



PRESIDENT'S ADDRESS



TIME

It seems to me that time has become a bit blurred lately with all the pandemic problems and constant media bombardment we get. Not to mention the constant changing of plans for work, holidays, events and everything else. For some, there is spare time to do things that have been waiting to get done and for others there is not enough time to get the daily work done. It is going to be a weird part of our history that we won't forget.

REVIEWING WORK PROCESS

For the people who are struggling to get it done, it is probably a good time to review how and what you do and see what can be done to make things run smoother. Myself – running a remedial building and waterproofing company – I've found that my workload has nearly doubled, and it has become a challenge. Now this is the tipping point, I was thinking; I don't have time to change anything, but I was wrong.

We engaged a business management consultant (that came recommended to us) who is local to us in Collingwood to see what they could do to assist us in our day-to-day operations and plan for future expansion. I know what your thinking – Oh yeah, another

"business coach" – and rightly so. We have had a number of these over the last 42 or so years, (Strewth! Has it been that long!) and some were good and others were a waste of money. This time, I have to say the small but effective changes are great. If I had not taken the plunge, I think we could have imploded.

Engaging a business coach, also takes some of the pressure off being the director/owner of the business as you have a third party to bounce ideas off and they also have a wider resource- to-business and draw ideas from. Let's face it – the amount of work out there is every increasing and if we are not on top of our game you will be left behind.

Anyway, the purpose of writing this is to convey that it is sometimes worth looking outwards to get some help. I could prattle on about this for much longer, but my message here is give it a go, it could be the turning point for your business.

RECOGNITION FOR THE IMPORTANCE OF WATERPROOFING

On the AIW front, things are creeping along very slowly right now (Covid) but with some extra efforts being put in by a fantastic committee we collectively are gaining a much stronger presence within the building industry. There a million thing I would love to be able do to progress this march forward but for now I just need to do what we are able to. I am hoping for a time when we are back to some sort of normality, and we can get together again and hash out some of things that are holding back those water proofers who are keen to see a better waterproofing industry with the recognition that we deserve. I am fed up with water proofers not being regarded as an integral part of the build. That is why we have been trying (and succeeding) so hard to encourage change. For the first time I see professionals reaching out to get together and discuss what we can do to make this change. Traditionally there has been a divide between states on all things construction. Our respective leaders have not made it any easier to "get along with other states", but that another story. Putting the politicians aside, it is up to us to make this change. It will not happen at the policy end if you do not get involved and say our piece.

I see the Master Builders all working individually and State building authorities working solo in their own states as well. At

the risk of sounding like a politician (ugh) we do need a national collective of information sharing – this way the right decisions can be made. I see the very same mistakes being made in all states whether the water proofer is registered or not. Does this tell us that the trade registration process in place is not working? If not, why and what can be done to rectify this?

I think it needs to be said that water proofers are copping the brunt of the waterproofing failure complaints when it more often than not comes down to the site management, design in the first place and of course money.

PROTECTING YOURSELF

I left a site this morning of a major refurbishment by one of the bigger builders. I said to the site manager, "Just waterproofing the top of this lift shaft will not prevent water ingress to the shaft. Are you okay with a wet lift pit? He said, "No, I'm not, but that is all that's in the scope of works, so we are not doing anything else; this job is hard enough as it is." This is exactly what causes many of the problems I see on a daily basis. The builder does the minimum or less and leaves the problems to someone down the track. In between is you and the water proofer. This is when you have to retrospectively "prove" or try to convince the builder (who will be the maintenance guy for the builder) or the new owners that the work you did was "only what they asked for" and you knew it would leak afterwards.

If you going to get involved in these jobs, cover yourself in writing. Note that you have advised the builder of your recommendations and they chose not to carry out any further works. It is not a disclaimer as you can't contract away from your responsibilities but at least you have something in hand to push the responsibility back onto the builder.

Look out for yourself and your business, think ahead and don't get caught out.

Take care and stay safe. Wear you mask and beat this rotten Covid.

Paul Evans
AIW PRESIDENT

OSMOSIS AND THE BLISTERING OF POLYURETHANE WATERPROOFING MEMBRANES

Cold-applied, asphalt-modified elastomeric polyurethane waterproofing membranes have been popular for roofing and waterproofing applications in the Pacific Northwest and British Columbia for at least the past 15 years. Their relatively low cost and easy application resulted in their widespread use in inverted roofing and waterproofing membrane assemblies (IRMA) applied to concrete decks. However, waterfilled blisters under these membranes have been discovered on numerous buildings in the Pacific Northwest in recent years. In some cases, the blisters were so large that replacement of the membrane was required. Water leakage to the interior can result when the blister expands to a crack or joint in the concrete slab.

The local building science and roofing industries are aware of the problem, but they lack a complete understanding of causal effect or of the physics of moisture transfer. Water vapor diffusion and capillary flow do not adequately explain the pressures or volumes of water contained within these discrete water blisters. Moisture transfer via osmosis can result in blisters under significant pressure and potentially explains the observed conditions. Osmosis is the physical transfer of water through a semipermeable membrane during separation of solutions of different dissolved-ion (salt) concentrations. Under osmotic pressures, water will flow through a membrane from the less salty side to the saltier side to reach equilibrium.

A series of laboratory experiments was performed to demonstrate that the required conditions for osmosis to occur exist in the field.

Laboratory testing of several of these membranes confirmed they are semipermeable to water (in order of 60 to 420 ng/Pa·s·m² for typical thicknesses). We also confirmed a significant dissolved-salt-ion concentration in the water collected in the field from beneath the membranes. Finally, osmotic flow was measured through several of the membranes using a controlled laboratory apparatus.

The measured flow through these membranes in the laboratory is in the correct order of magnitude to explain the large water-filled blisters and pressures observed in the field. This paper demonstrates osmotic flow through polyurethane membranes and attempts to create an industry awareness of the issue. Ongoing research is under way to refine polyurethane waterproofing membranes to reduce their susceptibility to osmosis and prevent future occurrences of water-filled membrane blistering.

The aged polyurethane membranes, which were removed from blistered roofs and tested, were found to be semipermeable and have a vapor permeance ranging from 60 to 420 ng/Pa·s·m², depending on application thickness and chemical composition. Some new polyurethane membranes that also been tested have similar order of magnitude vapor permeance values (up to 120 ng/Pa·s·m), even when tested with certain concrete primers. Some products on the market are even marketed as “breathable” or more vapor-permeable for use on green concrete. This would not be a beneficial attribute long-term for a waterproofing membrane.

(Acknowledgment to the authors: Brian Hubbs, PEng; Graham Finch and Robert Bombino, PE)

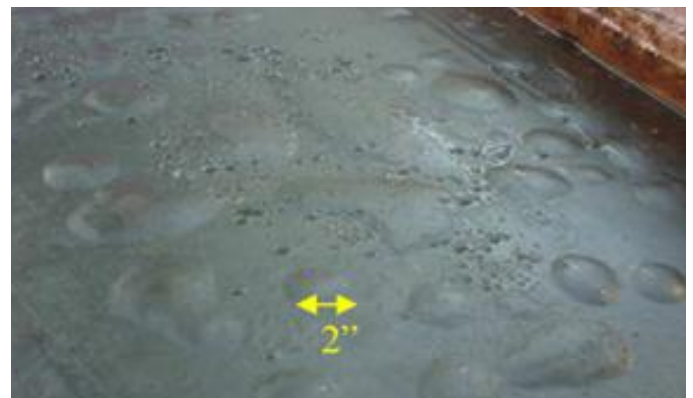
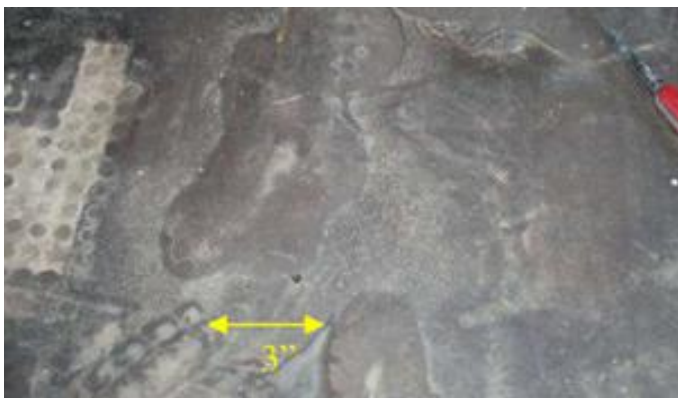


Figure 1 & Figure 2: Typical Blistered Roof Membranes. Blister size ranging from penny sized blisters to areas several square feet, membrane 5-10 years old.



Figure 3: Large "water-bed" type blister lifting pavers.



Figure 4: Water beneath blistered membrane over entire deck.

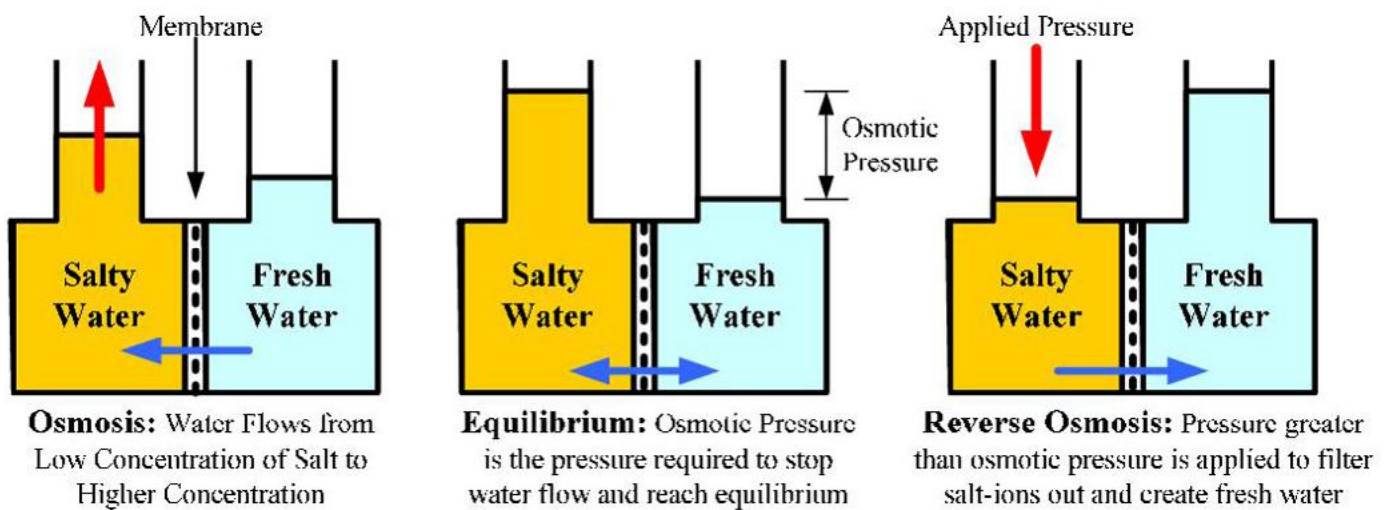


Figure 5: Osmosis, Equilibrium and Reverse Osmosis Flow through a Membrane.

THANK YOU AIW COMMITTEE

Thank you to all the members of the committee for all your hard work during the year. The October meeting was our last for 2021 and very productive.





Membrane & Sealants - Are You Doing It Right?

One of the typical areas of concern that I come across regularly on site is, without a doubt, membrane application in conjunction with sealants. To explain the applications, this is regarding Class III bond breaker/fillet joints at:

- Floor-to-wall or wall-to-wall junctions
- Expansion joint details
- Window threshold membranes requiring a joint sealant from the window to the membrane; and
- Membrane termination details; just to provide examples.

People regularly say, 'just put some Sikaflex in it' or 'throw some PU in there' and think that this is perfectly fine and compliant. As a supplier, I can state that we sell multiple types of PU sealants (and membranes) and that if we could have only one type of sealant to do all applications don't you think we would simplify what we offer to the market? Not all sealants are the same! Whether it's chemical composition, or the physical properties of the product, they all react and perform differently, and you should consult your local manufacturer on what is the most suitable product for the application you are undertaking.

Curing - This would have to be the most common defect that is seen throughout the market. Typically, a PU sealant will 'tack off' within a couple of hours but only 1-2mm will cure on the first day. Generally, a fast cure PU sealant will take a couple of days to reach

full cure. This is completely dependent on the thickness of the application so expect to allow more time if you're filling larger gaps with the product. Now how many job sites do you really see the sealant left for multiple days before membrane application? It's a scary thought.

There are plenty of 'MS polymer' or 'solvent free' PU sealants on the market these days; regardless of the technology they all generally release some form of byproduct during the curing process and most importantly must be left to fully cure. Regularly, I hear from contractors that using a solvent free sealant means they can install the membrane quicker; this is not the case, it may not gas and cause bubbling of the membrane, but you still must allow for full cure of the sealant before membrane application, no exceptions. Therefore, if you are waiting for full cure of the sealant, does the technology of what is being installed really matter? Food for thought.

Applying a membrane over a sealant before it's fully cured typically can cause two main issues:

1.) The sealant is still gassing and will retard the membrane from curing; this causes bubbles/blisters in the membrane and even if it eventually cures and membrane is now defective.

2.) If the membrane is applied over the sealant too quickly, the sealant may run the risk of not curing completely. Most sealants are moisture curing, so with no access to moisture/atmosphere, as it's sealed from a membrane, the curing reaction will slow down and eventually stop.

I've been on various sites where sealant details/joints have been cut out 6 months after installation and the sealant is still uncured once you cut into the surface.

Window Thresholds - This is an area of concern that needs to be addressed nationally. Most contractors think that a water-based membrane and a PU/MS sealant is all that's required. Sometimes this is the case, but contractors/builders need to realise that not all water-based membranes are the same. SBR/Latex membranes really don't like PU sealants and typically require primers for adhesion, water-based PU acrylic membranes typically adhere well but UV stable versions of these membranes with titanium dioxide and certain pigments can perform very differently and require primers for adhesion in some instances. In summary, the only membrane and sealant that should be used on a window threshold is the one where a supplier can provide an 'adhesion test report' showing adhesion and compatibility testing between the two materials otherwise you are taking the ownership on and this can end up being a costly exercise.

Key Message - Compatibility Is King!

Contractors are not chemists and aren't expected to know all the answers; utilise your product supplier's knowledge and only use tested systems to mitigate liability.

Kieran Biber
TM WATERPROOFING & ROOFING
+61 477 449 945
biber.kieran@au.sika.com

Did you know that our past newsletters can now be found on the AIW website?

Packed full with industry updates and waterproofing best practice tips they are well worth a read.

Check out what you missed under our 'News' tab --> <https://www.waterproof.org.au/newsletters/>

DESIGN AND BUILDING WATERPROOFING DETAILS IN 2021

In July 2021, many legal requirements for construction professionals come into effect. These changes have been on the cards for some time but with the regulations for the NSW Design and Building Practitioners Act 2020 recently made available, more is now known on the Act's application. However, there has been some ambiguity around waterproofing in the regulation and where it fits in the legislation despite being listed as a priority building element in the Act.

As the Building Commissioner has stated, the NSW Government is pushing for 'design, then construct', noting that details for wet areas have too commonly been missing from issued for construction drawings. So, for any project, the onus is on the principal design practitioner (architect or engineer) to design a building that is compliant with the National Construction Code (NCC) and a multitude of adopted Australian Standards. Then a principal building practitioner (builder) to execute those plans in construction and document compliance.

These plans are to be submitted to the NSW Planning Portal and will involve a compliance declaration stating that each building element is compliant and integrates with other aspects of the building. For the principal design practitioner, this is at the stage of obtaining the construction certificate and for the principal building practitioner this is part of the occupation certificate application. During construction, between each of these submissions, variations are to be documented and submitted explaining the area of the building and why such changes are occurring.

When it comes to waterproofing, the only reference in the Design and Building Practitioners Regulation 2021 is that an exemption applies under the legislation for waterproofing applications to alterations in a single dwelling in a wet area. So apart from a renovation to a building presumably many years after construction, every other waterproofing application is to be considered under the Act. That is every bathroom, laundry, balcony, rooftop, podium, planter box, tank, swimming pool, retaining wall, tank or other area where waterproofing is applied. Unbeknownst to many in the remedial space, this legislation also applies to their work.

The aim is to have all buildings constructed in a way that achieves the requisite performance targets defined in the NCC. The regulation's first clause outlines that where a design does not adhere to the deemed-to-satisfy provisions, a report detailing a performance solution needs to be prepared to verify compliance with performance requirements. The many construction practices that have become widely popular but are not listed in the deemed-to-satisfy provisions of the NCC will require performance solution documentation as per NCC 2019 Part A2.2. Pavers on



pedestals and flush transitions on balconies for aesthetic or NDIS requirements are two that are most prevalent where waterproofing is applied.

The regulation provides 18 design practitioner registration classes including various types of fire, facade, drainage, mechanical and structural specialties though there is no classification for waterproofing practitioners. With waterproofing defects commonly acknowledged as the single largest source of defects this is surprising and begs the question of where this responsibility falls? Based on our interpretation and discussions with industry professionals, this responsibility falls with the architectural design practitioner. We are currently seeing waterproofing designs being developed through collaboration between architectural design practitioners, builders and specialist waterproofing consultants to ensure the design is both buildable and achieves compliance with NCC requirements. In this process it is important to remember that generic section details developed by material suppliers can be a starting point but are not project specific.

Compliance inspections and onsite testing reports during construction provide the support for the principal building practitioner to make declarations in submitting for the occupation certificate. Both quantitative measurements and testing and qualitative inspections are means to quantify installation methods and The commencement of this Act is one of a number of changes in reference documents that will impact waterproofing over the next couple of years with changes and updates afoot for AS3740 and the NCC.

If you or someone you know requires assistance in navigating the requirements of the legislation in waterproofing, whether they are an architect, builder or other industry professional, please call Waterproofing Integrity on 1300 025 944 or email info@waterproofingintegrity.com.au

David Previte
WATERPROOFING INTEGRITY

Showers Over Baths

There are space demands in the design of units that can result in showers being installed over baths, a typical example is shown in Figure 1. The waterproofing requirements of these installations is critical if the water is to be contained to drain into the bath.



Figure 1 - Shower installation over a bath in this installation the shower screen is hinged so that when it is closed it will extend more than 900 mm from where the shower rose is fixed into the wall. If the distance is less than 900 mm then splash water will not be confined to the bath and the waterproofing will need to be extended onto the general floor area of the bathroom and be drained to a floor waste as shown in figure 2.

The area shown in red on the general bathroom floor is to mark the extent of the splash zone. The waterproofing will need to be extended to a joint in the floor tiles so it can be terminated to a water-stop angle brought up to the surface of the tiling. As there will be water laying along the top surface of the bath, the junction between

the rim of the bath and the wall will also need to be fully waterproof.

With showers over baths, it is best to have the shower rose positioned at the end of the bath so the water flow from it is directed down the bath rather than onto the screen, further minimising the risk of water leakage. Waterproofing is a trade that needs to be

There are several advantages of such a unit as follows:

- The bulbous end gives increased width in the shower area
- The curved closing screen contains the shower splash within the bath
- Having a pre finish on the outside face

means that tiling on the periphery of the bath is not required

Maybe these types of baths incorporating showers will become readily available with the increasing number of small units now being built in Australia.

Barry Tanner
**MELBOURNE BUILDING
& WATERPROOFING
CONSULTANTS**

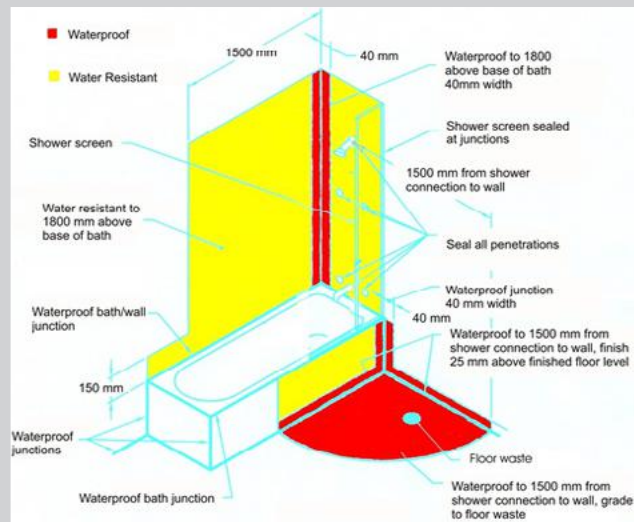


Figure 2 - The extra waterproofing required with a short screen

100% perfect and by minimizing the area that needs waterproofing reduces the risk of a failure.

directed down the bath rather than onto the screen, further minimising the risk of water leakage. Waterproofing is a trade that needs to be 100% perfect and by minimizing the area that needs waterproofing reduces the risk of a failure.

In Europe where showers over baths are common with their units and detached dwellings there are bath units specially designed to incorporate showers as shown in Figure 3.



Figure 3 - Bath unit designed to accommodate a shower

REDLANDS CASE STUDY

REDLANDS SENIOR CAMPUS - CREMORNE



This multi-stage new installation project, Redlands School located in a busy residential community suburb of Cremorne. This project was originally commenced by a builder that went into liquidation and then was taken over by Buildcorp after a few years. The challenges were adding the new sections of the building and tie in into the initial construction.

This project had to be completed at different stages so that they can be progressively handed over to the school. As one stage completed, another stage commenced. During the project, the existing school was still operational, so care had to be taken in order to minimize disruption to the school. Our waterproofing works was for the new Learning Hub which included 4 sections plus rooftop works.

The project was originally started a few years ago but unfortunately the builder went into liquidation which prevented the completion of the project. The project was then re-evaluated and put out to tender. Buildcorp was the successful builder and had to carry on from where the previous builder left off.

Before the planter-boxes were installed, FC sheeting was installed under the walls of the planter-boxes on the membrane. Drainage cells were also installed under the walls to allow drainage onto the main roof. Before installing the new membrane on the podium, any imperfections were ground back and repaired. In some cases, exposed reinforcement steel had to be cut out and

repaired. The additional works to the school helped to modernize the learning experience for the students and therefore it added extra value to the client.

Ron Caruana
DANREA WATERPROOFING





MEMBER PROFILE



STAN GIAOURIS

Stan Giaouris is the Principal Director of The Construction Adviser. He is a builder and waterproofer with over 20 years of practical onsite construction experience across all aspects of the industry including residential and commercial construction and defect remediation. Stan has the support of an invaluable team, that includes both civil and structural engineers as well administrative assistants.

TELL US HOW YOU STARTED? WHAT'S YOUR BUSINESS STORY?

I began studying a Bachelor of Construction Management in the 90s, whilst gaining hands-on experience in the industry with reputable tier 1 and 2 builders. The combination of theoretical knowledge from my degree and on-site experience gave me an edge in my career. By my mid-twenties, I was running medium to large government projects. By 30, I founded a construction firm that specialised in luxury housing and delivered award winning projects across Sydney. These experiences confirmed my unwavering commitment to quality and reliable construction detailing, and my passion for bettering the construction industry. A decade later, in search of greater work-life balance, I decided to found, The Construction Adviser.

WHAT DO YOU SPECIALISE IN?

We monitor the quality and progress of multi-million projects, acting as an independent client representative on behalf of property developers, builders, and home owners. This can include reviewing quotes, resolving conflicts, and ensuring timelines are met. My company also undertakes many expert inspections for litigation, provides remediation design solutions as well remediation costings.

I have a passion for understanding building industry codes and standards inside out, and I use this knowledge to help clients protect the health and safety of their building's occupants and the longevity of their investment. After all, defect remediation due to poor construction is costly, time-consuming, and stressful for tenants and landlords. For example, waterproofing defects typically account for only 2 per cent of construction costs and 98 per cent of future remediation costs. It can threaten the structural integrity of a building and render homes and offices uninhabitable.

Our practical experience assists us to advise on and diagnoses any hidden causes of defects and helps clients to accurately remedy problems or prevent defects from occurring. We provide construction advice, defect audits, and review designs for developers who are about to start a build. An increasing amount of our business is coming from developers who want to mitigate any problems in advance.

WHAT PROJECTS ARE YOU MOST PROUD OF?

Department of Defence – missile testing facility that was constructed to standards provided by the United States. I was the site manager for this project and was documented for use as the international design standard for such facilities.

Construction of a luxury home with an \$18M build value. Where I personally managed all of the design detailing and waterproofing design and specifications, including a glass water filled waterfilled walkway that allowed visibility into the pool and natural light from the basement rumpus and gym. The client passionately wanted this walkway which the experts we contacted could not resolve, so I endeavoured to research, design and detail it, and 6 years later it doesn't leak!

ANY CAREER HIGHLIGHTS?

Building up my own construction firm CBS Builders, where we employed 26 staff and turned over \$26 million in my final year as director. The company is still operating today.

Being recognised by my peers, by being elected for State Council of the Master Builders Association and President of the St George Division.

WHY NOT INTRODUCE YOUR TEAM!

Pramod Thebe - Pramod has a Master in Civil and Structural engineering, has been with TCA for almost 3 years. He is passionate about good design, identifying root causes to problems, and provides 2D and 3D cad design solutions.

Sulav Gautum - Sulav completed his Masters in Civil Engineering with Pramod. He is growing with TCA and expanding his knowledge and skills. Sulav's passion is for Class 2 unit design and defect mitigation.

Nicky Efthimiadis - Nicky is the bright and bubbly office manager who handles all of the accounts and administration of TCA. She is the friendly face among the technical staff.

HAS THE LOCKDOWN IMPACTED YOUR BUSINESS? IF SO, HOW?

Working from home was challenging. We provided training for staff however the lack of a team environment was harder for some than others. We have welcomed being able to return to the office.

WHAT'S NEW IN YOUR BUSINESS?

We are constantly developing systems to increase our efficiency and ensuring we have the best tools available to diagnose building defects.

Through my part time lecturing at the University of Technology Sydney, I stay abreast of all ongoing regulatory changes.

WHAT ARE YOUR HOPES AND DREAMS FOR 2022?

Excited that the D&BPA is making all parties accountable and responsible for good design and construction. Poor and lacking design will be a thing of the past. It's an exciting time for improving our industry!



THE CONSTRUCTION
THE ADVISER

WHO ARE WE?



WHAT WE'RE UP TO!

It's no secret we are inspired by our industry, craftsmanship, technology and high building development standards. We're continually learning and as a result our team and capabilities have expanded to include, **forensic building defect inspections, expert reports and waterproofing.**

OUR TEAM

Stan Giaouris

Managing Director,
Founder & Building Expert.
An industry master. No
problem is too big or
complex to solve.

Pramod Thebe

Civil & Structural Engineer.
An innovative professional
at the forefront of
technology and delivering
quality projects.

Sulav Gautam

Civil & Structural Engineer.
A passion for practical on
the ground problem
solving to deliver solutions
and outcomes.

Nicky Efthimiades

Finance & Office Manager.
A finance expert who is
exceptional at forward
planning. Keeps everyone
organised.

COME VISIT, CONTACT OR CALL US

www.constructionadvisers.com.au
info@constructionadvisers.com.au
(02) 9599 8667

