

GETTING THE MESSAGES ACROSS: NOTES AND SYMBOLS ON DRAWINGS

Paul Bussey, Associate with Scott Brownrigg, presented some interesting ideas to the Fellows Forum at the 2009 APS Convention and has developed this article from them:

SIGNS AND SYMBOLS: In most walks of life a hazard, once identified, is immediately brought to the attention of those exposed to any safety risks that it might create, by visual or non-text warning signage usually of unequivocal intent. This immediacy and clarity is key to prompting an instantaneous safety response by the person exposed and others subsequently. There are

innumerable examples of this in the home on electrical appliances, the workplace, during transportation on road, rail, sea and air, and in all our buildings and at natural features such as beaches, cliffs and lakes. Indeed these symbols are so commonplace that we often take them for granted but they at least subliminally affect us and generate a safety response.

Taking this comparison further, responsible travellers, before embarking on and during land, sea and air journeys, inspect previously prepared maps and charts of the expected landscape, seascape or terrain. These maps clearly indicate the hidden hazards such as the sunken wrecks, sandbanks and shoals, steep contours and cliffs, dangerous hidden rocks and other more obvious but no less dangerous features such as roads and rivers. These are then clear for all to see and then decide from their own expertise their methods for avoiding or navigating around.

WORDS AND NUMBERS: So why is it that in the construction industry when we embark upon many types of project we often fail to provide a suitable "visual map" of the hidden hazards and risks that lie ahead for those undertaking or involved in the work? Why have we deemed it necessary to write down a list of all the hazards and risks, however insignificant or

obvious, and record their (subjectively) numerical assessment of severity?

Why have we decided that it should be necessary to prepare a list of alternative mitigating factors rather than allowing for the competence and experience of the "traveller"?

This "bureaucratic" response seems to have evolved from a health and safety practitioner approach rather than the construction-related visual, tried and tested, commonsense and intuitive approach to hazard identification. It suggests that the audit trail (in relation to risks of criminal prosecution and civil litigation) is more important than preventing, avoiding or minimising otherwise easily identifiable safety issues.

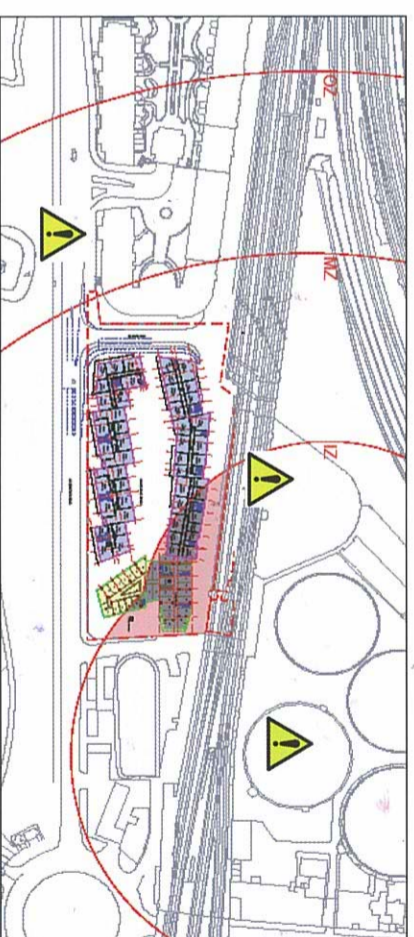
all users and stakeholders in the construction industry and from a safety perspective they can be the "maps and charts" of the hidden hazards. Most people are familiar with final design or construction stage drawings but fail to realise that these are the end-result of many design re-iterations from early site and scheme design sketches. The equivalent of the mathematical "working out stages" can be recorded in these drawings so providing a proportionate audit trail of decision-making. These early stage drawings need to have the hazards and other significant constraints identified so that designers can navigate around, or mitigate, the issues in their designs and the content of the drawings progressively

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WHAT SHOULD WE BE DOING? So how can we remedy this situation and also improve safety? How can the immediacy of visual hazard identification, the attention to significant rather than obvious or trivial issues, and a proportionate audit trail be introduced into the design and construction process?

Architectural and construction drawings are the stock in trade and best visual method of communicating information to

agreed by all the design and client team in a 'no blame' culture. They will ultimately be signed-off as ready for use but if redesign is required at later stages they can readily be re-visited. This is the iterative spiral known to all designers.



NEW SIGNS AND SYMBOLS: During this iterative design process it is essential that all significant safety issues are flagged up by suitable visual methods at the point of use on the relevant drawings. These can be most expediently referenced by Non-Text Symbols or Safety Signs with, if necessary, further and more detailed references placed in annotation boxes in the margins which could then, in turn, refer to other documents, for example asbestos surveys and construction or demolition proposals.

Such symbols would be visually clear to all stakeholders including designers, clients, contractors, cost consultants and site operatives irrespective of their training, educational levels and even linguistic capabilities. Once the hazard or risk is identified the responsibility to then follow mitigating procedures and implementation measures becomes the responsibility of, or is delegated to, the relevant competent person in the project team. This signage process is already followed by contractors on sites but can be extended to include suitably annotated drawings updated regularly by the contractor and displayed in prominent site areas for all operatives to check.

HAZARD REGISTER: A very simple Hazard Management Register can also be kept to track the outstanding actions and responsibilities on all the significant safety issues throughout the project.

On completion the final "as built" or record drawings would already include or could simply be annotated to include any "unusual residual risks" that are left embedded in the building e.g. post tensioned cables, cantilevered or suspended structural elements, encapsulated asbestos, difficult working at height maintenance issues, and so on.



REDUCING BUREAUCRACY: This methodology simplifies design and project risk management, offers value in a time of economic difficulty and improves safety by making it intuitive, commonsense and an everyday process for the whole team. This brings a proportionate health and safety approach that identifies only significant issues, with trivia and myths ignored, and allows everyone to be part of the solution - and last, but not least, reduces bureaucracy in line with HSE pledges.

Ed: A detailed presentation from Paul Bussey / Scott Brownrigg on this topic can be seen at:

www.associationforprojectsafety.co.uk/educationandcpd/index.php and should prompt comment - which should be sent to APS for the attention of the Digest Editor.