

DESIGNER INITIATIVE - w/c 17th March 2003

FINAL REPORT

Scotland & Northern England Unit
Construction Division

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Summary

During the week commencing the 17th March 2003, Construction Division inspectors in the Scotland & Northern England Unit carried out an initiative aimed at designers on 123 current construction projects.

The initiative, which replaced the more-traditional workplace “blitz”, involved on-site meetings with both the planning supervisor for the project, and the designer with lead responsibility for work-at-height issues.

Aims of the Initiative

- 1 To impact upon those with responsibility for design issues relating to the key priority topic of work at height.
- 2 To gather intelligence about both good and bad design practice,
- 3 To increase inspector awareness of designer performance
- 4 To raise awareness of HSE’s role within the construction design sector
- 5 To raise inspector confidence when dealing with designers on site

Given these aims it is clear that the initiative was not intended to be enforcement-led – although inspectors were expected to deal with any significant matters of evident concern identified during site visits in the usual way.

The protocol for the Designer Initiative detailed the mechanism by which the meetings were set up, and provided guidance on topics which could be discussed. A further briefing was given to all the inspectors involved at a conference held in the week before the Initiative.

The chances of an HSE Inspector coming across a large proportion of designers during routine site visits are fairly low. That is why all these visits were arranged by appointment. However the appointments were deliberately held on the relevant sites to reinforce the point that the designers were an integral part of the construction process, not a separate industry divorced from the realities of the site environment.

The meetings revealed that many designers lacked knowledge of their responsibilities under Regulation 13 of The Construction (Design & Management) Regulations 1994 (CDM). A significant number had failed to consider the practical detail of how the structure that they had designed could be safely constructed and maintained.

Of the design risk assessments produced, many were of poor quality and added little of value to the safety of the construction process. Paper

assessments were often produced for little purpose. Designers were often abdicating their responsibility to reduce risk in relation to work at height by leaving it to the principal contractor, without first considering how they could change the design in a way which would make it safer to build, clean or maintain.'

Many of the designers had very little knowledge of the other legislation, particularly the Construction (Health, Safety & Welfare) Regulations 1996 (CHSW) which applied to the contractors who had to construct the buildings. Consequently contractors were being put in the position of having to compromise on safety, which would expose them to legislative risk, in order to build to the design which had been produced.

Many designers viewed the safety harness as the panacea for all work at height risks without giving any consideration to either the hierarchy of controls in Regulation 6 of CHSW, or the practical issues involved in managing a harness-based fall arrest system.

Only one third of the designers seen during the Initiative were considered by the inspector to have adequate knowledge of CDM to allow them to adequately fulfil their duties as a designer. Less than 10% of the designers claimed to have received any training in CDM, and for many this Initiative was the first occasion on which they had been asked to justify their designs from the safety perspective, despite the CDM legislation being in force since 1995.

Results

During the Initiative, inspectors held meetings with lead designers for 123 construction projects which were either under construction or going through the design process. The estimated total value of these construction projects was £910m (average £7.4m per project).

Most of the meetings took place on the site, with the lead designer for work at height issues and the planning supervisor present. On several occasions the principal contractor and the client also attended, although they had not been requested to do so by HSE.

The feedback from inspectors following the meetings was in narrative form, not profoma, but they had been asked to provide details of significant strengths or weaknesses which were identified during the meetings. The results quoted below should therefore be treated with some statistical caution, as they only represent the subjective opinion of the inspector as to whether the issue discussed was significant.

Table of Main Designer Strengths Reported

Issue	% of Meetings
The designer had adequately considered the buildability of the project with regard to the risk from working at height.	33%
The designer was fully aware of their responsibilities under Regulation 13 of CDM.	33%
The designer worked as part of a design team which actively sought the views of the other interested parties in the construction process. (ie. other designers, planning supervisor, principal contractor)	20%
The designer had received training in CDM	8%
The designer shared good practice and innovation with colleagues/peers.	8%

Table of Main Designer Weaknesses Reported

Issue	% of Meetings
The designer had not adequately considered the buildability of the project with regard to the risk from working at height.	34%
The designer had not adequately considered the risks from working at height associated with the future maintenance of the building.	33%
The designer had an inadequate knowledge of their responsibilities under Regulation 13 of CDM	28%
The design risk assessment process was poor and contributed little added value to the construction process in respect of the risks from working at height.	34%
The designer had little or no knowledge of the other principal legislation affecting the contractors who would have to construct their design (particularly Reg 6 of CHSW)	37%
The designer abdicated their responsibilities in the design risk assessment process, resulting in principal contractors having to deal with risks which could have been addressed during the design process.	16%
The designer had specified solutions to work at height issues which relied upon safety harness systems without having considered alternative design solutions.	15%

In approximately one third of all the meetings the designers demonstrated little, or in some case no, understanding of their responsibilities under Regulation 13 of CDM. This poor performance was exacerbated by the fact that all the meetings were set up by appointment, which gave the designers at least 2 weeks to have prepared or to have at least discussed the matter with the planning supervisors. Only 8% of those designers seen stated that they had received any training in their duties under CDM.

Example: One designer claimed that the meeting was very challenging, that he was being asked to justify his designs for the first time, and that he had not really thought about his design input as part of the construction process previously.

When setting the meetings up via the planning supervisor, it was also worrying that in around 25% of cases the planning supervisor could not readily identify the lead designer for the project.

Over one third of the designers had no knowledge of the other health and safety legislation which applied to the contractors, particularly CHSW. This was evidenced on numerous occasions by the designers having come to solutions which relied upon a safety harness as the only means of preventing falls. Their widespread ignorance of the hierarchy of controls required by Regulation 6 of CHSW, resulted in a very limited understanding of why the harness "solution" could not be used in all situations.

Example: A roof parapet wall on a new car showroom had been designed to be 0.7m high around the roof edge. When challenged, the designer said there was no reason why the parapet could not have been designed to be 21cm taller which would then be able to provide permanent adequate fall prevention when future maintenance to the plant mounted on the roof was carried out. (ie the parapet would then be 910mm). An appreciation of the specific requirements of CHSW would have saved the new owner considerable expense in financial and risk terms during the lifetime of the building by avoiding the need to provide additional edge protection whenever work was carried out on the roof.

Very few designers had actively considered the buildability of the project in any detail. They frequently expressed the opinion that it was not their responsibility to know **how** the building was to be built, as that was a problem for the principal contractor. A number expressed concern that if they gave an opinion on how the design should be constructed, then they would be liable for any accidents which resulted that process.

It was on these projects in particular that inspectors came across statements in the design risk assessments, which specified that it was the responsibility of the principal contractors to produce a method statement to address the highlighted risk. This abdication of responsibility by designers was a very common feature of the reports from inspectors attending the meetings.

Example: During the construction of a theatre complex the principal contractor had used a birdcage scaffold costing £12,000 as a means of fall protection during the installation of an irregular roof covering. The scaffold prevented access into the auditorium by other construction trades for 3 weeks, and together with the scaffold erection/dismantling time added 4 weeks to the build programme. Safety nets could have been specified by the designer and attachment points incorporated into the design of the steel beams. The nets would have cost £4,000 and not delayed the project.

Example: The designer of a project to remove and replace the parapet wall of a five-arch masonry road bridge (which had to remain open to vehicles and pedestrians during the contract) had failed to consider how pedestrian safety could be maintained once the parapet wall had been removed, and how the risks of workers falling over the unprotected bridge edge could be prevented during the breaking out of the footway pavement. He stated that these were issues which were the responsibility of the principal contractor and not the designer.

Similarly, few designers had considered the future maintenance of the building in any detail, and where consideration had been given, it frequently relied upon safety harness systems without having considered alternative methods of prevention.

Example: A designer had specified the use of roof anchors to provide a safety harness attachment point for the cleaning of roof-mounted windows on a 3-storey domestic property. The anchor point however could not be reached from the roof access point. As a result of the meeting the designer agreed to review the design of the roof windows to allow them to be cleaned from within the building.

Example: The designer for a steel-framed building atrium had specified the use of a running line system for maintenance and cleaning of the glass atrium in the centre of the building. The glass from which the atrium was to be constructed was non-load bearing however. As a result of the meeting the designer reviewed the design of the atrium and changed the specification of the glass to be used, so that it could withstand an impact fall from a worker on the roof.

Example: One designer claimed (not as a joke) that school windows never got cleaned and therefore he had not considered how they could be cleaned safely.

Example (good practice): A ventilation ducting system in a leisure complex and swimming pool had been designed so that all ventilation duct access points were situated over the poolside and not over the pool itself.

Example: The designer of a lecture room in a hospital education facility had specified that the light bulbs should be replaced using a stepladder, but no consideration had been given as to how such a ladder could be positioned between the rows of fixed seating in the lecture room.

The standard of design risk assessments varied greatly, but few added any value to the design or construction processes. The assessments were often produced as an afterthought to justify decisions that had already been made and contained information about insignificant issues which were not the responsibility of the designer.

Example: One design risk assessment contained the statement that the window cleaners were to use a squeegee when cleaning the windows.

Most of the inspectors involved in the Initiative have received feedback from those attending the meetings. Much of the feedback has been extremely positive, with designers expressing the view that they were extremely pleased with the positive approach taken by HSE. Several principal contractors who attended the meetings have also praised the Initiative for turning the spotlight upon the designers and the planning supervisors.

Example: One designer, having been made to review a significant area of the design for the four stands at a rugby league stadium wrote to the inspector following the meeting and said "The discussions undoubtedly placed long-awaited HSE focus on the design aspects relating to the implementation of CDM"

Similarly, many of the inspectors involved also expressed the view that they were delighted to have been given the headroom to undertake quality inspections of this type.

Conclusions

The Design Sector

A significant proportion of the design sector is not fulfilling its responsibilities under Regulation 13 of CDM. Many designers lack adequate training or even basic information about their role, and some refuse to accept that they actually have a duty placed upon them by the Regulations.

The majority of designers are not paying sufficient attention to the detail of buildability or maintenance, and too readily fall back on the principal contractor to deal with issues which clearly fall within their scope as designers.

The design risk assessment process is rarely applied in a way which gives added value to a project, and is all too often a paper-chase exercise carried out to justify decisions which have already been made. Many assessments contain information about insignificant or standard risks.

There is a general ignorance of the requirements which other legislation places upon the contractors, resulting in design solutions which, if followed, would place the contractor at risk of enforcement action during the construction process.

Planning supervisors are failing to consider whether the designs adequately address the need to eliminate and control risks. They are failing to ensure co-operation between designers, and often fail to involve themselves in ongoing design issues during the lifetime of a project.

Did the Initiative meet its initial objectives?

Having had no significant HSE inspector involvement with the design sector since CDM was introduced in 1995, this Initiative appears to have made an impact in Scotland and the North of England. There has been considerable sector-press interest and many designers who were not themselves involved in the Initiative appear to have been aware that it was going on.

The Initiative revealed a number of examples of both good and bad practice, and some limited examples of real innovation. The timing of the meetings however, did not allow for very detailed discussion of these innovative solutions, and further work may be needed if a more detailed consideration of these solutions is required.

Individual inspector awareness of designer performance has been increased by the Initiative. In my opinion Aims 1,3,4 & 5 were met in full. Aim 2 revealed many bad examples, but more resource would be required to gain useful intelligence from the relatively small number of innovative solutions discussed with inspectors.

The Format of the Initiative

The Initiative protocol was designed to avoid the same designer being required to attend more than one project meeting during the selected week. This decision was made primarily to ensure that the largest possible number of designers was seen during the Initiative, and to avoid large design houses being selected for numerous meetings solely because of the volume of work they were involved in. The main consequence of this decision was that a master list of designers involved in the projects had to be collated centrally in Manchester.

The only information held by HSE which would provide us with a lead to the identity of the relevant designer for each project was the planning supervisor as detailed on the F10. This placed a considerable resource burden upon the construction administrative support in the Manchester office who had to telephone each of around 150 planning supervisors in an attempt to identify who the lead designers actually were. As detailed earlier in this report, around 25% of planning supervisors were unable to readily identify the lead designers.

The result of this collation exercise, which took 8 days of Band 6 time to complete, was that only 3 duplicate designers across the whole of the Unit were identified. If the Initiative was to be repeated, I believe that the apparently low risk of designer duplication would not be worth expending the

administrative resource in establishing such a master list of non-duplicated designers.

Further Work

Many of the inspector reports produced following the meetings, detail the designer's proposals to improve their management of the CDM design process. It may be worthwhile revisiting a proportion of those designers at some stage in the future to see if real and permanent change has indeed been effected by the Initiative. This could possibly be done centrally by mailed questionnaire.

There would appear to be a great need for information to be provided to designers on both their duties under CDM, and also the legal duties the contractors are under whilst involved in the construction work. The Designer Awareness Days may provide one mechanism to achieve this, but thought should be given as to whether work with the principal trade bodies, eg RIBA etc could also be beneficial.