



General Practitioners June 2021 Newsletter

Welcome to our second newsletter for 2021, halfway through the year already, I am sure some of you are just as shocked as I am. With the housing crisis and the influx of returnees to New Zealand we are feeling the pressure from a number of sectors on workload and the first half of the year seems to have flown by in the blink of an eye.

In this issue we have a great article on issues with bracing systems in light timber-framed buildings following the BRANZ report SR337 and what we as engineers should be considering with these designs. Ian Watson reminds us that things do not always go our way, and that we can take comfort in knowing we are not the only ones – it does happen to others. Have you ever had a formal complaint made against you? Cliff Boyt provides some advice that may come in handy should it ever happen. And a real life example of a problem on site is provided anonymously by one of our members.

A reminder that the SESOC conference is being held in Hamilton on the 5th and 6th of July and the EGP have secured a session in the programme on Day 1 with a few of our members giving presentations. The conference aims at meeting fellow engineers, debating topics as well as attending presentations on an exciting range of topics from a line-up of speakers who will share their experiences and advice. The theme for this year's conference is "A new beginning", following the challenges we have faced since the 2011 Christchurch earthquake and more recently Covid 19, and how we have adapted. We would like to encourage you to attend, to show your support for your fellow EGP members as well as for the benefits and possibilities this conference can provide.

For registrations, programs and to find out more about the conference [please click here.](#)

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Message from the Chair

Hectic – That is about it. I have never been this busy – ever.

The committee has been working away on a number of projects, namely:

- MBIE's review of registration and licensing: We have looked through the documents made available, ENZ's draft submission, SESOC's draft submission and have drafted one of our own. For the most part this agrees with the submissions of other groups. We do believe that registration should be mandatory for any engineer signing off on work but as always the devil will be in the detail. It seems we are having an impact with our submissions and aim to be closely involved with the registration and licensing structure and its implementation.
- SESOC conference: The EGP SIG has two speakers in the plenary sessions – Gordon Hughes and Ian Watson. Martin Pratchett from ENZ is also presenting and we have a full afternoon breakout dedicated to EGP matters on day 1 from 3.30 till 5.00pm. This has been a huge effort and my thanks go out to those who are flying the flag and keeping our message front and center.

We had our last committee meeting at the ENZ offices and were able to engage with our support systems at ENZ and as a result are progressing on a number of initiatives – visits by a committee member to various regions, the 'Get a Mate to Check Your Work' scheme - not a formal review but a chance to benchmark against others in general practice. Exemplars for a range of documents and guidance for small practices on how to meet requirements from Design Features Reports to Safety in Design to QA processes and how to take care of yourself with all the stresses we face.

One initiative we are very keen to promote is setting up small local informal groups – EGPs who can meet on a regular basis with a few engineers in their immediate vicinity. We already have a number of engineers meeting on a monthly basis. Keep it local and monthly and it is not a big drain on time or resources. In Rodney we meet for a coffee at 10.00 am on the first Friday of every month at the local Plant Barn. It is a chance to discuss engineering issues that are confronting us on an increasing basis. Getting to know other engineers can be an invaluable resource and support network when things get a little hairy!

We are intending to tag along on the new CEOs roadshow which is coming up and meet our members in various centres as well as spread the word. Watch out for releases as the year goes on.

I would like to thank Martin Pratchett and Rebecca Mather from ENZ, in particular for their energy and enthusiastic support for our growing SIG and the work we are doing – we now have over 200 members.

Elections for the officers are now only 3 + months away – think about standing, for there is much to do. Even if you don't want to be on the committee there is a lot of work to be done and

we value the contributions of anyone prepared to get involved. If you want to contribute drop me a line at pete@pvgdesignltd.co.nz and I will contact you.

Pete van Grinsven

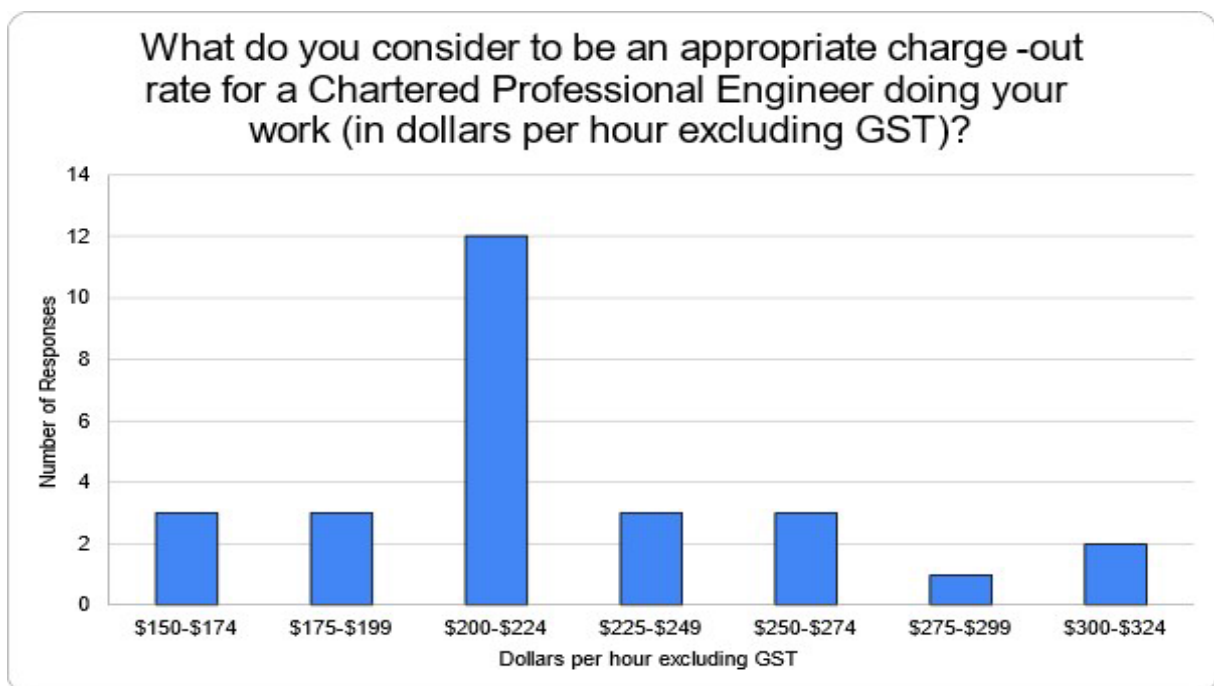
The EGP One Question Survey

This issue we are asking Engineering General Practitioners:

On average, how many hours per week do you work as an Engineer?

Take Survey

In the last issue we asked you what you consider to be an appropriate charge-out rate for a Chartered Engineering doing the work you do? Here are the results:



From a total of 27 responses, the average rate was \$214/h.

Issues with Light Timber-Framed Building Bracing Design

Nick Calvert CPEng

In 2015, BRANZ released a study report (SR337) titled “Design Guidance on Specifically Designed Bracing Systems in Light Timber-framed Residential Buildings”. In that report, a number of issues were raised with the current provisions of NZS3604. Unfortunately, the recommendations of that report have not yet been included in an update to NZS3604 and there has been limited adoption of the recommendations by engineers and likely zero adoption from non-engineers that use NZS3604. The issues raised in that report and a number of other issues with NZS3604 are summarised below.

1. SLS performance – the provisions of NZS3604 and more specifically the P21 tests that NZS3604 is based upon, do not appear to meet the SLS performance requirements which likely means excessive SLS deflections. This is addressed in SR337 by increasing seismic loads that LTF buildings are designed for.
2. Bracing Distribution – The bracing distribution requirements of P21 are not adequately reflected in NZS3604 resulting in NZS3604 bracing approach being applied to dwellings which do not comply with the intent of NZS3604.
3. Maximum Bracing lengths – the P21 test states that the bracing system can only be used up to twice the length of the tested element. At this point, most commonly used bracing design tools do not include this limitation and most bracing system suppliers do not print the maximum length on their data. This issue results in the possible specification of long elements which do not meet the requirements of P21.
4. Stiffness compatibility of different bracing systems - SR337 provides design guidance on the displacement-based approach to designing different systems (i.e. portals and GIB walls). Unfortunately, the recommendations of that report have not been included in an update to NZS3604 and there has been limited adoption of the recommendations by engineers. Engineering New Zealand recently released a guideline called “Residential Portal Frames – an Engineers Perspective” which addresses this issue and can be found here: https://d2rjvl4n5h2b61.cloudfront.net/media/documents/ResidentialPortalFrames_Sep2020_Final.pdf
5. Stiffness compatibility of different wall lengths – Limited testing has been carried out on walls with more than one bracing element and significant variations in bracing element length (for example a wall with a 0.4m element and a 4.8m element). How will this perform in SLS and will the wall achieve the capacity that is desired?
6. Subfloor bracing capacities – In 1993, BRANZ released SR46 titled “Design Strength of Various House Pile Foundation Systems”, this report included the basis of calculation for subfloor elements in NZS3604. Subsequently, BRANZ released SR58 titled “Field Testing of House Timber Pile Foundations Under Lateral Loading” which derived capacities of subfloor bracing elements which were subsequently used in the current revision of NZS3604. Unfortunately, NZS3604 appears to ignore the F1 and F2 factors adopted in the basis of 3604 which results in the NZS3604 capacity of the subfloor bracing elements being overstated by a large proportion. Hand calculations generally agree with the field tested results up until the F1 (hysteresis loop

modification factor) and F2 (ductility scaling factor) factors are applied. All NZS3604 pile systems need to be deeper into the ground to achieve the reported capacities from NZS3604.

7. Subfloor stiffnesses – Current bracing design tools do not prevent the use of different bracing elements in subfloor systems. SR58 states that anchor piles in clay displace 40mm while braced piles in the same soil displace 60mm meaning that the systems have a very different stiffness. What testing has been completed where different elements are used, how would these perform under SLS and ULS loading? In the absence of testing should mixing of subfloor systems be allowed?

BRANZ have raised issues with the current approach to bracing of LTF buildings and in addition, a number of other issues also exist. Practising engineers should be addressing these issues in their design, however it is clear that the next update to NZS3604 needs to formalise these concerns to address the approach being utilised by non-engineers.

You would Love This Project!

Ian Watson CPEng

Sometimes you get a project that you really enjoy doing. It has design challenges, one-off details, but you know exactly how to handle it. The client is so pleased with you! You love the creative work! It is great being an engineer!

Then there is the other sort, big and complicated, difficult client, taxing design problems and the architect's plans are hard to understand. You are tearing your hair out! Then the Geotech engineer is not sure the ground is stable and wants to spend a heap on liquefaction studies, but how do you explain the extra cost to the client? You gave a fixed fee but it's going way over budget. Then the surveyor picks up a boundary problem. More delays! Then the Service engineers want to cut holes in all your beams. More work! Finally, the Council send back a huge list of RFI items. More work, unpaid!

But you re-assure yourself that despite all the obstacles, you got the job finished and liaised with all the parties successfully. The project is ready to build, and you are hoping that your well-oiled skills of navigating all the issues raised will benefit you when you get a well-paid commercial job.

Oh did I mention? The above job was just another HOUSE.

How to Handle an Official Complaint

Cliff Boyt FEngNZ

What do you do if you are the subject of a complaint? While potentially shocking and embarrassing, not to mention stressful, it needs to be taken seriously for your benefit and that of the profession.

In 2009, I took a call that left me in absolute disbelief. Engineering New Zealand (then IPENZ) had received a complaint about me. I'd attended a series of public forums and the complaint was about a theory I presented at one of them.

My first reaction was anger. I was in denial about the need to respond. It was embarrassing and I wanted to keep it to myself, but after a few days, it sank in that the complaint was real. I needed to deal with it in a well-planned and logical way.

Read the full article about Cliff's story and how he dealt with the complaint as well as his advice to others should this happen to you:

<https://www.engineeringnz.org/news-insights/how-handle-complaint-against-you/>

Lessons Learnt

An anonymous member has provided the following description of a project that encountered problems during excavation near a road. It's a good reminder that we all need to do more than just make things work on paper.

View Lessons Learnt PDF

Do you have a learning opportunity of your own that you would be willing to share anonymously?

We would like to encourage our members to submit their own examples to enable us all be better engineers. In many ways it can be a cathartic experience. You can download the Learning Opportunity form below and email it to general.practitioners@engineeringnz.org. All communication will be treated confidentially in accordance with our Code of Ethical Conduct.

Learning Opportunity Form