General Practitioners October 2024 Newsletter

Welcome to the third newsletter for 2024.

We had a great webinar on Load Paths last week, that is critical to all engineers. If you missed it check out our website as it will be uploaded there shortly. In this quarter's newsletter we can see from the discussions on our Slack channel that EGP engineers are passionate about and getting answers to items that could affect the way we operate. These discussions have led to further investigation in order to assist our members and provide the answers they need.

We have an interesting article about the moisture content of piles and how this affects driving as well as an article on how we could go about assessing projects and some notes describing the differences between the current and proposed timber codes. There is a good Learning Opportunity from CROSS on structural issues of a house in a high seismic zone that is worth a read.

Don't forget to share your photos of any interesting jobs you have done for others to view on Slack, or submissions can be emailed to general.practitioners@engineeringnz.org. Also, **I would like to encourage you all to submit your lessons learned for inclusion in our upcoming newsletters.** This is anonymous and a great tool to help other engineers to not repeat the same mistakes. We are also asking for you to submit photos that you think best describe Engineering General Practice, so that we can showcase exactly what we as EGPs do.

Tamlyn Adams, Editor

In this issue:

Message from the Chair

Hello and welcome to all EGP's out there,

It is good to see our membership numbers growing and the continued large number of engineers tuning-in to our webinars targeted around promoting general practice engineering and the fundamentals that we should all understand, to be able to provide quality engineering solutions.

As the days are finally getting longer and warmer I would encourage you all to get out and socialise, we have a list on our website of the locations where we have local Coffee Catch-Ups. We have had 5 Networking events, with EGP members coming together in a few new locations. If there is not an event local to you, please get in touch if you would like us to set this up.

For those of you who are members and have exclusive access into the Slack channel, amongst the general discussions there was also a bit of conversation around liability and where this lies generally for engineers personally and more specifically with respect to remote inspections.

Another major discussion on the Slack channel is around the Standards New Zealand recent pricing changes. The EGP committee acknowledges the massive impact this has on all the engineers working in smaller practices and are backing all efforts on this. If you would like more information around this issue or to see a copy of the letter from ACE & Engineering New Zealand to Standards New Zealand about this log on to the Slack channel and check it out.

One of the motivations for forming the EGP group some years ago came from frustrations experienced by many engineers when they applied for, or renewed, their Producer Statement Author Approval, with Auckland Council. We are currently collecting and documenting chronicles from engineers so that we can prepare a case to be presented to Engineering New Zealand to form the basis of a discussion with AC so that improvements can be implemented. The rules and procedures that AC have put in place affect EGP engineers profoundly because in a small practice if a PS4 cannot be issued due to AC's withholding approval, commercial and reputational damages can occur. For larger firms asking another CPEng within the firm to sign a PS4 is relatively straightforward and avoids delays and reputations being affected.

Happy reading,

Kelly Pilkington

Chair

general.practitioners@engineeringnz.org

The EGP One Question Survey

This issue, we are asking Engineering General Practitioners:

How is Business currently?

- Pretty slow actually
- It's ok, I'm keeping myself occupied
- Things are picking up
- I am flat out

CLICK TO TAKE THE SURVEY

In the last issue we asked:

Do you think the government's proposed changes for fast-tracking consents is going to be a good thing for the industry?

ANSWER CHOICES	RESPONSES
Yes, I don't think it will affect the quality of works or affect engineering much	32.5%
No this is a disaster waiting to happen with contractors likely to take shortcuts	55.0%
Other, please clarify… • The question seems to be covering two aspects. Fast tracking the initial consent process is fine. I don't agree with the proposed remote construction monitoring (CM). Quality CM is already badly lacking, with TA inspectors often incompetent and just passing the liability onto engineers. • No, it creates further divide between council and government. • It is likely to depend on the details. The local authorities often do not have staff with the experience to identify adverse issues when the pace is fast. • Yes, but quality must be considered. Also, making the people who design and build responsible for failures (no more hiding behind limited liability companies). • It's a good idea, but provisions need to be put in place to ensure building quality is maintained. Also there need to be checks and balances to identify flood prone sites and poor foundations are identified and appropriate action taken.	12.5%

Looks like the majority are against the proposed changes with quality of work being the biggest concern. Some great feedback that we will pass on to Engineering New Zealand.

Learning Opportunities

The biggest opportunities to learn from are not when things go right, but when they go wrong. The best way to learn from your mistakes is to recognise what went wrong and how you (and others) can avoid making the same mistake again.

Click on the links below to read some anonymous Learning Opportunities submitted by two different contributors:

1. CROSS article on Issues in structural design of a house in high seismic zone.

Do you have a learning opportunity that would be of interest to your fellow EGP members? Please submit your examples for others to learn from. Download the Learning Opportunities form here and send it to egp.sig.anonymous@gmail.com

EGP Slack Channel Update

Nick Calvert

The EGPSIG Slack channel provides a useful forum for technical discussion. The committee recommends that all our members are active on the slack channel. Follow this link to sign up and install the EGP Slack Channel. If you have any issues or questions regarding the Slack channel, feel free to email your questions to tech.groups@engineeringnz.org.

There have been many topics discussed since last newsletter, but one of the most significant topics covered is the increase in costs from Standards New Zealand. A number of our members have directly contacted SNZ and some have also gone so far as to contact their local member of parliament. The EGP committee have received an update on this issue from Engineering New Zealand who have confirmed that their direct approaches to SNZ have been unsuccessful. Engineering New Zealand continue to pursue other avenues to address this issue for members and further updates will be forthcoming. A reminder to members that SNZ have sponsored standards that are free at the following link: https://www.standards.govt.nz/get-standards/sponsored-standards.

The EGP are also collecting input from members regarding issues our members have faced with the Auckland Council Producer statement list (i.e. duration of processing renewals, insurance lapses resulting in PS1s not being accepted). If any members have experienced issues, please contact a member of the committee.

Other topics discussed since last update include:

- 90mm nibs
- Post fire Stability of boundary walls
- Determining rural seismic hazard factors
- Consenting of GRP/FRP products and much more
- Person liability of engineers, even if in a firm.

Missed any topics of interest to you? Have a look back on the Slack Channel to see what was discussed.

If you have any interesting photos from your EGP jobs, share them on the EGP-Photos Channel on Slack. Great to see what we are working on out there.

We ask all members to continue to be active on the Slack channel because the more activity, the more beneficial the content is for everyone. If you missed out on any of these, go have a look at the discussions and feel free to add your input.

Piling Moisture Content – Something to think about

Graeme McMillan

This is a lessons learnt project where timber moisture content created a strange modern art piece to be left on site to dry out due to the construction issues it caused.

The Site:

The site was an IL2 liquefiable site, 100m from an estuary river mouth in Southland New Zealand. The project was a mass storage facility comprising a series of multiple lock up units. The Engineer's Consulting Brief was to accommodate all Council requirements including all fill and liquefaction issues.

The proposed construction required 1200mm fill to be added to the site. The foundations were required to be placed down to a solid base, found to exist at 4.5m deep with little variation over the site. The site was adjacent to a historic estuary site and flood prone river mouth.

The Proposed Solution:

Driven piles into the firm sub-base of gravel (some 11.0m thick) through the known blue pug clays and silt. The use of driven piles in Southland is most common and cheaper than the removal of the poor clay. The piling specification called for either vibration or hydraulic head driven piling equipment through some 3.0m of suspect undesirable sub-base of less than 40kPa, with a further placement of 1200mm of fill on top to the whole site, to allow for the surface water runoff into the local Council's stormwater system.

The timber specification covered NZS 3604, acceptable solution of building Code Clause B1; NZS 3605 House Piles (timber piles and poles used in construction to comply with NZS3604 -H5); NZS 3631: Timber grade rules and NZS 3603 Timber design used for verification methods of NZBC compliance.

All the standards covered what the contractor needed to comply with.

The difference in this case was the use of a large quantity of piles to be resourced - some 550 piles of 175mm SED diameter. Normally a piling job for an average house might include 60-80 piles at the most. Gold Pine and others are excellent suppliers and hold a large range throughout the Southern region for all exterior and ground retention timbers. These operators understand about moisture content and generally think ahead of the curve on the climatic periods and place in store quantities to fit their normal sales history for seasonal sales and demands.

The experienced Contractor organised his own mass extraction of piles from the logging company and had the piles duly tanalised to H5 as the codes required. It was the start of winter and drying to the optimum moisture content was not to his advantage. The piles arrived on site still dripping and with a lot of finance already committed these piles were going into the ground as programmed.

There had been a successful test piling prearranged on site and 175mm <15% STD moisture content piles from one of the normal stockists were driven successfully to the required depths through geotechnical Bidim layers to the required solid gravel sub-base at some 4.5m allowing for 800mm of embedment.

The piling sub-contractor had driven the test piles and was not anticipating any problems in the driving of the 550 piles planned. He had good gear on site which enabled the piles to be picked up by its own claw and held while a vibrating head was applied and commenced driving the supplied 200mm SED piles of a supposed 40-50% moisture content. It was soon obvious there was a problem, but the contractor decided to drive them all into the alignment by up to some 1.8m which he struggled to do as the density of the piles was so well cushioned by the content of water in the piles. You could see the water shedding as the piles were vibrated, and shortly after driven by the aid of a 1.5T monkey which simply smashed the heads of some of the piles. It was decided to leave the piles placed in the ground as they were, to allow time and the wind to reduce the moisture content to a sufficient degree to be able to continue piling at a later date. From the photo we see what turned out to be a local temporary work of modern art.

Progress: The simple set of events that brought about this situation were easily chatted over but a simple engineering lesson for both contactors and engineers is to check items to ensure they fit the specification issued for construction. The balance of the driving was not straightforward and although the upper piles dried out the placement of the 1.8m initial driven pile did not do this easily. Varying drop height and time in driving at a lower drop height eventually ensured more than adequate sets, although the heads of the piles were in some cases believed to be mushrooming in diameter at the ends, as the test piles and specification called for only 175mm SED, 200-220mm SED

were supplied. This would not normally be of any concern but to ensure the required depth was achieved was a challenge. The site finally proved to be more than adequately compacted. Valuable time was lost in the order of a month which the contractor made up for as best he could.

Conclusions:

It is easy to be accustomed to regular engineering systems progressing as they normal do, but it only takes the base parameters to be changed outside of the normal situation and the course of events can arise that show an outcome that was not anticipated. The contractor still said he saved a lot over buying direct but next time he would be more prudent about the consequences of moisture content that all of us in this instance could well have overlooked in the haste to save funds and complete a large contract with what seemed at the time to be the ideal course of action to do.

The photo shows the intense piling solution and unique temporary Art Form in the blue skies of Invercargill.

Assessing Projects

Martin Pratchett

Engineering New Zealand have developed a guide that provides engineers with an adaptable framework for assessing a new project or when a project unexpectedly changes during its lifecycle. It's divided into several key sections including:

- concept sketches
- risk considerations
- contract writing.

Each section provides guidance and examples to help engineers effectively assess projects.

Assessing projects is about assessing the various risks of the proposed project and an appropriate fee to cover the risk, time, and expense involved with completing the work. The expenditure of time on risk management should be directly related to the probability and consequences of failure. Often, reasonable judgements based on experience can be made without exhaustive analysis. Sometimes, however, we face projects requiring a more rigorous risk assessment to inform our decision-making.

The first step in assessing a project is to consider whether it is worthwhile for the company to undertake the work. This step is frequently missed and can lead to poor outcomes if you quote for and win an unsuitable project.

A good quality assessment leads to a robust fee proposal and contract that clearly communicates the scope, assumptions, and terms of services. Failing to assess a project adequately can lead to underestimated costs, missed deadlines, and strained client relationships. Engineering New Zealand offers courses covering these topics in more detail

See link below for access to guide.

MORE INFORMATION

Timber Design Code AS1720.1 Course Notes

Pete Van Grinsven

Timber Design Society recently provided a course on the new timber design standards. EGP has taken notes and drawn up what we feel is important to EGP's. We have also approached TDS about a joint webinar when it becomes necessary to address the differences between AS1720.1:2022 appendix ZZA and NZS3603, so keep an eye out for this.

AS1720.1 Course comments:

- An Appendix (ZZA) has been added to provide a simplified pathway.
- At present AS1720.1:2022 has not been cited in B1/VM1 as an acceptable solution, so is considered an alternative solution at present.
- For now, the acceptable solution continues to be NZS3603:1993.

Important notes:

- The standard is being developed by Standards NZ.
- Input is officially provided by MBIE.
- TDS is in an advisory role only and SNZ has no obligation to incorporate any recommendations.
- Practically speaking there is crossover and relatively good communication.
- TDS commissioned two separate reviews involving separate consultancies carrying out actual designs using AS17201. These revealed a number of errata, from formulae being incorrect to simple typos.

Differences and similarities:

- Component design follows similar principles. AS 1720 has changed some k factors – particularly around characteristics related to moisture content.
- Joint design in AS1720 falls into two categories
    - Those with simple load paths and adequate separation distances for fastenings and edge distances (simplified analysis very similar to NZS3603. Limited to two storey buildings.
    - Those with complex load paths and secondary effects. The latter are more related to multistorey timber structures involving principally CLT and LVL components in shear wall/diaphragm structures.

Current approach until advised otherwise:

- For EGPs, use NZS3603 until advised otherwise.
- It should be possible to carry on design using the simplified pathway in Appendix ZZA (very similar to NZS3603.) Transition will only happen when the new standard is officially cited in B1 of the building code.

- Elements of 1720.1 can be used where the engineer's judgement indicates that there might be secondary effects to be considered. However, this does mean that part of the solution becomes an alternative solution and will require verification – usually by professional review.

Upcoming EGP Webinars

The EGP has recently been rolling out a few great webinars for our members with a few other exciting ones lined up, we recently had a webinar on retaining walls with an outstanding number of attendees, make sure you do not miss part two on Wednesday 17 July. Below are some webinars that may be of interest to our members coming up soon, otherwise please refer to the Engineering New Zealand link below for a full list of upcoming webinars:

Date	Webinar/Event
16/10/2024	**Soil Testing Techniques for General Practitioners**
17/10/2024	Timber Design Society 2024 Series – 9 Fire Safety in Mass Timber Buildings
18/10/2024	Producer Statements – Practice and Liability
24/10/2024	Fundamentals of Pile Design in Liquefiable and Expansive Soil

The EGP is embarking on a series of Webinars over the next 12 months that focus on general topics: Tips and Tricks for GP Engineers. I hope you managed to see our Webinar on "**Load Paths**" on the 25 September. If not, this will be put up on our website in a few weeks' time.

As a voluntary committee, we want to bring you quality content to support your work as a General Practitioner and we hope you'll join us for our next webinar. If you have ideas for future webinar topics, please get in touch, we would love to hear from you.

If you missed any of the previous EGP webinars, you can watch it through the link below.

VIEW HERE

For a Laugh