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New store from the ashes

In November 2015 a fruit and vegetable store at 1343 Cameron Rd, was damaged by fire.

Damage to a building resulting from fire can be far more extensive than would initially appear. Smoke damage becomes all pervading and needs special treatment to ensure that long lasting toxic odours do not emanate from surfaces. Electrical equipment, which can appear unaffected at face value, may have molten cables and componentry behind walls and ceilings so full replacement is usually required. In addition, water damage from firefighting and possibly subsequent rain damage from where roofing is removed by fire fighters, also contributes to far more damage in some situations than the initial fire.

With new Health and Safety legislation there are many factors to consider when undertaking repair work to a fire damaged building —something which Hawes Building Solutions has previous experience in.

The building owners made the decision to demolish and build new rather than try and make good the existing building.

Architectural Design Group was engaged to complete design and documentation with Hawes Building Solutions being selected as builders.

The existing floor slab and concrete block fire wall were retained and reused. The overall footprint of the building was increased slightly and the new and existing concrete floor ground and polished to provide a versatile easily cleaned surface.

The design of the building is fairly simple with a mono-pitch steel portal frame and steel roof purlins. The cladding and roof is longrun colorsteel, both of which made for an economical build.

The replacement building is a prominent feature in the Greerton village streetscape and provides the owners a flagship premises which is being enjoyed by new tenants.

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Design for construction — Keeping it Safe

On 1st April 2016 the Health & Safety at Work Act 2015 came into force. The new act has implications on everyone involved in the construction process including client, designer, contractor, subcontractors, material suppliers and importers. The new legislation introduces the PCBU (person conducting a business or undertaking) and has specific requirements for all PCBU's of the aforementioned and recognizes that roles and corresponding duties of care change within the process. It requires that all these parties work together to address safety issues *(cl 34.1)*.

One core issue which is still being grappled with is that of how design influences the safety of construction workers, as well as subsequent users. Overseas research into 224 construction related fatalities concluded that 42% could have been averted at the design stage. (Safety Science, Vol 46, Issue 4, April 2008, Pages 675–691).

The designer should understand how the building or structure can be constructed, cleaned, maintained and decommissioned or demolished safely.

Heathrow airport is a case in point as reported in "The Telegraph," Nov 2013:

"Heathrow will be hiring a team of high wire walkers to change the light bulbs that sit 120 feet-high along the ceiling of Terminal Five, after complaints from passengers [that the terminal was gloomy]. The major bulb replacement task is expected to take nearly four months and cost several million pounds". By 2013 sixty per cent of the 120,000 light bulbs at Terminal Five had blown yet not a single one had been replaced since construction in 2008 as there was "no viable way to replace them".

Ladder use contenders for future Darwin Awards. (The Darwin Awards salute the improvement of the human genome by honoring those who accidentally remove themselves from it.)

Below are some common examples of designing safety into a project which are relatively easy to implement and also effective in reducing hazards to construction workers.

- Components need to be designed to facilitate prefabrication in the factory prior to arriving on site, or at ground level onsite, so that they may be erected in place as complete assemblies. The purpose is to reduce worker exposure to falls and strikes by falling objects. For example, using prefabricated stairs for installation early in the construction sequence for multi-story buildings thus improving access; designing a roof to be constructed at ground level and then lifted into place avoids time working at height; designing gantry cranes and working platforms into very high atria etc for maintenance of light fittings/ glazing systems; having lighting gantry's on hoists in performance arenas for repositioning event-specific installations.

- Designing roof parapets and window sills at 1m to address safety from falling issues during maintenance. Incorporate decks of sufficient depth with upper storeys stepped back from lower storeys allowing safe access for painting, window cleaning, cleaning gutters etc.

- Specify non-toxic and low VOC materials, paints and sealants—eg ACQ, CuAZ (eg MicroPro® H3.2 & H4) treated timber instead of CCA treatment to avoid exposure to chrome and arsenic. Avoid LOSP treated timber which causes skin issues, eyes and throats to burn and headaches as well as causing solvent damage to other building materials. Design for modularity (eg of fibre cement sheets) to minimize cutting and dust creation.

- Incorporate permanent safety access points for safety harnesses; using tilt-turn windows and safety hooks on soffits for cleaning high level windows. Wider doorways and corridors (ideal for Lifemark accessible certification) allow for bringing in access equipment such as mobile electric working platforms. Alternatively locate plant requiring maintenance at ground level (eg Air Con units). Lighting can be positioned to ensure good lighting of maintenance equipment and cupboards.

- Specify materials, fixtures and finishes that have a long life and are durable to reduce the need for maintenance. E.g., LED light fittings, brick/ aluminium cladding, hydrophobic and oleophobic (water & oil repelling) self cleaning surfaces etc.

- Design underground utilities to be placed using trenchless technologies or thrusting. This will help eliminate hazards associated with trenching (falling and collapsing), especially around roads, or where vehicles operate, as well as pedestrian areas.

- Allow adequate clearance between the structure and overhead power lines. Consider, burying or rerouting existing power lines around the project before construction begins. Overhead power lines that are in service during construction are hazardous for hi-ab's, cranes, rubbish skip trucks and other tall equipment.

Hawes Building Solutions has used many of these options over the years and welcomes the chance to discuss these issues, and options for safe construction, with designers during the design phase.

Renovating and the need for contingencies

Hawes Building Solutions has successfully completed many renovation projects. A recent renovation started as a minor house alteration including a new kitchen, but ultimately required extensive recladding, re-decking, a new retaining wall and roofing works. Another involved converting underutilised areas into a new teachers work room at a local school. HBS has also just completed a major house alteration of an 80 year old house. All 3 projects revealed extensive issues once work commenced, highlighting the need to have contingency sums of at least 15% on renovation projects. In addition a "what-if" back up plan should be part of any risk management consideration , covering a worst case scenario of the building lacking structural integrity.

Ideally at the time of design, portions of the existing lining or cladding are removed to enable a full consideration/ inspection of the existing building. This will help to avoid lengthy redesign and consent amendment delays. It also will hopefully highlight the presence of any asbestos so that the management of this can be planned for—again preventing delays. The removal of a sheet of cladding, lining or soffit to allow investigation is easily undertaken, with temporary repair executed at very little cost compared to the alternative of weeks of delays (eg scaffold can cost hundreds of dollars a week). We are able to assist designers / owners with this task as the first step toward the successful completion of a project.

In the first renovation mentioned above, the scope of work was initially internal until we encountered rot when the internal lining was removed. As we investigated this, the full extent of rot and rusting steel structure stemming from a litany of prior building errors was uncovered. "Retaining" wall structure had no foundations and was only embedded 100mm into asphalt, deck structure was held off stubs nail plated to the existing home, EIFS cladding was leaking at all the usual junctions (bottom corners of windows, penetrations, junctions with roof and balustrade etc). Remedying these issues resulted in the completed project costing quadruple the original budget.

In the school renovation we encountered asbestos sheet behind weatherboards. We also discovered pieces of asbestos in the subfloor. Worksafe was notified and a certified remover was engaged to remove the offending material and air monitoring was undertaken before, during and after removal to ensure no fibres were released during the removal. Despite initial attempts at removing the asbestos from the subfloor, layers upon layers were discovered with the growing realisation that it had been used as a previous "cutting station". To fully remove the asbestos would have entailed removing the entire floor of not just the area of works, but the entire building (4+ classrooms + admin building) and then vacuuming the subfloor dirt to remove any dust. Then to remove it from the wall framing would have seen extensive areas of the building reclad with flow on affects to window and door joinery, eaves and soffits etc. The prospect was hundreds of thousands of dollars to remedy. The pragmatic approach that 'asbestos undisturbed is a durable building material with no threat to building users' was followed. The decision made to prevent/ manage access to the subfloor for anyone but licensed personnel with full safety gear for any future access to services.

The renovation of the 80 year old house identified issues with rot, specifically in the original rimu bottom plate of the foundation wall. This has required the whole house to be propped whilst the foundation wall was removed and a replacement built in its place

All projects have incurred delays, disruptions and significant additional costs emphasising the importance of budgeting for contingencies.

Staff Profile: Mike Bailey, Col Henry

Mike is a trade qualified Carpenter, having gained most of his experience in residential construction. Formerly a police officer, he also has a trade certificate in Ship, Yacht and Boat Building and has worked in the trades for almost 20 years both in New Zealand and overseas. He has a National Diploma in Construction Management and Quantity Surveying. Originally employed as a carpenter at Hawes Building Solutions, Mike is now employed as a Quantity Surveyor working on the pricing and administration of a variety of projects.

Mike is happily married with three young daughters. Outside of work Mike loves to get out fishing, surfing and playing social sports

Col trained as a Carpenter/Joiner at Cootamundra Components in NSW, Australia and gained his trade qualification through Wagga Wagga Technical Institute. He has a Level 5 Construction Supervisors Certificate and has over 30 years in the trade. His construction experience includes residential, commercial, cabinetmaking and boat building.

Col ran his own building business in Australia for 5 years. His role at Hawes Building Solutions is multi-faceted, working as both a foreman and a construction manager responsible for overseeing the on-site management of projects. He is also the company health and safety representative.

Col is happily married with 4 young boys and enjoys rugby, golf and live music.

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On the lighter side...

Architect Daniel Czapiewski designed the upside-down house to reflect the pace of change in Poland and to make a statement about the communist era and the state of the world.

The building took 114 days to build – a little longer than expected – as workers suffered dizziness and confusion and needed frequent breaks to recover

A man with a bald head and a wooden leg is invited to a Xmas fancy dress party. He doesn't know what to wear to hide his head and his wooden leg, so he writes to a fancy dress company to explain his problem. A few days later he receives a parcel with a note:

Dear Sir, Please find enclosed a Pirate's outfit. The spotted handkerchief will cover your bald head and with your wooden leg you will be just right as a Pirate.

The man is offended that the outfit emphasizes his disability, so he writes a letter of complaint.

A week passes and he receives another parcel and note:

Dear Sir, Sorry about the previous parcel. Please find enclosed a monk's habit. The long robe will cover your wooden leg and with your bald head, you will really look the part.

The man is really incandescent with rage now, because the company has gone from emphasizing his wooden leg to drawing attention to his bald head. So he writes a really strong letter of complaint. A few days later he gets a very small parcel from the company with the accompanying letter:

Dear Sir, Please find enclosed a tin of Golden Syrup. We suggest you pour the tin of Golden Syrup over your bald head, stick your wooden leg where the sun doesn't shine and go as a toffee apple.