

HEALTH AND SAFETY EXECUTIVE			
CONSTRUCTION INDUSTRY ADVISORY COMMITTEE (CONIAC)			
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PROPOSALS FOR TAKING FORWARD THE FINDINGS OF A RESEARCH REPORT ON MAJOR INCIDENT POTENTIAL IN CONSTRUCTION

A paper by Mike Cross, HSE Construction Division

For discussion and decision at CONIAC on 21 July 2010

Issue

1. Proposals for the creation of a CONIAC working group to take forward the findings of a research project which has considered the potential for major incidents in the construction sector.

Background

2. Although most deaths and injuries in the construction sector occur singly there have been a number of incidents both in GB and worldwide during the active phases of construction projects resulting in multiple fatalities including, on occasions, the general public. Examples include the collapse of buildings, tunnels and scaffolds during construction, and explosions resulting from the striking of underground services. And there have been many more incidents where the potential for multiple casualties, fortuitously, has not been realised.
3. Last year HSE contracted with the Construction Industry Research and Information Association (CIRIA) to explore the topic in more detail and to build on an earlier HSE internal report¹ (which was considered by CONIAC's Safety Working Group in February 2007). The aims of the project were: (i) to revisit the original review in order to bring the conclusions up to date; (ii) to strengthen the evidence base and analysis; (iii) to present the findings in a way which will stimulate industry action; and (iv) to inform future HSE work.
4. HSE expects to receive the contract research report from CIRIA at the end of July/August 2010 and is keen that momentum is maintained to ensure the findings and conclusions are acted on.

¹ A Discussion Paper on a Programme of Work on the subject of Major Accident Hazard Risk in Construction – Phil Wright, Construction Division Technology Unit

Project Progress

5. CIRIA was selected to undertake the research on the basis of their widespread knowledge of the industry and, through its membership, access to a vast network of industry contacts. Loughborough University were contracted by CIRIA to undertake a literature review and to conduct analysis of the data including by means of case studies. A steering group was established to oversee the project and to promote interest and involvement in it (see Annex 1 for the membership list)
6. After project start up (Phase 1), the second phase of the work involved seeking information, views and opinions from as wide a range of sources and contributors as possible. An on-line survey was conducted between mid-January and the end of March 2010 (promoted via *New Civil Engineer* and other trade press), two CIRIA CPD events were held (in Manchester and London) with a further workshop in London, and a database was established to capture information on events in the UK and worldwide.
7. 700 visits were made to the survey website and 350 visitors took time to answer most of the questions. 120 incidents were submitted for case study analysis, narrowed down to 62 on the basis of sufficiency of information for meaningful scrutiny. And the CPD workshop discussions were captured and fed in to the analysis.
8. In Phase 3 the data from the survey, case studies and information captured on the database were analysed and emerging conclusions prepared ahead of the final phase (Phase 4) which is dominated by the report writing and which is due to end in the near future.

Emerging Findings

9. A lot of information has been collected and analysed and it is not possible in this paper to give more than a flavour of what has emerged.
10. From the on-line survey (completed mainly by construction managers, designers and health and safety professionals – 75% with 11+ years experience) respondents identified a range of factors affecting major accidents in construction, eg. failure to recognise hazardous scenarios. They also ranked a range of controls for their effectiveness and identified what else might be done to reduce the potential for major incidents.
11. The case study analysis identified the main types of event that have major incident potential – collapse of permanent structures, failure of temporary works arrangements including the collapse of plant such as tower cranes, fire and disruption to underground services. For each the significant factors underlying causation have been identified.

12. From this a number of emerging issues have arisen – these are set out in Annex 2. These include: (i) insufficient hazard awareness of incident potential at all levels in the construction industry; (ii) the need to improve systems to enable the industry to learn from past events; (iii) the need to improve the competence of on-site staff so they have the knowledge and experience to manage major incident potential processes; (iv) and the absence of meaningful performance indicators that would give senior management assurance that major accident potential control measures were in place and working effectively.

Next steps

13. HSE expects to receive the contract research report in the next few weeks. The contract with CIRIA also includes them undertaking activities which will promote the findings and the detail of how this will be done is currently under consideration. Initial thoughts are to organise a number of events, possibly including a conference for a formal launch as well as work with the trade and professional media. CIRIA will also publish a report in their own series (a target date of December 2010 has been set).

Proposals for a CONIAC Working Group

14. Major incident potential events in construction have received more prominence in recent years following the spate of tower crane incidents and recent fires in timber framed buildings. Through the research project a lot of interest and enthusiasm has been generated and it is important that the momentum achieved is sustained. Although HSE commissioned the research project it is vital that the response to the anticipated conclusions comes from the construction industry.
15. To that end CONIAC is invited to consider whether the establishment of a “task and finish” working group to review the research findings and develop an action plan for responding to the conclusions is warranted and, if so, to indicate its agreement. Draft Terms of Reference for such a group are set out in Annex 3.
16. If CONIAC agrees to the setting up of the group the Secretariat will seek nominations for membership in the usual way.

Contact

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CIRIA Research Project – Major Incident Potential in Construction Steering Group Membership	
Member	Organisation
Lee Boshier	Loughborough University
Vaughan Burnand	Strategic Forum
Paul Bussey	Scott Brownrigg
John Carpenter	SCOSS (project reviewer)
Chris Chiverrell	CIRIA
Mike Cross	HSE (Project sponsor)
Paul Ebbutt	LUL
Sarah Fray	IStructE
Alan Gilbertson	CIRIA
Laura Hague	Motts
Paul Hoyland	BBCEL
John Lane	RSSB
Shaun Lee	UCATT
Gordon Masterton	Jacobs
Susan Mackenzie	HSE (Specialised Industry Division)
Tony O'Brien	Motts
Steve Parncutt	HSE (Construction Engineering Specialist Team)
Alan Powderham	Motts
Peter Robertshaw	Osborne
Clive Sherwood	Charteris Insurance
Stephen Taylor	HSE (Project Manager)
Tim Watson	Consultant
Philip Willis	Jackson Coles

CIRIA Research Project – Major Incident Potential in Construction

Tentative Conclusions

- 1 General agreement that major hazards/top events are a significant cause for concern and that they should be considered in an appropriate manner in the industry. The industry will have to work out how that should be done, although the intended CIRIA report could provide suggestions and case study examples.
- 2 It was apparent that the issue of competence was important, as would be expected, but in particular the role of the Principal Contractor.
- 3 The case studies frequently demonstrated a failure to adequately identify the full extent of hazards and address the risks arising appropriately and other sources demonstrated a considerable degree of uncertainty and a lack of confidence in the industry's knowledge, skills and experience of basic safety risk management.

This suggested that more emphasis needed to be given to:
 - Education of those who would be entering the industry
 - CPD and on-the-job training
 - Development of more effective systems
- 4 Learning from experiences was not well-rooted in the industry. There was a lack of confidence that:
 - learning was well shared rapidly
 - Lessons were incorporated into the education and training
 - Information could be easily accessed

There was however activity which needed to be encouraged and supported:

 - The work of SCOSS and CROSS which was not well understood
 - The work of the various industry bodies and groupings who do seek to respond to events but whose performance is variable and rarely inclusive of all industry stakeholders.
- 5 It was clear that many events had occurred which had impacted upon both contracting companies and client companies.

Organisational risk management of companies should therefore, in order to respond to Turnbull, include consideration of how well 'Top Event' risks are being managed and the use of industry-relevant indicators should be developed to support such activity.
- 6 It was apparent from many case studies that insufficient consideration was being given to the role of the *temporary works coordinator*. This role must be taken seriously and include all temporary works aspects, including scaffolding, plant and other management of impact of the works on adjacent structures.
- 7 Certain terms which are in common use need to be better defined and understood, including:
 - What a 'Top Event' (or other wording) is, in the context of the Construction industry)
 - Various aspects of 'Robustness' and how to measure/achieve it in different contexts
 - Various aspects of 'Risk Management' as they relate to Top Events
 and the Report could usefully suggest such definitions, drawing upon earlier work.
- 8 There was evidence of projects where there was inadequate independent review of what was happening on site; when this concern was tested, opinion was divided but believe this is worthy of further exploration.

CONIAC Working Group – Major Incident Potential in Construction

Draft Terms of Reference

Purpose

The purpose of the Working Group is to advise CONIAC on the steps that should be taken to respond to the findings and conclusions of the HSE Contract Research Report – Major Incident Potential in Construction.

Composition

- 6-10 members
- Members to be drawn from a balanced group including:
 - Representatives of major contractors
 - Designers
 - Trade Unions
 - Technical experts
 - those who have expressed interest in being on the Steering Group
- The Chair is appointed by HSE
- The Secretariat for the Working Group is provided by HSE

3. Tasks and responsibilities of the Working Group

The tasks and responsibilities of the Working Group include:

- Confirming the Terms of Reference of the Working Group
- Receiving and reviewing the Contract Research Report, particularly the findings and conclusions
- Developing an industry-wide response to the report including identifying the “what, how, when and who” for taking forward workstreams to address the findings and conclusions
- Monitoring progress with the workstreams and reporting to CONIAC on progress and advising on remedial actions, if necessary

4. Operation of the Working Group

- Agendas, papers and drafts for the meetings will be sent out 10 working days before the meeting
- Comments must either be received by the Chair in writing prior to the meeting, or tabled at the meeting, to enable them to be discussed and agreed. Comments cannot be accommodated after the meeting other than in exceptional circumstances
- Wherever possible unanimity of opinion will be sought; should conflicts arise, the Chair will be pragmatic in resolving these