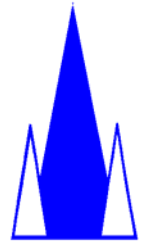


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Dear Sir

## **Site Black Tie Day 30<sup>th</sup> March 2010**

This article is written in defence of the “average site person” and is an attempt to bring to peoples attention a dilemma that our industry should consider. It relates to that 20C problem, introduced by our academics in the last century – the preference to use limit state codes. This has been brought starkly to the attention of the writer by the statement from British Standards that ALL standards that are superceded by a Eurocode will be withdrawn on 30<sup>th</sup> March 2010, not superceded, but withdrawn. The list is extensive and amounts to five A4 pages; it includes such favourites as BS 449 (permissible stress in steel), BS 5268-2 (Permissible stress in timber and plywood), BS 6399-2 (Wind load.) Hence the suggestion that practising site engineers wear black ties on 30<sup>th</sup> March 2010 – make a note in your diary planner now! – to mourn the passing of these codes.

I am not suggesting that the industry should rise up and revolt against introduction of these Eurocodes into the UK. The debate has already taken place and it is a fait accompli. What concerns me is how this limit state information relates to the “average site person”. It is a matter of fact that site operatives, supervisors, foreman, tradesmen and site managers fully understand the concept of safe working loads. The crane driver lifting a 10kN pallet of bricks will know the safe load rating of the crane at that radius – although it may still be thought of as 1 ton. The data presented to him is in safe load terms. The user of a trench prop and /or a steel prop, has an understanding that it will take about xkN. It is unquestionably true that construction sites “think” in safe load terms.

In contrast, the permanent works designers and engineers will have been working in limit state terms with partial safety factors relevant for the materials and conditions. For example, the bridge designer will have calculated the required design strength of the bridge, using suitable material and partial load factors, so that the characteristic strength can be ascertained. Thus at ultimate limit state, the bridge’s characteristic strength is known. So why are new bridges not officially marked with their limiting characteristic strength, e.g. 32 kN CS? This would allow all users to calculate whether their 2t truck can cross it safely, applying their own factors – but of course we don’t mark bridges that way – after 1<sup>st</sup> April 2010 the UK will continue to state safe load on bridges – because the driver knows his actual weight, with and without the load in the truck. It’s safe load concept, i.e. permissible stress. The average man’s concept.

This is the dilemma facing temporary works designers, how to relate data to the site in terms the site staff understand. Adjustable steel props (BS EN 1065), prefabricated timber formwork beams (BS EN 13377), steel scaffold tube (BS EN 39), scaffold fittings (BS EN 74) are already only stated in characteristic strength terms, not safe working loads.

continues

To assist the users on site of tube and fitting scaffolding, the National Access and Scaffolding Confederation's guidance TG20:08 has been deliberately written in safe load terms, using relevant factors, and is being understood by site personnel. Proprietary scaffold suppliers continue to publish their equipment's properties in safe load tables.

This designer v site problem also occurs in Europe – the writer recalls the writing of the European Prefabricated Timber Formwork Beam standard (BS EN 13337), when the German Delegation insisted on adding Annex E to convert the limit state design resistance into a working value for use on site by dividing by a factor. When the writer pointed out that dividing failure load by a factor to give safe working load was permissible stress, he was clearly told “No – it's limit state with a factor!”.

As long ago as 1985, the Concrete Society recommended in “Formwork – a guide to good practice” that equipment suppliers should seriously consider stating equipment properties in both characteristic and recommended safe load terms; provided it is clearly highlighted which is which. How sad it was to hear recently of one supplier, whose technical director recommended publishing both values in data sheets, only to be vetoed by the sales director on the grounds “It will confuse my salesmen”. Yet both sets of data are likely to be needed in future by checkers and users alike.

The management of all our temporary works has, since the publication of BS 5975:2008 earlier this year, introduced categories of design check for all temporary works. Site staff doing simple everyday temporary works will check their designs on site, almost certainly in safe load terms. Hence equipment and proprietary suppliers' data need to continue to include safe load terms.

The future though is problematic – as designers and engineers move over to full use of Eurocodes, the level of industry expertise to generate relevant site user information will reduce. But do we actually need site information? As a trainer I often hear the claim from delegates “We aren't allowed to design – we always build to a drawing.” How many sites can actually say that every aspect of every design is fully covered? Isn't it true that there will always be areas of work where on-site decisions have to be made? My view is that competent site people need to retain an understanding of safe loads – hence the industry must continue to supply information understood by “the average site person”.

How is this to be achieved? Well, in the field of temporary works, the scaffolding industry is covered by TG20:08, falsework by BS 5975:2008 and formwork by “Formwork – a guide to good practice” currently under major review for publication in 2010. All these documents are written or being prepared in “site terms” and will be understood on site – there is though the risk that the enthusiastic (limit state) temporary works checker will refuse to accept the calculations because they were not completed to a Eurocode. We have to be firm and ensure that recognised good practice, based on our understanding, and on use of authoritative industry guidance documents, is accepted. The writer's view is that preparation of authoritative guidance in temporary works is more important now than ever before. It is up to the engineers of today to ensure that this relevant knowledge is passed on in meaningful ways, and if that means perpetuating safe load concepts – so be it. Perhaps BSI should take note from the experience of EN 13377 and insist on “safe load annexes” in NAD's.

Yours Faithfully



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