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When buildings collapse in a planned way, we call it demolition. But buildings can collapse unexpectedly. We call this an accident, but in reality it's usually just down to poor planning and a lack of control. War and natural disasters aside, buildings have collapsed due to shallow (or no) foundations, poorly designed load-bearing structure, substandard materials or workmanship and especially during renovation, lack of appreciation of supporting structural members (i.e. knocking down a joining wall, not realising it is holding up the roof). There are many other likely causes I'm sure, but the result is the same.

Regulators have controlled buildings for ever. There are basically two parts to regulatory control. The first is mainly planning and the second is mainly execution. There is always some degree of overlap because life is like that and does not fit neatly into boxes (unlike

Stopping the UK from collapsing

chocolates and shoes).

Most countries (including South Africa and the UK) have some form of building planning control rules. Because planners don't get out much, these rules are almost always called "Building Regulations". These are wide ranging and supported by detailed codes of practice. The codes are based on sound civil and fire engineering principles as well as accessibility considerations for the emergency services and people with disabilities. That means, in major new builds at least, you are encouraged to follow a set of (sometimes very detailed) principles and rules, including submitting plans to local government planning authorities before you even start building. These rules are considered legal "design constraints". But within them, there is still a good deal of room for design flare.

Planning authorities will usually inspect the work as it proceeds, to make sure that the work is being done to plan and to the right standard. These rules usually also apply to major building changes, like extensions and refurbishments involving internal structural alterations.

In the UK, during execution of the build, specific construction safety regulations will also apply - these are known as the Construction (Design and Management) Regulations, or CDM for short. Since this is a health and safety article, let's concentrate on this side of things. As the name implies, there is some overlap with the planning side (the design), but they are mainly concerned with the way the construction project is managed and executed and the way that design information is passed on during the life of the building. Like their planning counterparts, these regulations also cover building renovations (well, obviously not simple wall-papering, but structural alterations, extensions etc). Let's concentrate on the application to alterations/refurbishments/renovations, as that's probably a large slice of work for builders and a typical scenario for building collapse.

The current CDM regulations in the UK can seem a little complicated. We will concentrate on just a few of the broad

principles here. Essentially, it's all about properly managing a construction team. Construction projects can involve many different tasks, make heavy use of contractors and draw on a wide skill base, some of which are rather specialised. Things can get missed and out of hand as a result with deadly consequences. In the world of CDM, the major construction team roles are called:

- **the client** - who wants the job done
- **the designer** - typically an architect or structural engineer, but technically anyone having a say in how the building will be designed or altered
- **the principal contractor** - the main contractor you deal with who may sub-contract to other contractors
- **other contractors** - sub-contracted
- **a CDM co-ordinator** - a lame title, like 'milk monitor' but supposed to help and advise the client and generally make sure all the roles coordinate and information is kept together in a special file
- oh, yes, **workers** - a small bunch of people employed by the contractor companies and who actually do the work.

The full team roles only need to be appointed for notifiable projects (work lasting longer than 30 days or involving more than 500 man days or work). So, you could do without the CDM co-ordinator for small jobs, because the job is not that complicated. For practical workload reasons, not everything needs to be notified - like many things in life, it's usually down to size or duration or a combination of these. Even if you forget to notify, very large building projects are difficult to miss (your annoyed neighbours may even turn you in), but smaller ones can be overlooked. Planning authorities and safety regulators don't have hordes of people running around like building police. Violations may therefore only be discovered when things go wrong - the building collapses ... people are killed.

Currently domestic clients do not have any specific duties under CDM (but this may change). But, even so, it depends. If

they are frustrated designers or builders and they start to insist that things are done in a certain way or certain materials are used, then they can end up adopting duties of designers or contractors - it depends on the degree of control they exercise. So basically it's not about titles, it's about the role you play (I know that sounds a bit socialist...)

Assuming the original building was fit for purpose in the first place (a big assumption I know), alterations are all about management of change (MoC). As we all know, some changes carry higher risk than others. So when significant changes are planned, you review what you are planning to do in light of what you already know about the existing building design. This is where the so-called "health and safety file" comes in. This is supposed to live with the building during its lifetime. It's a handy record of relevant design considerations, plans, location of asbestos etc - indeed anything that might come in useful if you want to maintain, clean, repair, alter or demolish the building safely (obviously you don't need this if you plan to do all these things dangerously). If you don't have anything

like that and you're planning major structural changes, you may need to conduct a structural survey because of the potential for structural collapse (either partial or total), unless it's obvious or routine. This will help you plan what is possible.

Foreseeable potential alterations should also be born in mind at the original building design stage (by the designer) as it's cheaper in the long run. So, if you envisage a good deal of internal rearrangements being necessary, or an upwards extension being likely (single or multi-storey house) best to design that building with this in mind (fewer load bearing internal partition walls, suitable foundations etc).

Another important factor, and a duty under CDM, is making sure the contractors are competent to do the job. You can never be absolutely sure of course, so this is all about reasonable checks. A common practice is the endless sub-sub-sub-sub-contracting (to save money). Not bad in itself but it means you can lose control of who is actually doing the job. So, whilst you may have

carried out reasonable checks (experience, qualifications etc) on who you think is doing the job, the real workers may be unknown to you, and worse still, someone who has insufficient experience or skill in the type of work needed or little appreciation of the consequences of structural alterations.

I know you probably expect contractors to check the credentials of those to whom they sub-contract, but some clients are not blameless (if you are squeezing them down to the last penny, insisting they finish it by yesterday and imposing massive financial penalties, what do you expect them to do?). Hence there's a duty to make sure there are adequate resources and time planned to do the job properly.

Managing the construction project, in practice, is also about making sure everyone communicates. So, site meetings and making sure those who need to know do so - especially if there are changes to the plan (management of change, again). That'll be the CDM coordinator then ...

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