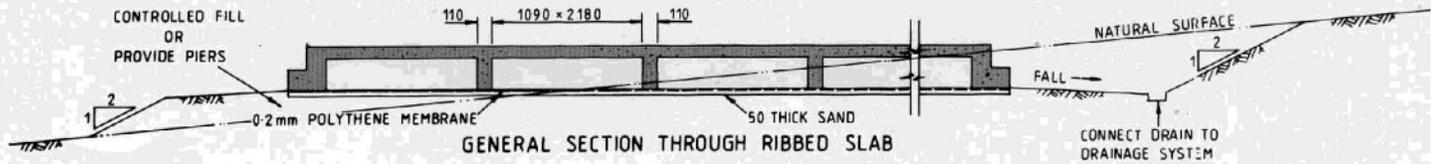
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Research in to waffle pods

Luke Tymensen, Chairperson FFSV



For quite some time there has been discussions amongst members of FFSV and ACSEV about how do we solve the most common problems that we all encounter as Geotechnical and Structural Engineers and Professionals. The usual issues are poorly compacted fill sites, leaking services, poor and / or inadequate drainage and tree drying issues.

Robust discussion has followed and usually this leads to a common point that our issues could all be fixed if AS2870-2011 was completely re-written.

As this is unlikely to happen the discussion then leads to what else can be done. There has been a lot of discussion regarding using a waffle pod that is tied to screw piles. There have been some in favour and some against. There have been calculations done by both sides that suggest that it will / won't work.

The idea was then born that we should actually model this in the field and test the theory properly. By doing this, the slab can be monitored to provide real time / real life results that can be analysed to help us further understand the pressures and movements that slabs and footings experience.

This will be 3-D modelling of a real life / real time situation instead of the 2-D theoretical models that are used in AS2870-2011.

The intention is to construct a slab on the worst case probable and to measure the movements and pressures that act upon the slab and the screw pile connections. The slab is to be constructed on over consolidated, dry of optimum highly reactive CLAY fill that will have moisture added deliberately. The intention is to add enough moisture so that the maximum heave is achieved and to en

sure that the pressure from the heave doesn't shear the slab off the connections to the screw piles. The expected outcome is that the heaving soil will fill the void of the waffle pod and exert minimal pressure to the connections themselves.

By having sensors underneath and on top of the slab, movements and soil pressures can be measured and used for further analysis. This analysis could lead to a more cost-effective design that can be used in areas where soil reactivity is not as high as the Western and Northern Suburbs of Melbourne.

The desired outcome of this research is to produce a product that has been designed and tested by industry to ensure that it will perform as required. This would then provide a cost-effective solution, that has been tested and checked, to be used in situations as mentioned at the start of the article. It will also reduce the risk of building on the highly variable, highly reactive soils that we have in the Northern and Western Suburbs of Melbourne and various other areas around Victoria.

There has been a fantastic response from Industry in regard to supplying products and equipment. There is a meeting in September with Victoria University in reference to accessing a site and there is a further meeting planned with a local council in reference to constructing some of the slabs on their recreation areas that will be able to be monitored for many years.

Ideally it would be great to have the project started ASAP so that the information from the monitoring can start to be gathered.

I will keep you all informed of the progress of the project as it occurs.

Compliance and testing of materials

Prof Lam Pham, Swinburne University of Technology

15th August 2018



Lam’s presentation was excellent; it covered technical problems which we don't realise how much they affect us; compliance with good practice, and knowing that the products you're specifying on your drawings are what's going in the project. These things are being questioned heavily not only in Australia but around the world.

He also thanked ACSEV in that we did agree to put forwards members in kind to help and assist in setting up a system throughout Australia starting in Victoria with Swinburne University to ensure that compliance is reached with each and every product with methodologies whereby these matters can be tested properly.

Whilst it may seem like a dry topic, however the ramifications are the direct opposite. If countries around the world, in particular Europe, have in place very well-known and very strong testing regimes nobody attempts to put rubbish into those economies. If Australia does the same we too will benefit by having the better products at the right price come through. This is the thrust of it all.

The second part of Lam's presentation was on the funding that is being put forwards by both ACSEV and FFSV of \$20,000 per annum per organisation for the next four years for the sole purpose of ensuring that we have an adequate and intelligent Steel Design Handbook. It is hoped that this money will be matched by grants from government agencies and/or similar and it will not stop at a Design Handbook but will look at fabrication details and integrate them, it will look at how best to do second and third tier type analysis and knowing when you transition from one to the other i.e. rust rates, fatigue, harmonics and all those things that we try to ignore; will be much easier handled in a handbook that keeps them simple so you know when you transition from "I'm sure it's working" to "I am not sure". This will be an excellent four years of solid research and it will be an excellent time for all of us to get involved.

Whilst the amount of money sounds big it doesn't actually buy you a great deal of time at the hourly rates charged, therefore we are looking for ACSEV and FFSV members to put in and to help and assist to make sure that when a question is asked we get intelligent answers.

The breadth of the topics covered by Lam were extensive and the newsletter and future meetings will aim to keep everybody up to date on the topics. If you would like to see further of Lam Pham's presentation, you may view the slides/notes on the ACSEV website.

.....R.Brown

Scoping study for Australian Technical Evaluation Network (ATEN)

Swinburne University is leading the project titled 'Scoping Study for Australian Technical Evaluation Network' and is negotiating for funding through Victorian Future Industries Fund – Sector Growth Program - Construction Technologies. The project is to carry out a scoping study for the creation of an Australian Technical Evaluation Network (ATEN) as a consortium of Australian technical institutions that will carry out appraisal of construction materials and products including testing. The Network will perform three functions:

- appraisal of new innovative products that will assist in the certification and regulatory acceptance of these products,
- investigation of non-conforming products and
- providing relevant technical data on construction products for the consumers via web-based medium.

Along with Swinburne, VBA, CSIRO and NASH, ACSEV is also contributing in-kind to this initiative. Prof Lam Pham who is heading this program has recently wrote to Russell Brown thanking ACSEV for the support. For more details please contact Russell Brown at russellb@ribrown.com.au

.....Editor

ACSEV Technical meetings, CPD hours with a difference

Biju.B



Mandatory CPD hours are dreadful times for any engineer who is struggling to find the balance between family time and the ever increasing professional work load. A practicing engineer has to dedicate their valuable productive time, as well as hard earned money, to gain the required hours to satisfy professional registration bodies. If you are lucky, you will find something useful which you might apply to your practice area, but more often than not, you end up unlucky. Most of the CPD providers are like general practitioners trying to fight an infection with a broad spectrum antibiotic rather than a specific one. It works for most of them, then why not?

ACSEV technical seminar is a different kettle of fish in the mix. After 6.30 PM on the third Wednesday of every month, ACSEV seminars are delivered in a relaxed setting, in the backdrop of sprawling Box hill golf course. After a good quality steak dinner, tasting specially sourced wine, you are already winding down. Over dinner, you suddenly realise that the grey-haired gentleman sitting next to you is an expert in the field that you want to get some advice from, and he is more than happy to answer some of your decade old stupid professional questions you were reluctant to ask anyone! After a few ice breaking chit chats you shoot some questions and the conversation is on. You are already learning and the technical seminar has not even started yet.

ACSEV committee prepares the topics of seminar annually, after a good round of discussions and they always balance the content to match the expectation of a wider audience. For example, you will always find something on concrete, steel, masonry or timber. Also the content will be delivered from different stakeholders such as academia, industry and practicing engineers. This gives the audience a balanced view of the topic rather than one-sided advice. The recently concluded Joint ACSEV/FFSV meeting is the best example where the speakers were from Swinburne University, FFSV, ACSEV and Practicing Engineers. The topics generated overwhelming interest and attracted more than 300 participants — a new record for ACSEV/FFSV seminars!

In most CPD seminars, after the main delivery, you find the organisers clamping down on questions, with an apology for the lack of time. On the contrary, ACSEV seminars often end up with an hour long interactive session where you often find the conversation extends to the carparks. I think that is where the learning happens. I find the those heated interactions are quite useful to the audience as you see the different angles of the same argument and you can make up your mind on which side you want to be. As we all know, there is often no direct answers to the burning engineering questions we have, only a few possible solutions which you can rely on. If you learn a few of those, you have gained something out of the evening and the necessary CPD hours, of course.

ACSEV delivers annually 10 CPD programs (8 technical seminars, one site visit, one workshop). You can find all information about the seminars in the quarterly newsletter. Even if you miss a few, the newsletter provides enough information about the session and you can always follow up with the committee for more information about a specific seminar you are interested in. ACSEV is a VBA approved CPD provider and the topics and contents are selected to meet the current requirements of the structural and civil consulting fraternity.

Looking forward to meet you at the next technical meeting!!

Timber and Screws

Greg Pankhurst, Technical Consultant, SPAX Pacific
19th Sept 2018

Greg Pankhurst, the Technical Consultant and Engineer with SPAX Pacific, gave a presentation on modern timber connections, focusing on applications and design of screwed connections in timber.

Modern screws have a number of advantages when compared with traditional methods such as bolts and steel plates, the most important often being the aesthetics of the joint where screws can be completely concealed, providing a much more aesthetically pleasing connection. The other advantages are fire resistance, speed of application and cost effectiveness. Screws are also an effective method of re-inforcing timber to prevent cracking in tension and crushing in compression.

When designing connections, there are a number of factors to consider, including grain orientation, timber species, edge distance and spacing, as well as the type of connection which will ultimately determine the style of screw head required and the thread type, partial or full thread. The design examples provided a comparison between designing with the Eurocode versus Australian Standard AS1720, with some interesting results. It is interesting to note that not all screws are the same. Innovations in the German-made SPAX screws provide faster installation with less torque, less chance of splitting and closer edge distances and spacing compared with conventional timber screws.



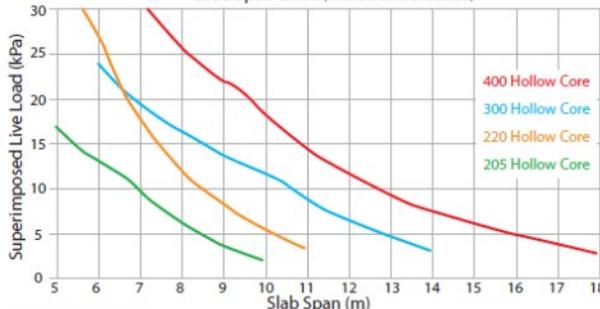
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Load Span Chart (with Structural Screed)



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ABN 65 622 466 320 *Associations Incorporation Registration No.: A0026069J*



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www.acsev.org.au

ACSEV ANNUAL GENERAL MEETING 2018

DATE : **Wednesday, 17th October, 2018**

TIME : **Start 7.30 p.m.**

VENUE : **Box Hill Golf Club
202 Station Street
Box Hill South**

Mel. Ref: 61 C3

AGENDA

1. Apologies.
2. To confirm the Minutes of the 2017 Annual General Meeting.
3. President's Report.
4. Treasurer's Report.
5. Declaration of Office Bearers.
6. General Business
7. Guest Speakers.

By Order of the Committee

Secretary
24th September, 2018

Engineers Bill not passed

Karl Apted

The ACSEV Committee, and other interested parties including regional engineering groups (especially from the Ballarat area), have responded to the Victorian Government regarding this proposed act regarding the many concerns as to the need and intended operation of the proposed legislation.

ACSEV Committee called, corresponded with, and met numerous State Members of Parliament expressing our concerns. We spoke to opposition, government, minor party and independent members expressing our concerns with the proposed bill.

As a result of efforts from numerous concerned parties, including ACSEV, the Bill was not put to the Legislative Council for final debate and approval. It appears the Opposition and minor parties also had concerns with the Bill and the Government was not confident in pushing the Bill further.

The Bill had been approved by the Legislative Assembly and had been listed a number of times to go before the Legislative Council for final approval.

With the Victorian Government now going into caretaker mode in the lead up to the State Election in November, the Bill is now no longer in place and the process will need to begin again.

We hope that the new Government will consult extensively and take into account industry concerns, and make any proposed registration system less of an imposition on already practicing and regulated engineers (currently professional engineers are required to be Registered under the Victorian Building Act when working on classifiable buildings). ACSEV hopes to be part of any consultation process.



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- Design of Clay Masonry for compression
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CSR

Benefits of permanent formwork wall systems

Stephen Nash, AFS/CSR Development Engineer – BEng (Hons), Grad Dip Comp, MIE Aust.



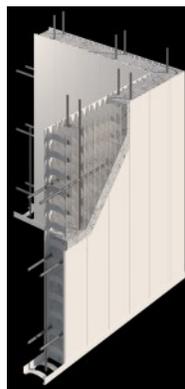
AFS Logicwall® and Rediwall® are permanent formwork wall solutions. AFS Logicwall® is a fibre cement based permanent formwork panelised solution, while AFS Rediwall® is a PVC based panelised system. Both systems can save you time and handling costs. The lightweight panels are easily lifted into place by hand and components that just either snap-in or slide together and lock into position. Once reinforcement is installed and the concrete poured, the formwork stays in place permanently and you have resultant structural reinforced concrete wall that can be designed to comply with Australian Standard, AS3600 - Concrete Structures.

NCC Building Code Compliance

Both the AFS Logicwall® and Rediwall® systems meet the NCC building code compliance requirements, with AFS Logicwall® system already having Codemark Certification, and also having NATA accredited test laboratory tested for smoke and fire resistance. The Rediwall® system has been deemed water resistant.



Above: afs logicwall®



Above: afs rediwall®

Speed of Installation Saves You Time and Money

The greatest benefits for using AFS Logicwall® and Rediwall® over other conventional heavy weight walling systems such as pre-cast concrete panels and even blockwork is its ease and speed of installation, including the need for less number of truck and crane movements. This is especially an advantage for tight sites or sites with obstructions like overhead power and tram lines.

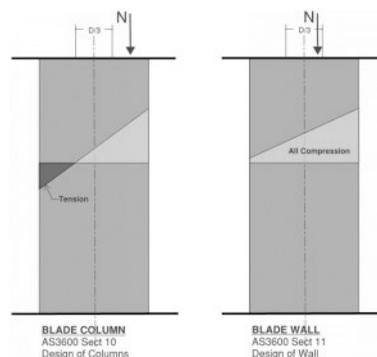
AFS Logicwall® and Rediwall® panels are delivered in palletised packs once landed on the site floor do not require cranes for erection by the installation crew. They can easily be lifted into place by hand.

Applications

AFS Logicwall® and Rediwall® walls are a simple and effective alternative to traditional block walls. With an increasing demand throughout the construction industry for faster and more efficient building methods, our systems have gained rapid acceptance in the industry due to the speed, ease and flexibility of design and construction.

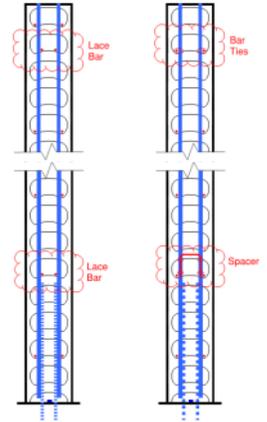
AFS Logicwall® lift and stair cores have similar capacities to In-situ cores subject to some limits in shear capacity. The core walls act as a full monolithic cantilevered core with full corner connections. In comparison to precast core walls require additional shear connectors, more reinforcement, dowelled starter bars and heavy craning on site.

AFS Logicwall® and Rediwall® blade walls can be designed as a structural wall that is no longer a long continuous wall by satisfying AS3600 Section 11 to be designed as Simple Walls. Or as a Blade column AS3600 Section 10.



Ease of Placement of Reinforcement Bars

- The location of reinforcement **bars** within the AFS Logicwall[®] and Rediwall[®] panels can be easily achieved. Horizontal reinforcement placement is achieved using the specifically profiled locating recesses of the panel webs allowing for the reinforcement bar to self-locate to the centre of the recess (for single layer) or to the outer edges of the recess (double layer) to achieve the desired cover.
- Vertical bars are located through the top and bottom of the panel and held in place via a 'laced' bar. A laced bar is a horizontal bar placed on the alternating sides of the vertical bar to correctly locate their position.



Concrete Placement

To ensure effective concrete flow & compaction, AFS has specified standard and high workability concrete mixes and concrete placement techniques that have been tested to achieve successful of filling of AFS Logicwall[®] and Rediwall[®] .

Humour being

A young engineer was leaving the office at 6pm when he found his boss standing in front of a shredder with a piece of paper in his hand.

"Listen," said his boss, "this is important, and my secretary has left. Can you make this thing work?"

"Certainly," said the young engineer. He turned the machine on, inserted the paper, and pressed the start button.

"Well done, well done!" said his boss as his paper disappeared inside the machine. "I just need one copy."

A lawyer and an engineer were fishing in the Caribbean. The lawyer said, "I'm here because my house burned down, and everything I owned was destroyed by the fire. The insurance company paid for everything.

"That's quite a coincidence," said the engineer. "I'm here because my house and all my belongings were destroyed by a flood, and my insurance company also paid for everything."

The lawyer looked somewhat confused. "How do you start a flood?" he asked.

Disclaimer

Statements made in this News letter do not necessarily represent the views of the Associations. The Associations cannot accept responsibility for the accuracy of any information supplied or for any loss or damage which may arise from errors or omissions. We strongly advise independent verification of the facts before practice.

..Editor

YOUR CONTACT DETAILS CHANGED???

Please let us know

Please contact
Membership Officer:

Francis Hsieh

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Book Review

Basement retaining wall design and construction requires close coordination between structural engineer, geotechnical engineer and the builder. Not many text books/ technical guidance for a practicing engineer are available on this topic and you can see varying level of technical knowledge across the consulting world.

CIRIA (<https://www.ciria.org/>) a neutral, independent and not-for-profit body for construction industry research, has recently released a new guide CIRIA C760 "Guidance on embedded retaining wall design"

This publication provides good practice guidance on the selection and design of vertical embedded retaining walls to satisfy the requirements of Eurocodes. It covers temporary and permanent cantilever anchored, single and multi propped retaining walls that are supported by embedment in soft soils, stiff clays other competent soils and soft rocks.

A good guide to refer if you are designing basement retaining wall especially on soft soils.

.....Editor

Guidance on embedded retaining wall design



Guidance on embedded retaining wall design (CIRIA C760)

Authors: A. Gaba, S. Hardy, L. Doughty, W. Powrie and D. Selemetas

Publisher: CIRIA

ISBN: 978-0-86017-764-7



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Precast building cores – insights from recent experimental testing

Scott J. Menegon^{1,2,*}, John L. Wilson³, Nelson T. K. Lam⁴ and Emad F. Gad⁵

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This article presents a brief overview of the experimental components of an ongoing research project being undertaken at Swinburne University of Technology to assess the seismic performance and collapse behaviour of multi-storey precast concrete buildings in Australia. One of the primary objectives of the project is to assess, both experimentally and analytically, the lateral displacement behaviour of precast building cores. The first phase of the experimental study included the testing of three large-scale building core specimens, which were intended to represent a 60% to 70% full-scale ground storey component of a building core in a typical four-storey case study building (refer Figure 1). The second phase of the experimental study included the development and testing of two new innovative connections for precast building cores in multi-storey buildings.

The three large-scale building core specimens were designed to best match industry standard precast construction detailing in Australia. The individual panels were connected to adjacent panels using typical welded stitch plate (WSP) connections and to the top and bottom foundation blocks using grout tube connections. The specimens were tested under cyclically increasing unidirectional in-plane lateral displacements, with a constant axial load that corresponded to an axial load ratio of approximately 5% (i.e. $N^*/(f'cAg)=.05$). An in-plane lateral moment was also applied to the top of the specimen to simulate the response (i.e. bending moment diagram) of the taller four-storey case study building in the one-storey test specimen (refer Figure 1).

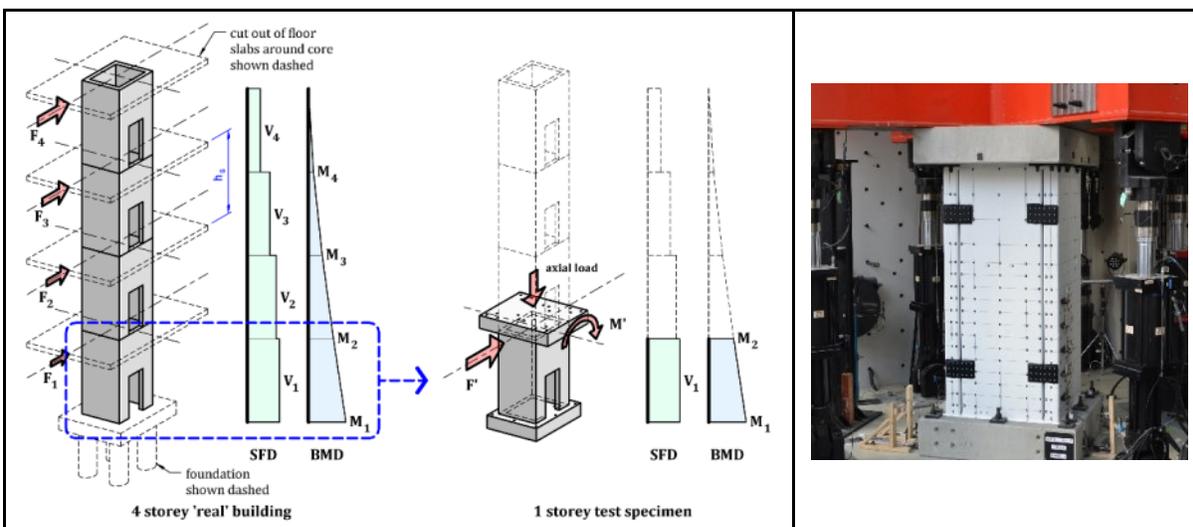


Figure 1: Experimental testing of precast building cores.

Some of the key findings from the large-scale experimental program included:

1. Poor grouting at the base of the panels can result in stress concentrations and premature compression failures due to vertical tensile splitting of the compression flange panel (refer Figure 2). This would likely be mitigated by providing nominal cross ties at the top and bottom of the panel, which would mean the panel is then not relying on the concrete's tensile strength to prevent these potential tensile splitting failures. It is therefore recommended to provide cross ties at the end of each grout tube connection.
2. The WSP connections were not stiff enough to allow full composite action to be developed. This resulted in the effective moment of inertia of specimen S05 being 25% lower than an equivalent cast in-situ building core specimen. Further, it meant that only 80% of the theoretical maximum moment capacity of the wall could be developed before flexure failure occurred via fracturing of the vertical reinforcement.

- Low ductility reinforcement allows only marginal ductility to be developed before fracturing of the reinforcement occurs and results in a sudden reduction in lateral strength (refer Figure 2).
- Despite the post-peak lateral strength decreasing significantly (often below 20% of the maximum response), the walls could withstand very large in-plane lateral drifts prior to axial load failure occurring (i.e. complete structural collapse). Test specimens S03, S04 and S05 were loaded to 6.5%, 8.0% and 4.9% respectively without axial load failure occurring, at which point

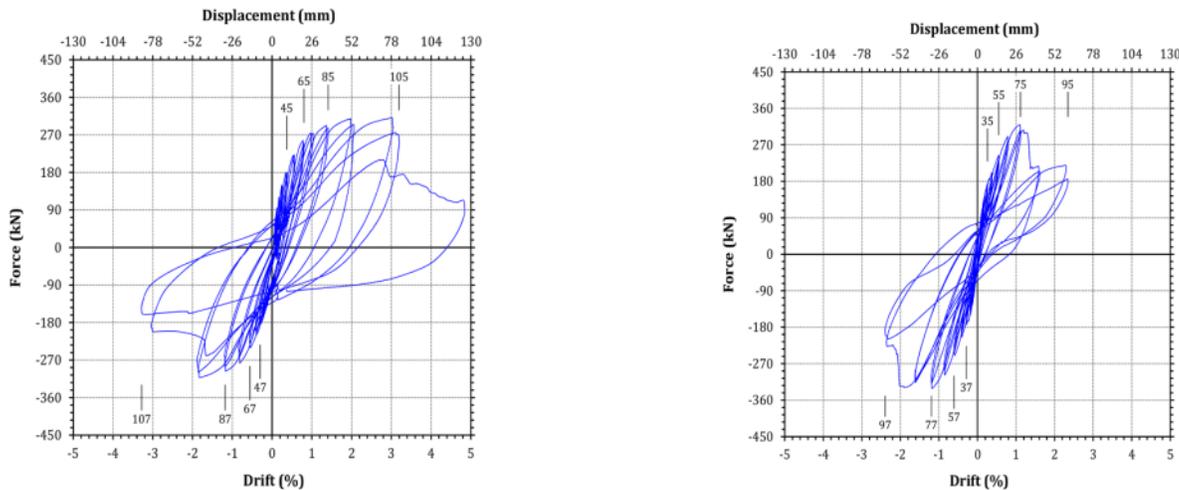


Figure 2: Force-displacement response of specimens S04 (left) and S05 (right).

The second phase of the research project was performed in conjunction with Westkon Precast and the goal was to experimentally assess a typical welded stitch plate (WSP) connection in isolation and then develop and experimentally assess two new alternative connections for jointed precast building cores. The experimental testing program consisted of three component level connection specimens.

The first of the three component level connection specimens (i.e. J01) was the baseline test specimen, which was a WSP connection and a replica of the connection used to construct one of the large-scale building core specimens. The first prototype specimen (i.e. J02) is being referred to as a 'grouted panel pocket' (GPP) connection. The second prototype specimen (i.e. J03) is being referred to as a 'post tensioned corbel' (PTC) connection.

The GPP was developed with ease and speed of construction as the primary objectives, whereas the PTC was developed with strength and stiffness as the primary objectives. This resulted in the GPP connection being simpler and quicker to construct than the PTC connection, however it then had significantly less capacity and stiffness. The three connection specimens are shown in Figure 3. Some of the key findings from the component level experimental testing program included:

- The WSP connection was the weakest and most flexible connection of the three different connection types tested.
- The first new innovative prototype connection, i.e. the 'grouted panel pocket' (GPP) connection, was 1.73 times stronger and 1.73 times stiffer than the baseline WSP connection. The test provides proof-of-concept that the GPP connection is potentially a viable substitute for WSP connections in jointed precast building cores.
- The second new innovative prototype connection, i.e. the 'post tensioned corbel' (PTC) connection, had a much greater strength and stiffness than the WSP and GPP connections. The stiffness of the PTC connection was greater than 40 times that of the WSP and GPP connections. The test provides proof-of-concept that the PTC is potentially a viable substitute for wet joints in jointed precast building cores.
- While test specimen J02 provided proof-of-concept for the GPP connection, more testing would be required to establish comprehensive design rules for this type of connection to allow for widespread industry adoption.
- The PTC connection appears to be a very effective method for constructing jointed precast cores. Its design would be based on well-established structural engineering principles and could be adopted in industry immediately.

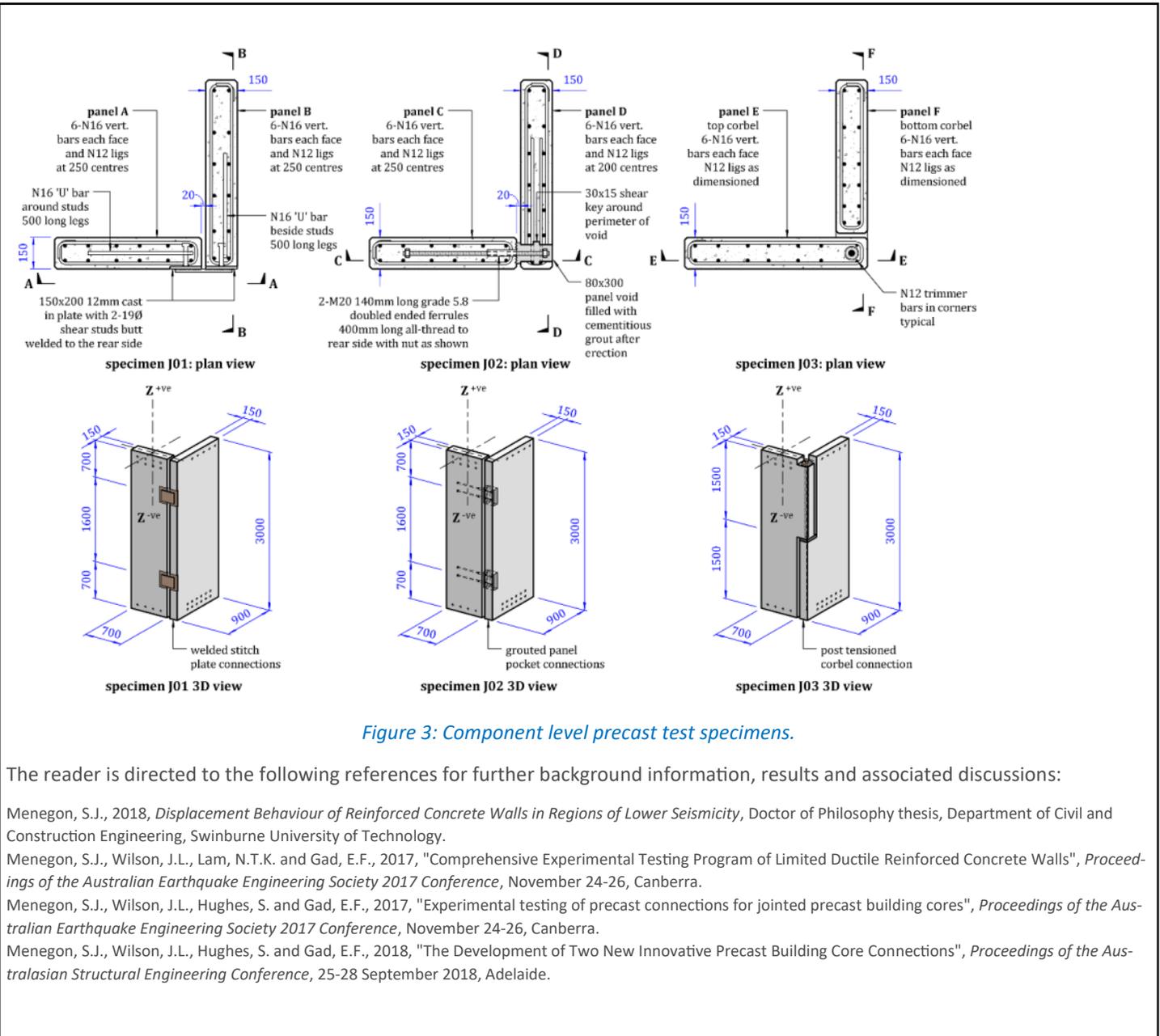


Figure 3: Component level precast test specimens.

The reader is directed to the following references for further background information, results and associated discussions:

Menegon, S.J., 2018, *Displacement Behaviour of Reinforced Concrete Walls in Regions of Lower Seismicity*, Doctor of Philosophy thesis, Department of Civil and Construction Engineering, Swinburne University of Technology.

Menegon, S.J., Wilson, J.L., Lam, N.T.K. and Gad, E.F., 2017, "Comprehensive Experimental Testing Program of Limited Ductile Reinforced Concrete Walls", *Proceedings of the Australian Earthquake Engineering Society 2017 Conference*, November 24-26, Canberra.

Menegon, S.J., Wilson, J.L., Hughes, S. and Gad, E.F., 2017, "Experimental testing of precast connections for jointed precast building cores", *Proceedings of the Australian Earthquake Engineering Society 2017 Conference*, November 24-26, Canberra.

Menegon, S.J., Wilson, J.L., Hughes, S. and Gad, E.F., 2018, "The Development of Two New Innovative Precast Building Core Connections", *Proceedings of the Australasian Structural Engineering Conference*, 25-28 September 2018, Adelaide.

ACSEV Membership fees 2018-2019

ACSEV membership fees are collected for the financial year starting from July. Please pay your fees before June 30th 2018. Paying your fees on time will greatly help the committee to run a smooth operation.

<input type="checkbox"/>	MEMBER	\$185.00	<input type="checkbox"/>	MEMBER (Country)	\$145.00
<input type="checkbox"/>	ASSOCIATE	\$185.00	<input type="checkbox"/>	ASSOCIATE (Country)	\$145.00
<input type="checkbox"/>	RETIRED	\$70.00	<input type="checkbox"/>	GRADUATE (6 years or less)	\$90.00
<input type="checkbox"/>	STUDENT	NIL	<input type="checkbox"/>	LIFE MEMBER	NIL

ACSEV TECHNICAL MEETINGS/SEMINARS

Technical meetings/seminars are held monthly on a variety of topics which are designed to promote involvement in **continuing professional development (CPD)**. ACSEV is recognised by the **Victorian Building Authority** as a CPD provider for registered engineers. ACSEV members discuss matters and issues of common interest or concerns related to the engineering profession and professional practice, in addition to networking with other design engineers.

Technical meetings/Seminar 2018

Date	Topic	Speaker	Action	Dinner Venue	Meeting Venue
January, 2018	No meeting				
21 Feb, 2018	Concrete site visit/laboratory-Hansen Plant, Dandenong/Oakleigh		FH	NA	Oakleigh
21 Mar, 2018	Structural steel/small builds	Spiros Dallas	RB	Box hill Golf Club	Box hill Golf Club
18 Apr, 2018	Engineers registration, work cover issues and non compliant materials and people.	Joe Genco	RB	Box hill Golf Club	Box hill Golf Club
16 May, 2018	Façade Equation: Overseas Materials Procurement-Quality Control=Inevitable Failure? OMP-QC=IF?	Peter Smithson Oliver Ng	DL	Box hill Golf Club	Box hill Golf Club
06 Jun, 2018	Workshop on Masonry	Multiple	JN/RB		Swinburne
20 Jun, 2018	Concrete mix design	Joanne Portella	FH	Box hill Golf Club	Swinburn Box hill Golf Club
18 July , 2018	Forensic Engineering and Lessons to Learn from Failures	Sean Brady		Box hill Golf Club	Box hill Golf Club
15 Aug, 2018	ACSEV and FFSV joint meeting	Prof Lam Pham Patrick Irwin Luke Tymensen Russell Brown Steve Buratto	RB	Box hill Golf Club	Box hill Golf Club
19 Sep, 2018	Design with SPAX Timber screws	Greg Pankhurst	RN	Box hill Golf Club	Box hill Golf Club
17 Oct, 2018	AGM. Legal review of Tribunals and Courts and regulations that affect engineers in the new environment	Ed Samo	RB	Box hill Golf Club	Box hill Golf Club
09 Nov, 2018	Annual Dinner			Veneto Club, Bulleen	Veneto Club, Bulleen
December, 2018	No meeting				

Become an ACSEV member

The Association of Consulting Structural Engineers Victoria (ACSEV) is a professional association of structural engineers that provides technical and professional support to its members.

ACSEV aims to facilitate better communication and goodwill between structural engineers, particularly those in small practices, and to advance the knowledge and professionalism of all members through technical training and regular contact with experienced engineers.

Our members specialise in structural engineering design related to the building industry on projects including commercial buildings, industrial developments, residential developments, domestic housing, institutional buildings, retail developments, bridges and various other structures.

Membership is offered at various levels to students, new graduates and industry associates, with full membership status available to qualified and experienced structural engineers eligible for either Building Practitioner (Vic) registration (EC - Engineer Civil) or membership of Engineers Australia.

Membership form can be downloaded from www.acsev.org.au

Renewables is a damned or damnation

The editor of this newsletter received a most explicit document outlining how we are fundamentally damned as a consequence of we probably don't have the resources to actually meet any sensible targets for renewable energy. I did inform the author who is well known to a lot of us as Emil Z that one of the wisest men that ever wrote a book about science "A Brief History of Time" by Stephen Hawking made the comment "I was advised by the editor if you put one formulae in the book you will halve the sales". The problem is that this particular paper has a formulae every second line, as a consequence I believe that the readership has probably dropped down to me. However, I can commend it to those of you that have the time to understand that mathematics is not dead and does lead to some fairly logical answers, and that is we are more damned than we are anything else.

As Emil Z takes up quite a few pages we are not presenting it in the newsletter but I do hope that this overview of it encourages you to read it. In simple terms it states we have no hope at all of meeting any of the targets set down whether they be watered down or watered up; we just don't have the resources to do it. Secondly, we haven't developed enough battery power to make it worthwhile doing. Thirdly, the sheer cost of doing it in a short period of time almost beats the reality of why you would try. This is not a paper about the if's, the but's and the could you it's about if you attempt to achieve a given target, how can you do it and what are the costs, timeframes and the abilities to meet it. It is without a doubt one of the most soul destroying papers I have ever read and I commend it to you all who wish to have your soul destroyed and your hopes for a better future dashed on the realms of reality and maths that seems to be an absolute damnation. For example, what nobody wants to talk about is that USA emissions are down massively because they are using gas to reduce emissions. Perhaps they're buying it from us and putting up our gas prices. Most other countries have actually increased their omissions, it's only the USA that has successfully diminished them; killing coal and using gas.

To obtain a copy of the article, please send an email request to russellb@ribrown.com.au

SUBMISSIONS WANTED

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Do you have a response for our newsletter?

Acsev newsletter is made possible by member generated content

We need your submission, Can you help?

Submit all content to Acsev.newsletter@gmail.com

Submission is acceptance that the contributor is responsible for all submitted content and is authorised to allow ACSEV to publish.

Engineers Fees

A sample of ACSEV members were surveyed in 2017 with regards to fee scales. The results printed do not include GST. GST must be added to the above rates. In addition, vehicle costs should be charged at the RACV scale. Members are not bound by this schedule. The range given is middle and some consultants may charge more or less dependent up on project difficulty or skill level required and size of project.

EXPERT WITNESS	\$300-\$400
DIRECTOR/PARTNER	\$250-\$350
SENIOR ENGINEER	\$200-\$250
ENGINEER:	\$130-\$200
SENIOR DRAFTSPERSON:	\$130-\$170
DRAFT PERSON:	\$100-\$130
OFFICE ADMIN	\$90 -\$110

Avoiding & Resolving Building Disputes, What can be done with AS 2870 & associated references?

Patrick Irwin, Irwin Structures

15th August 2018

This article is a summary of my presentation to ACSEV and the F&FS on 15th August, 2018 and presents my perspective from, experience in building disputes involving foundation movement.

It is well established that problematic foundation movement and disputes resulting from it are onerous to those involved. A situation that commonly involves litigation, or pre-litigation investigation, just to establish if there is a problem, is hardly best practice. Consumers are accustomed to being provided with products that are clearly either sound or unsound and most industries adhere to standards they can rely upon. Not so construction.

AS 2870 and associated references can be improved and play their part in avoiding problems, reducing disputation and better informing remedial solutions. This is my three pronged approach.

Most problematic foundation movement issues result from abnormal moisture conditions. These may be caused by specific construction defects such as faulty plumbing but more often result from inappropriately maintained or developed sites. AS 2870's Appendix B is far too difficult to obtain (and expensive) to be useful consumer advice and the CRIRO guide (also copyright) is complex and vague in parts. A new, readily accessible, highly readable reference is required to cover the basics. It should be freely available to all.

The issue of identifying and confirming whether a foundation and footing system has performed is vague, subjective and complex. The use of defect or distress criteria to distill footing and foundation performance is indirect and inexact. Modern brick veneer construction can sometimes tolerate excessive differential movement with minimal distress. The criteria of AS 2870 Appendix C should be abandoned and replaced with specific performance criteria including overall level differences and local gradients. Such criteria need to set two standards: One of satisfactory performance and one of excessive movement that is within the structural capacities of the footing system so can be remedied, generally, without structural works.

Generally, buildings and sites developed and maintained to



AS 2870 requirements and recommendations (Appendix B), perform satisfactorily. However, there are two areas that warrant revision.

AS 2870 makes no allowance for different types of clad framed construction, some of which can be more movement sensitive than some masonry types (eg: fc. cladding, balcony to house junctions etc). Better definitions of building types are required and some lightweight types should move into masonry categories.

Moisture under waffle pod slabs is a notorious cause of movement. Whilst this is often the result of inappropriate site drainage the waffle pod raft slab design is inherently faulty in having its edge beams based at shallow depths on free draining crushed rock or sand. Edge beams should be deepened and based into firm, natural ground to reduce moisture ingress under the slab.

Remedial works would make a useful appendix to AS 2870 but should be general and guiding only. There are still far too many people who think that cracking automatically involves a need for underpinning.

VBA practice notes are an avenue to better inform the public and perhaps present the necessary companion reference to better inform home owners.

Summary of Suggestions

AS 2870 to better classify clad framed construction.

AS 2870 to increase waffle pod edge beam depth & base into natural ground.

AS 2870 to include guidance on remedial works.

New independent reference/s required to inform practitioners & owners in particular. Perhaps this is an opportunity for ACSEV, the F&FS and the VBA?



The Brown Report

Well, the year is coming to an end, and it's been a massively packed year. We welcome things that have occurred that are very positive. Firstly, you'll notice that CROSS has made it, and there's an article indicating how you can go and read of the disasters by others, and hopes that if you learn from them, they'll never write an article about you. One of the things that one of our past presidents wanted desperately, Richard Eckhuas, was for us to be able to read about CROSS, and if you look at it, it's now on <https://www.cross-aus.org.au/>. I would highly recommend it. Thank goodness we didn't have to pick up the tag for it, but it appears somebody did, and we are going to get the benefits of reading it. Richard, a job well done.

And just a quick wrap up of all the things that are going on. Firstly, foundations and footing society and ACSEV as you know, are jointly funding research, basically, into a new steel hand book to make steel design more amenable. One of the spinoffs has been that the steel fabricators and their association have got together, or at least a very small and tight band have, and they are now sixty to seventy percent through accumulating details, drawings and documents that they would prefer to be utilised. They're also preparing reasons why they prefer different methodologies under different circumstances. We would point out that this particular usage of finance and funding is the first in the world. We will be able to bring a document together where the people who make the steel componentry will have had almost as big an impact as those who design it, and or who make the steel. A marvellous opportunity, it will take time to come to fruition, but then as the bits and pieces are put into place, we will be presenting them during each year. Further, funding has been almost put together for further research into raft slab, which I'm sure you know of. But there's going to be a continual in regards to shrink swell testing and other methods of determining soil properties, as an ongoing reality, and this will bring to a completion of work that's already finalised, but not as final as we'd like it. So, there are three things going on at once, in addition to Jenny's marvellous work in making awards available so we are at the forefront in the minds of students in the engineering faculties in this state.

Next, we've had a very interesting turn of events in our courts. A case that came up that interpreted whether or not ground movement under a house constitutes an insurance claim. And for years, insurance companies have been desperately trying to make it not claimable. Well, they have at last succeeded in the Supreme Court. The matter concerned, a house attacked by hail in late 2011. The hail got to the subfloor, timber-type flooring, initiated swelling, we believe, of the ground and lifted the floor. Repairs were made under the general conditions, and as the ground dried out again, it moved. A claim was made to have it repaired. This was quite unique, in that there wasn't an actual event that had been one of the exclusions that was invoked many times over. But this time, there was an event -- the hailstorm. However, the Supreme Court judge, reading the English language and went to great lengths to work out what the word 'or' meant, and or what the word 'and' meant. It came down, almost 110%, on the side of the insurance company, that ground movement caused by flood or any cause whatsoever virtually, is not covered. I would highly recommend you to go to the link, which is <https://jade.io/article/542923?at.hl=guastalegname>, and have a full read. The paragraphs you need to start with, though, paragraph 20 and 22. They almost cover it all. But the rest of the read is worth it.

On another topic, I am unhappy to announce that Gary Oldfield, who used to be the face of steel for many years in the States and elsewhere, passed away. I think we all remember Gary with a great appreciation of his humour and his ability to try and help. And I'll never forget the date when he almost used the word 'concrete' and was just able to say the grey stuff in time, to save himself from one of the cornerstones of his life was to never mention the other material. I think he'll be sadly missed. Also, we've lost another great from Melbourne University, Emeritus Professor Len Stevens who passed away in his 90s. And there is a document related to his history that we'll get for you and put on the website, and it was the most illustrious career that was lived to the fullest. Even in retirement, he contributed on a daily basis. He'll be sadly missed by all of those who knew him, all of those who worked with him and I would hope all of those who were taught by him at some stage in their career.

Covered elsewhere in this newsletter, but just quickly, the registration of Engineer's Bill, as I call it, did not get up and was deferred to next year, which of course is after the election. I'm not here to tell you how to vote, but I'd be hoping we don't have to put up with the way the legislation was proposed. Not that we're against registration, we're just against the absurdities that within the proposal.

It's been a good year, and I hope next year is better. Enjoy.