

The perils of concrete stairs.

Phil Buckley, ATFA Inspector, Mint Floors & Shutters

I tell myself 'it could be worse'. I swear, kick things and wonder at my own stupidity in continuing with this job – and again I tell myself 'it could be worse'. What did this to me? Concrete bloody stairs.

Time and again I have underestimated the difficulty in installing timber over a concrete stair. The maths seemed unreasonably difficult, the requirement for fixing the timber and the set-downs I had to work with would never get on the same page, and justifying the cost to the client was only possible on the rarest of occasions. Sound familiar?

Firstly, I had to accept the fact that it will always be difficult, but not impossible. And as you must all be sick of me saying by now, communication with clients early and often is a big factor. With concrete stairs, the difficulty is understanding the challenges and then communicating those challenges in a way that both reassures the client and convinces them that the cost is justified.

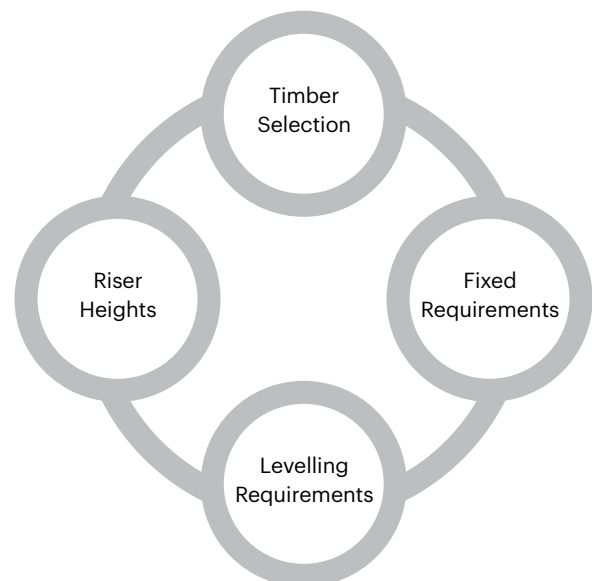
To understand the challenges you first need to understand the basic requirements of a compliant flight of stairs. Requirements can vary between the different states, and between public and private stairways - so be sure to get up to speed with your local requirements and read through the ATFA information sheet that deals with this exact issue. However, the basic principles are the same.

- Riser heights must be a minimum of 115mm and a maximum of 190mm.
- The Going should be 355-250mm for public stairs, and 355-240mm for private stairs.
- The Slope (this is calculated using the formula $2R + G$) should be 700-550mm for public and 700-559mm for private.
- Generally, a 10mm tolerance is applied to riser heights over the whole flight. This is not a cumulative allowance but is applied to each riser. That is, if your average is 180mm, you can have risers ranging from 175mm to 185mm.
- Each tread must be either coated with a non-slip coating (P3 for dry areas, P4 for areas likely to become wet) or have a non-slip nosing strip (again, classification P3 for dry and P4 for wet).

- Often (but not always) an allowance is made for the first and last riser to differ by an additional 5-10mm. This is not always the case and should be checked with your client or certifier before proceeding.

So, amongst all of this, the most consistent issue we face is that timber requires some sort of fixing (be it adhesive, nails or screws) and this often means adding a layer of timber over the concrete structure. The problem can be that this added covering changes the riser height of the stair. An example of this would be putting plywood over a stair to even it out and give you something to glue to. That's all great, but it adds to the riser height and sometimes this creates an issue.

So how can we approach covering concrete stairs in a way that eliminates some of the unknowns and controls the risks? Well each case is different, and each element of a job is dependant on the other. A good way to think of it is shown below:





As you can see, each of these elements are linked and dependent on each other. An example of how this might play out is:

The client has selected solid Blackbutt treads. With the location of the project, you feel that you need a full layer of adhesive and some top nails or screws to hold it in place. You decide based on this that 25mm plywood is a good base material. The problem is that to make all the risers equal height, you need to either start chopping concrete out or reduce your ply thickness to 12mm. So, what do you do? Compromise the riser height? The fixing strength? Start chopping concrete out? Maybe you need to look at changing the material?

As you can see, the issues can mount quickly, and they can take time and effort to even determine – you would need to basically mark out the height of each riser on site before you realised which treads had room for packing and which didn't.

The first step to stop losing money on concrete stairs is to be aware of the possible challenges. Work on ways of explaining these complexities to your clients without scaring them away. Then when you quote on works, make your best estimate based on the time it will take to get it right.

We have developed a cost base for covering concrete stairs in plywood before we install timber. The cost involved in this process can change slightly with changes to plywood thickness, but most of the cost is labour, and therefore the overall cost remains relatively stable. From a neat plywood base, our work becomes much more familiar and easier to manage. The other great thing about cladding the concrete in plywood is that it ensures our treads and risers are set before we start, and it allows for multiple fixing systems to be used as required.

The system also gives a reasonably simple testing procedure during the quote stage. Basically, the sales representative can add the thickness of the client's material choice to 15mm then see how that plays out on the treads. Accounting for cumulative differences over the whole flight is beyond beyond who? The

client or the sales rep? But at least we are trying to control the scope of works early on. When this is combined with a little bit of client expectation management, the process can be a success.

This system was used with good effect in the project shown above. The plywood thickness varied slightly between the two flights to allow for different levelling requirements, but the works were completed within a reasonable time frame and with a high-quality finish. One added challenge on this job was that the end grain of each tread and riser was to be visible on the open side, but this naturally resulted in the plywood packing on each also being visible. The solution was the small picture frame-like trim running down the side of each tread and riser. This provide a neat and tidy line from the open side, and also covered up all our packing work under the American Oak.

Take your time, think through all your options and do everything you can to ensure your client understands the degree of difficulty in producing a high-quality timber finish over an existing concrete stair. Try to systemise the process as best you can to allow some sort of control of cost estimations before you find yourself too deep in the game to recover your costs.

Then there is that job where you do all of this and more, but still lose your shirt – and you too will swear, kick something and wonder at your own stupidity in taking it on. But remember - 'it could be worse'. **t**