



# BUILDING DRY BASEMENTS

SOME BUILDING WORK IS MORE COMPLEX THAN OTHERS – AND THE MORE COMPLEX IT IS, THE MORE COSTLY THE MISTAKES. NOW, BUILDERS SHOULD LOOK TO BECOME EXPERTS ON BASEMENT CONSTRUCTION BECAUSE IT IS ONE OF THE MOST EXPENSIVE PROBLEMS TO FIX.

**B**uilding anything below ground level throws up more technical problems than you may think – these include structural issues that are mainly due to soil pressure or undercutting existing footings. This is in addition to dampness, condensation, termite entry and unhealthy spaces if you don't get ventilation right.

Most of these are common sense. Others need research, proper detailing and an understanding of how to make things last in areas where chronic water/water vapour is ever-present.

## **DON'T BE THE GOOD SAMARITAN DROWNED BY THE CLIENT HE HELPED**

Too often we get caught out doing

the wrong thing when we are trying to do the right thing. A client says, "Can you excavate the basement so I can build a room for my mum?" Or, "I want you to line my garage so we can use it as a home theatre."

I'm convinced that most of you can do this work but it is not for the lazy or faint-hearted. Unless you do understand what happens when you dig out next to existing footings, or what space to leave between soil and a new wall, or how to line an existing wall with FC strips and sheets, expect call backs and endless drama.

Science is your ally. Research is getting easier and easier to do. You do not have to accept a liability for

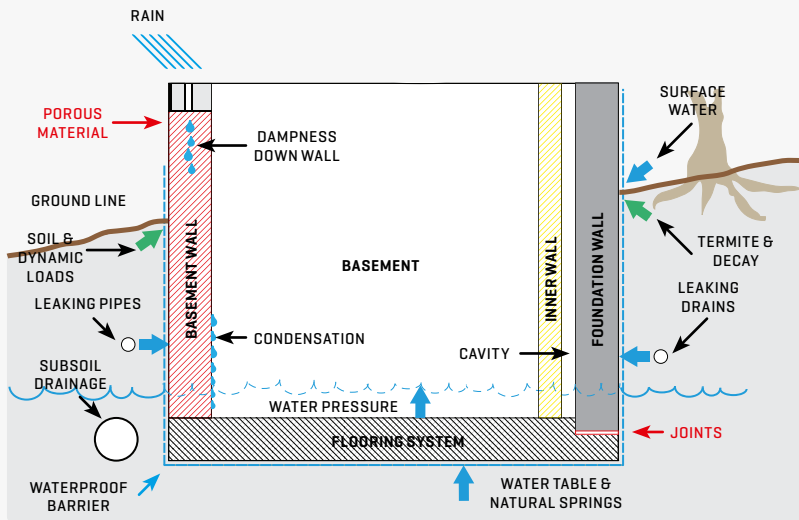
your client's pushy and impatient bad choices.

## **WATER RULES**

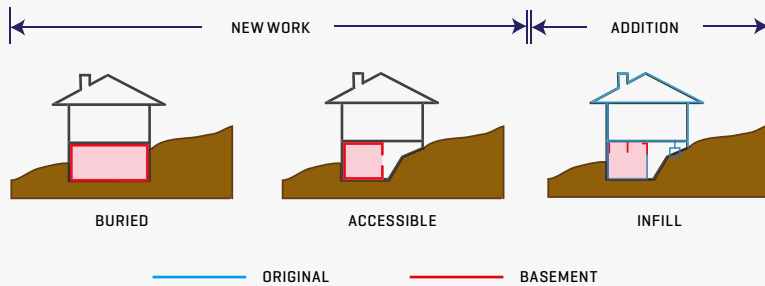
Now this is basic but I don't care. You know what I have said about using gravity to keep your buildings dry. Below ground is about gravity AND how this morphs into water pressure underground. In essence the rules are:

- Water will always find its own level.
- If the water table is higher than your floor level, think of your basement as a 'boat'.
- Any porous material in contact with moisture [water and water vapour] will act like a 'wick' and draw moisture into the building –

## UNDER WATER AND UNDER ATTACK



## TYPES OF BASEMENTS



Art rebecca walker

this includes fabrics, bedding and furniture.

- Condensation risk increases with basements because walls in contact with soil are cooler than those above ground (warm air condenses on cool surfaces).
- Air movement can be minimal and moisture in the air below ground is more difficult to ventilate.
- Moisture will damage all but the most durable materials.

### TYPES OF BASEMENTS

There are three main types:

**Buried** – soil against all walls.

**Accessible** – you can get behind most walls.

**Infill** – you are stuck with existing slabs and walls which you have to make dry, keep dry or keep away from new finishes.

There is little doubt that accessible basements are best because if all else fails you can get behind the wall to fix any problems such as a blocked drain, or collapsed soil against the wall or termite entry into a timber frame.

### SO WHAT TO DO?

**Step 1:** DO NOT blindly do a job which will leak, get termites or end up being uninhabitable due to mould.

**Step 2:** Plan the work carefully with the client. Do a drawing. Get the head heights right – especially under

### TIPS FOR BASEMENT WORK

- Avoid joints in floor slabs and vibrate them well.
- Place subsoil drainage UNDER slabs in very wet areas.
- NEVER, NEVER agree to keep an existing wet slab on ground.
- Always keep an air gap/space between a wet wall and new linings/finishes even if this is just a 20mm treated pine batten.
- Leave at least 100mm of a slab edge exposed if you are using an accessible strip drain.
- Always have at least a 20mm setdown in slab edges even with the best of exterior waterproofing and drainage.
- Protect any external membrane – do not rely on labourers to be careful backfilling or the owners to be careful when they're gardening.
- Always vent voids around a new basement – both to limit rot to existing subfloor timbers and also limit condensation/dampness around the new works.
- Allow removable access panels at any termite inspection point.
- Do not use mild steel or zincalume door jambs – the bases rust. Tell your client to use aluminium, stainless steel or Class 1 hardwood.
- Avoid using timber joinery and NEVER let your client force you to use MDF products.
- Complete flooring, especially tiles, before fitting any cabinets.
- Use proprietary grouts for floor tiles.

existing plumbing or new beams – and make sure there is enough for the essential ceiling fan. Put the stair in the most logical place. Plan other electrical items so you are not chopping into finishes later.

**Step 3:** Get your engineer to tell you what slope you need from any existing piers; the size of any retaining wall if you intend to backfill against it; and what beam size you need for supporting the floor above if you need larger rooms without piers in the middle of them.

**Step 4:** Plan termite management, especially at joints to old work.

**Step 5:** Choose a suitable waterproofing method for the

**THE NCC IS GETTING CONFUSING!**

The Australian Building Codes Board know I respect the challenge of getting all Australian states to agree on a single set of building rules.

While the National Construction Code (NCC) 2013 does make upper floor windows safer for young children and hints at slip resistance so contractors don't get blamed for unsafe products any more – I believe this is where the 'hugfest' stops.

The parent volumes have spawned a small Appendix called 'Variations and Additions' and I don't understand it. So I hereby challenge the ABCB to answer the following questions:

1. Why are there two volumes for building? Plus this Appendix. And sorry David and Warwick (my good plumbing mates) why is there an entire volume on plumbing and not waterproofing, thermal detailing, tiling, and smart building?
2. Why can't some of the text be converted into diagrams that us builder blokes and blokettes can understand?
3. Why isn't there an index?
4. Why aren't all the main Australian Standard rules blended in?
5. Why isn't everything free online?

If the ABCB doesn't consider this, a smart 'wikibuilder' could provide it online for nothing – and snap, there's no more income to assist in producing this important work. Or worse, this suite of publications will evolve to a point where it becomes even more confusing to people who want to use them.

OUTSIDE of any wall which will be backfilled against. Pay extra special attention to joints. Liquid applied membranes will need protection from mechanical damage.

**Step 6:** Drainage should always be located LOWER than the internal floor level. Have a riser for flushing clean over the years and protect it with a filter sock.

**Step 7:** Every surface must be dry before you paint or apply a finish to it, especially if you use vinyl flooring or are stupid and use timber.

**Step 8:** Coatings should be washable and have a mould inhibitor added – such as Dulux Mouldshield. ■

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Next issue: Attics.*

PROPERTY INSPECTIONS

# CASE OF THE MISSING PAPERWORK

IN ADDITION TO HIS REGULAR COLUMN, **JERRY TYRRELL** PROVIDES US WITH REAL CASE STUDIES OF BUILDERS WHO HAVE GOTTEN INTO TROUBLE ONSITE AND EXPLAINS HOW YOU CAN AVOID MAKING THE SAME MISTAKES.

*The following is a letter comprising actual statements or apologies I have heard from contractors over the past 40 years. I wish it was all a joke.*

Jerry Built Renos  
RMB 13  
Stupidville

Mr Noah Hope  
Hope and Prey Solicitors  
Cnr Regret and Insolvency Sts  
Wealthtown

**Re: Reno job for Miss Take**

Dear Mr Hope,

I did a \$250,000 reno of a building for a good friend Miss Take and now face a number of problems:

1. I did not advise her to get careful plans from a competent architect or designer.
2. I did not sign a contract.
3. I allowed lots of changes without telling the client that these changes would increase the price.
4. I let the client tell the subbies what to do.
5. I did not confirm in writing that she had accepted the floor tiles had no slip resistance.
6. I went ahead and built an indoor pond and basement room even after telling the client that the way she wanted them done wouldn't work.
7. Nothing we agreed to is confirmed in writing.
8. I paid for over \$5,000 worth of locks, hinges, clothesline, letterbox, building surveyor's fee, shower shelf, road opening and gutter guard even though it was not part of the agreement.
9. The client is threatening to report me to Fair Trading because I only took out \$100,000 of home warranty insurance.

I've now spent well over \$295,000 at cost with more than \$35,000 of work required to get the building finished. My friend thinks I'm ripping her off and in any event doesn't have the money. Subbies won't help to fix anything because they only did what they were told.

I desperately need the money to keep the business running and my wife happy. She is furious that I can only afford for her to drive a 15-year-old car. And we planned to get away for our anniversary next month. The bank is charging 14% interest besides the \$35,000 credit card debt which costs over 22%.

I tried to do the right thing and now all I have is an unhappy client, wife and bank manager!

I'm scared of costs because I know you charge \$330 per hour and that building consultant you recommended last time is \$250. What should I do?

Yours faithfully,  
Jerry