

ANGLES

SENSE STUDIO NEWSLETTER OCTOBER 2016

Welcome to the Seventh edition of "ANGLES" our triannual newsletter which we hope you will find a source of interesting information and news. We welcome feedback and contributions so please **let us know what you think**. We hope you will enjoy this and future editions. **Murray Armes**

THE NEPAL EARTHQUAKE: A YEAR ON

In February 2016 I returned to Nepal thirty-one years after my first visit, and nearly one year after the earthquake that devastated the country in April 2015. My son and I visited the Manaslu region which is close to the epicentre, partly because it was an area he had not previously been to in his many visits, and partly because we believed that one of the best things to assist the battered economy was to contribute by spending money there.

The shock waves from the quake appear to have travelled more easterly from their origin in the Ghorka region of central Nepal: there is relatively little damage to the west or south, but in Kathmandu, 80 km from the epicentre, there was significant damage, and many of the ancient monuments in the historic centre were completely destroyed.



The Royal Palace in Durbar Square, Kathmandu

On our trek up the Bhodi Gandaki river we saw much evidence of the damage: in places whole villages had been wiped out by landslips, in others the dry-stone houses had just been shaken to bits. Survival seemed random. However, the fact that the quake occurred just before mid-day on a Saturday meant that the schools were shut and many families were out in the fields, and thus survived the collapse of their houses.

The death toll was still around 8,000, but the main impact has been the destruction of property, and efforts to bring aid to affected areas, way up in the mountains far beyond road-heads, have been painfully slow. Relief agencies reported being hampered by the Nepalese government's wish to retain control of the aid process, and not allow agencies to distribute directly, and of course there have been allegations of corruption.

Our guide's house in the village of Baseri was more-or-less destroyed. He told us that government aid for rebuilding is conditional upon doing so with lightweight construction to approved designs: timber frames and corrugated iron sheeting. However, aid is not paid

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until rebuilding is complete, and the fact is that the materials from the collapsed buildings are readily available while the sheeting has to be purchased and then laboriously carried up the valleys on mules. Not only that, but the insulation properties of lightweight construction are poor. Concrete-framed buildings have proved more resistant to the shocks, but these also require the transport of steel reinforcement, carried for many days by hand, and bags of cement on mules.



What's left of our guide's old house...

Most of the people we spoke to have lost friends and family, but the matter-of-fact way in which they described their losses emphasised that early death is still shockingly common, and the irresistible forces of nature remain a basic fact of existence in this under-developed country. In the end the main resource the hill people have is their self-sufficiency and resilience, and we left full of admiration for the way in which they are slowly rebuilding their lives. ●

Jon Satow



...and his new one



The stone house in Macchakhola collapsed, but the concrete one behind survived.

Common modes of failures in brickwork and facades the designer's responsibilities. Industry advice which is commonly more onerous than the relevant standards. Liability for failures may not necessarily be avoided by conforming to standards and the building regulations.

Brickwork:

Brickwork is one of the most commonly used facades materials in the UK currently over 50% of walls by area are built of brickwork. The supporting inner wall may be a variety of materials from a series of lightweight steel framing to the more traditional blockwork. It might be thought that the use of this material is simple, well understood, and not prone to failure.

It might be further thought that the designer by conforming to the various codes and practises which apply of following previously understood methods of construction, the designer has specified the product to be constructed by well understood practises and therefore has operated at the standard of a reasonably competent architect or designer and, the design is therefore acceptable. This assumes that construction is a static business and that standards and codes are relevant without revision.

We would like to draw attention to one of the areas of this most commonly used material where failures are frequently occurring. This may have been previously understood standard and acceptable practise, but now is an area of disagreement. The first area is that of free standing walls. There are a number of Standards used in brickwork construction for the purpose of this explanation we should refer to PD6697: 2010 The Published Document from the British Standards Institute: Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2.

This document which would be the appropriate reference document, has very little advice of certain aspects of brickwork construction, namely free standing walls.

During the harsh winters of 2012 and 2013 the brick producing companies found the level of claims made against their products could, if allowed to profligate significantly threaten the profits of the manufactures. Consequently, and reasonably, it was determined that the harsh winters particularly unusual for the south of the UK required a

change in the advice offered as walls, which had become likely to fail without an increased specification.

The Industry published advice published by the Trade Association; the Brick Development Association, (BDA) a document titled Severely Exposed Brickwork. Confusingly this referred not just to Areas of Severe Exposure, as categorized by the Exposure Zones listed in the BRE well understood map of the UK depicting exposure zones. It also, includes advice relating to simple freestanding walls, retaining walls, chimney constructions, mortar joint profiles and steps.

The brick industry is therefore recommending alternative and more demanding construction advice than contained within the standard. For example, the PD 6697 allows in the clause under capping's a brick on edge or soldier course can be used and give advice on damp proof course (DPC) provision if a brick on edge is employed. The BDA document expressly suggests in free standing walls which also could be extended logically to parapets that brick on edge is not a satisfactory method of weatherproofing a wall.

The designer who chooses to proceed in accordance with the notes in the standard is therefore not able to confirm in the event of a subsequent failure that he has proceeded in accordance with best practice.

The brick industry plan is quite clear they wish to minimize their considerable losses from various failures, and to place the onus for any product failures firmly at the designer's

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door. The designer will find his defence of his detail proposal difficult if not impossible, as he has not followed the industry advice or recommendations. It might well be claimed that in the event of a failure the designer or architect has fallen below the standard of the reasonably competent designer.

The central point which this note seeks to make is that the role of standards is often misunderstood. Standards are not instructional documents and following advice will not, and should not protect the designer from errors in specification. British Standards have the following note on the National Foreword.

'This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application. Compliance with a British Standard cannot confer immunity from legal obligations.'

It might be considered reasonable that the client of a designer would expect his architect or designer to be knowledgeable in the detail design and specification of a project and materials and, not just blindly follow or rely on British and harmonized European Standards.

Every project is different both in the location micro climate and the juxtaposition of various materials. In brickwork the various choices of joint profile mortar mix and various properties of widely different brick types both in the compressive strength and water absorbency mean that for simple specifications a complex equation required

both knowledge, or at least the acknowledgement that advice has to be sought.

In the case of harmonized European Standards such as BS EN 771:1: 2011 Specification for masonry units: part 1: Clay masonry units it is even more taxing.

A harmonized standard is required to operate from Finland to Greece with a widely different climate and building practices. It is not possible for reliance on that standard in all the circumstances that are likely to be encountered. This may be self-evident, on mentioning this, but architects are relying on standards and codes without considering their own competence in some areas.

As, a masonry expert whose advice is often sought it was noticeable to me that the designers who sought my advice tended to be the more knowledgeable designers, who were aware that their own expertise could be underpinned by a specialist.

It might be considered the example noted above is a limited element not likely to give great economic loss. In fact, the following example indicates the disproportionate work that was required following a significant failure of a typical settled case of some 5 years ago. A very large regional police administrative headquarters in a sheltered location had a design which had the top floor stepped from the outside walls to form a walkway running around the building. This was no doubt done to form a defensible building. The outside walls terminated in a parapet brick on edge (now not recommended). Bricks on the top of a wall are not

under load and consequently are free to expand which they do. In order to cater for this expansion soft movement joints compressible to 50% of their width were used for this project every 3 Metres. This soldier course was laid on a DPC restricting water passing down to brick faced wall below.

The bricklayers in contravention of good practice had laid the brickwork soldier course with the 3M movement joints raked out and filled with a silicone filler. The movement joints therefore looked to the casual examination to have been correctly provided. In fact the expected expansion of the brickwork was not catered for and the top soldier course of the parapet shattered along its length. The DPCs also did not extend under the whole wall and so water was also causing lime streaking from the mortar joints below. The extent of the soldier course failure was nearly some 800 metres of failed walling.

Rectification works required full progressive scaffolding of the building, site control. Free issue of bricks from the supplier, replacement mortar material, DPC's and wall ties, damage and disturbance to the police authority client. Cleaning and rectification of the staining. Action was taken against the architect and supervising Clerk of Works, main contractor and brickwork sub-contractor. So a simple soldier course failing had led to a disproportionate result leading to a major rectification with many parties being both inconvenienced and having to make significant PI insurance claims and, suffering reputational damage.

Another common error made by designers is to imagine that standards

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and codes contain all the answers. A building in central London was supplied by the brick manufacturer with undersized bricks in length. It is common for bricks to vary in size but still be within the stated tolerances which can be very large. The bricklayer's solution was to open the vertical mortar joints (perps) to accommodate the undersize bricks. Some mortar joints thus became up to 30mm 3 times the normal designed width of 10mm. (In fact, some recent buildings have been designed with oversized joints to cater for variable brick sizes.) In this case the resultant façade was extremely unsatisfactory. The variable joints and the contrasting brick and mortar colour gave a most unpleasant appearance.

The inquiry centred on what width should the mortar joint tolerance be allowed to extend to. The construction team sought advice and was advised that there was no standard or code describing the maximum or minimum width of the mortar joint. In this case a ruling from an expert was sought and it was determined by examination of previous technical advice notes that a joint of plus and minus 50% was permissible. The reasonable width of a vertical perp. would therefore be from 5mm to 15mm. After much discussion this was accepted by the parties. Unfortunately, there was no alternative but to take down the outer skin of brickwork of a new building and rebuild, which occurred. The codes and standards in this case gave no assistance and the building was taken down on the view of Experts and was reasonable industry practice. Standards and codes gave no assistance in the discussions on the issues on this building.

This was not anticipated by the construction team. In this case the delay to the contract even outweighed the considerable rebuilding costs which had to be covered by the construction team and their insurers.

It was common 35 years ago in the UK for even substantial buildings to be specified by practices in house specification architects. Self-specification required in depth technical knowledge and competence. At the very least designers were required to examine research and consider specifications, in light of potential failures. Less experienced project runners now rely on the National Building Specification listing the appropriate codes and standards. The standards do not contain all the necessary information to avoid building failures and the reliance on them is no defence for the less experienced specifier. Manufacturers advice and knowledge of the technical requirements of the work item under consideration is also required.

Standards also require substantial time periods to revise. It is required that Standards are revisited every 5 years. The lead in time may mean that while industry advice may have been altered, the standard is in delay.

Product failures

Designers can avoid product failures by not just slavishly quoting codes but also, protect their reputation and stay out of trouble in the specifications marketplace by seeking wider advice and information.

The manufacturers, often publish all they know about the product, across a range

of platforms. Informed people will make reasonable choices when confronted with good and adequate information about a product. If that information is lacking that information, or being unable to find it, they will often make the wrong choices and that can lead to problems. Whether it's on a printed page or on a web server, information published on good practice is generally available.

Manufacturers often publish good guide specifications which will have been altered to suit recent experience. The industry will help the designer to achieve good understanding of the product. If manufacturers can provide high quality, professionally written guide specifications, the designer should both be aware of and take a critical advantage of this information.

Most of the information that a practicing architect, engineer, designer or specifier needs to keep up with today, will be available. A good manufacturer or supplier will impart additional information to the codes and standards enabling the designer to ensure he is performing to the level of the reasonably competent professional in that field.

Finally, wisdom is the most valuable aspect of a good design and specification. Wisdom encompasses knowledge from time and experience from others as well as one's self. It embraces the experience gained from making good choices over time and learning from bad ones. That means relying on a variety of sources to gain experience, not just on codes and standards. ●

Simon Hay

SNAPSHOT - The Joint Contracts Tribunal (JCT) launches new 2016 contract suite

23rd September 2016 saw the launch of the anticipated JCT Design and Build Contract, the second suite release of the 2016 Editions, following the release of the Minor Works Contract suite in June 2016.

The contract suite includes; Design and Build Contract (DB) Design and Build Contract Guide (DB/G) Design and Build Sub-Contract Agreement (DBSub/A), Design and Build Sub-Contract Conditions (DBSub/C) Design and Build Sub-Contract Guide (DBSub/G). The new Minor Works Contract suite includes; JCT Minor Works Building Contract 2016 (MW), JCT Minor Works Building Contract with contractor's design 2016(MWD), JCT Minor Works Sub-Contract with sub-contractors design 2016 (MWDSUB/D).

Some key new features and changes within the updates include the following;

CDM REGULATIONS

Changes incorporating the 2015 JCT Amendment introduced by the Construction (Design and Management) Regulations 2015 (CDM 2015). Many within the industry are already familiar with the revised terminology and the change is a formality and consolidation of the new legislation within the suite of contracts.

BUILDING INFORMATION MODELLING BIM

MW 2016 includes provisions by means of inclusion within the Contract Documents section of the contract, within footnote 5 of the second recital "It is envisaged that in those cases where there is an applicable BIM or other communications protocol this will be included within one of the Contract Documents identified in the Second Recital" DB 2016 includes a new entry at clause 1.1 allowing for insertion of the particular BIM protocol where applicable in the contract.

PUBLIC CONTRACT RELATIONS

Changes and amendments have been made in both DB and MW 2016 to include provisions for employers covered by

The Public Contracts Regulations 2015 (PCR) relating to Fair Payment, Transparency and (BIM), without requiring additional bespoke amendments where PCR 2015 applies, thus enabling public bodies, contractors and sub-contractors to use these provisions on public sector projects.

PAYMENT PROVISIONS

Payment provisions have been revised, simplified and consolidated, reflecting the Governments Fair Payment principals. There is now no distinction for interim payments due up to practical completion and payments on or after practical completion. A defined interim valuation date (IVD) has been introduced, of which the first can be agreed between the parties, or by default will fall one month after the start date for the works, following which IVD's will then be monthly. This differs from the current position of interim payments at intervals of 4 weeks calculated from the date of commencement of the works. The revised monthly position will continue after practical completion up to the due date for final payment, rather than the two month intervals currently seen. These payment provisions will apply to main contracts and down the supply chain at sub-contract and sub-subcontract levels.

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Along with generally simplifying the payment provisions, a new clause within DB at 4.20 "Notification and ascertainment" providing a procedure for prompt assessment of Loss and Expense claims. The contractor is required to notify the employer "as soon as the likely effect of a Relevant Matter on regular progress or the likely nature and extent of any loss and/or expense arising from a deferment of possession becomes (or should have become reasonably apparent to him." The notification requiring accompaniment of, or as soon as reasonably practicable following, the Contractor's initial assessment of the loss and/or expense, including future amounts likely to be incurred, and any information reasonably necessary for the Employer to assess and ascertain the loss and/or expense incurred.

Monthly updates are then further required from the contractor in order for the total amount of the loss and/or expense to be assessed. Following this, the Employer has 28 days from receipt of the initial assessment provided, and 14 days from each update to notify the contractor of the ascertained amount of the loss and/or expense incurred.

Fluctuations Provisions and options have been amended to provide further flexibility in both MW and DB, with a new option within the contract particulars allowing the option for no fluctuations provisions, or bespoke specified fluctuation provisions. Fluctuations B and C are no longer included within Schedule 7 of the contracts, but continue to be available on the JCT website for use.

INSURANCE

Insurance provisions have been amended and made more flexible with an extension of (Works) insurance option C within the MW Contracts allowing for more flexibility with insurance of the works and existing structures by other means. Of particular importance where a MW contract is to be used for a fit out or refurbishment project by tenants within existing commercial or multi-let buildings. Simplifications have been made within the DB 2016 contract with regards to the three insurance options, and in relation to existing structures insurance within DB

2016, modifications enabling alternative solutions to be adopted through a C1 replacement schedule.

THIRD PARTY RIGHTS

The DB optional clause for provision of Collateral Warranties from sub-contractors has been extended to include alternatively Third Party Rights by sub-contractors.

Third Party Rights and Collateral Warranties within DB has been removed from the Contract Particulars, and now at 7.2 of Contract Particulars requires the parties to include details within a separate document to be listed within the contract. JCT have a Model form for the Rights Particulars which can be downloaded from their website for use if required.

SECURITY DOCUMENTS

Section 7 within the DB 2016 has been amended allowing provision for inclusion of Performance Bonds and Parent Company Guarantees already seen as common place within the industry, now included within the contract particulars. The contracts now also allowing for optional expiry dates of the bonds within the contract particulars.

Options being, the date of practical completion of the works, 2 weeks after the date of expiry of the rectification period for the works or, the date for issue of the Notice of Completion of making good for the works, by default if not specified the date being the date of practical completion of the works.

CONCLUSION

The release of the first two suites of JCT 2016 contracts, provides enhanced flexibility simplification and ease of use particularly in the areas of payments along with updates reflecting key changes in legislation and case law within the construction industry and other minor general changes. Incorporation within the contracts of several of the common place standard amendments and simplification of various clauses will be welcomed by both employers and contractors, we await the release of the further suites of contracts. ●

Deborah Paterson