

# elevation



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## Safe Access

Case study: Swiss Re  
CDM regulation update

SOCIETY OF  
FAÇADE  
ENGINEERING

Welcome to the second issue of *Elevation*. The construction industry has put some notable accidents in the file for 2006 (the Battersea crane collapse and the Witan Gate scaffold collapse). Gravity and facades have an interesting symbiotic relationship. The façade is so fundamental in making a building safe, so it holds so much risk if things go wrong. Falls from height is number two on the HSE's 'High Five' risk list. Recent changes in fire legislation and the news that the UK CDM regulations have finally been approved by the Health and Safety Commission have implications on designers of facades and our approach to safety. As façade designers and constructors, we have had duties to prioritise the safety of individuals involved in the manufacturing, installation, cleaning, replacement and dismantling of the façade... in other words, with each design should come a cradle to grave plan of safety.

## Safe access and the designer's duties

In this issue we focus on façade access, and the need to evolve clear maintenance access strategies for facades. The best solutions result in effective integration of the access equipment into the building form... get it wrong, or plan it too late and the result can be unsightly, inefficient or even unsafe equipment that can blight an elegant and otherwise well designed façade.

# Assessing Access

early consideration of a maintenance access strategy

As building designs become more complex the need for effective internal and external façade maintenance becomes more crucial – writes Andy Jordan of Reef Associates.

Current legislation requires that all designers consider the long-term maintenance of the project during the early design stages. A properly thought out and considered maintenance strategy at an early stage will provide the most economic and practical means of achieving this goal.

Construction Design and Management Regulations (CDM), The Working at Height Regulations and the Lifting Operations and Lifting Equipment Regulations (LOLER) are but a few of the regulations



to consider in the provision of any maintenance access strategy.

The safety of both operatives and those affected by the maintenance operations must be considered in developing any scheme, and significant emphasis is currently being placed by the HSE to reduce risks as low as reasonably practical.

Firstly, risk and hierarchy of risk for each system must be assessed. Hazard assessment goes beyond routine cleaning to encompass the longer term requirements of façade maintenance and replacement of elements of the façade.

As always there are a number of solutions to achieving this goal, however an ill-conceived solution can prove to be difficult to use and increase the long-term maintenance costs to any project.

Considering the access requirements early in the design stage gives the opportunity to incorporate systems that can be developed to be in-keeping with and sympathetic to the architecture of a project.

Access requirements of a project are fre-

quently considered much too late in a design, which can result in unsightly, obtrusive, and in the long-term costly solutions being employed.

Maintenance strategies for a project should be developed to include, but not be limited to:

- Identify the unique requirements of the project
- Identify the layout, load paths and materials of the structure
- Identify all surfaces requiring access for cleaning or maintenance, including the requirements for replacement of elements of the façade, such as security cameras etc.
- Identify the cleaning and maintenance methodology and frequency of operations for each of these surfaces, including requirements for upkeep of warranties
- Identify the risks involved in performing these operations. The eventual strategy should outline the equipment and methods employed in achieving this required access

The selection of any means of access solution is dependant on a large number of factors: capital cost of equipment and costs of incorporating systems into the design of the structure and building fabric must also be considered.

Not all projects will involve a permanent means of access to maintain the façade. The use of Mobile Elevated Working Platforms (MEWPs) for example can have far reaching and wider implications on selection of features on a façade and landscaping, ground works around a project.

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### **Useful Web Sites**

*A summary of HSE publications:  
(for the glass industry)  
www.hse.gov.uk/pubns/glasindx.htm  
(falls from height)  
www.hse.gov.uk/pubns/fallindx.htm  
(risk assessment)  
www.hse.gov.uk/pubns/raindex.htm  
(slips trips and falls)  
www.hse.gov.uk/pubns/slipindx.htm  
(Workplace health and safety—including  
Regulation 14 implications for glazing)  
www.hse.gov.uk/pubns/indg212.htm*

### **Further Reading**

*BS 1808 Safety Requirements on Suspended Access Equipment – Design Calculations, Stability Criteria, Construction - Tests (1999)  
BS 6037 Code of Practice for the Planning, Design, Installation and Use of Permanently Installed Access Equipment (2003)  
TN 42 Safety and fragility of glazed roofing - CWCT  
TN 54 Self-Cleaning Glass - CWCT  
TU 10 Use of glass overhead - CWCT  
Guide Design of Facades for Safety - CWCT  
Design of facades for safe access for construction, maintenance and repair, by Keiller, Ledbetter, Walker and Wolmuth. CIRIA  
Lifting Operations and Lifting Equipment Regulations (LOLER) 1998  
The Work at Height Regulations 2003*

### **A Planning Supervisor by Any Other Name**

The draft revised CDM regulations have finally been approved by the Health and Safety Commission, making way for an Approved Code of Practice (ACoP) that is expected to be issued in the new year ahead of introduction on 6 April. Presented as a single package, the new

## Case Study: St Mary Axe



The façade access consultants and the architects carried out careful and detailed consideration of the access requirements and the risks involved in this project at an early stage in the design.

Spatial and structural requirements to accommodate the three machines employed in accessing this building were considered at an early stage.

The cladding design was co-ordinated with the requirements of the access equipment to incorporate storage in a garage area and restraint points for use by the suspended platform as it descends from the high level. The façade below the 36<sup>th</sup> level is accessed using two bespoke Building Maintenance Units (BMU) each with a dedicated suspended platform. The position of the platform on the façade is monitored and the BMU automatically adjusts the outreach of the suspension jib to suit the curved shape of the façade.

The crown of the building is accessed using a bespoke MEWP supported and running on the same structural tracks around the building as the BMU's.

In addition to providing access for general cleaning of the façade these systems are also rated to carry the additional loads of glazing and cladding panels during replacement. As part of the overall strategy

the façade access consultants also developed the methodology for re-glazing of the building.

A fourth piece of equipment (running on the same track system) is a dedicated rescue unit. It can be driven out around the track system under its own power to the other equipment providing access to assist in any rescue of operatives.



When not in use, all of the external façade access equipment is stored out of sight within the building garage area.

The internal surfaces of the high-level crown area is served by a purpose developed MEWP. This was co-ordinated and installed to be stored within a covered pit in the floor slab, when not in use.

regulations combine Construction (Design and Management) Regulations 1994 and the Construction (Health, Safety and Welfare) Regulations 1996 in a bid to unify the construction health and safety regime. A line from the HSE website states:

“The new CDM regulations offer an opportunity for a step change in health and safety performance and will be used to re-

emphasize the health, safety and broader business benefits of a well-managed and coordinated approach to the management of health and safety in construction”

The Designer's duty remains to eliminate hazards and reduce remaining ones, so far as is reasonably practicable. Newly required is to ensure that any workplace they design complies with relevant sections of

the Workplace (Health Safety and Welfare) Regulations 1992.

The principal contractor's duties remain broadly similar; including requirements to allow for and notify about time for planning and preparation, providing training, monitoring compliance etc.

All duty holders are required to check competence before appointing other duty holders. They must also seek and provide co-operation with others.

The Planning Supervisor will be replaced by the CDM Coordinator, who is the empowered duty holder, to provide the client with suitable and sufficient advice, to help the client meet his duty to co-ordinate the planning and design, and to prepare the health and safety file.

The key difference between the co-ordinator and the planning supervisor is that the coordinator is also required to advise and assist the client in the discharge of his duties, in particular to advise on the adequacy of other duty holders' arrangements for controlling risk arising from the project. If the co-ordinator has concerns about the arrangements for health and safety made by any member of the project team, they should advise the client of these concerns, and the client (as the person for whom the project is being carried out) will have the power to make sure that these concerns are addressed.

Changes in the client role are described as 'enhanced' rather than new, reflecting the fact that the new rules make existing requirements more explicit. There will be a primary duty to ensure that arrangements made by other duty holders are in place and sufficient, and clients must instruct any contractors they appoint how much time they have allowed for the planning and preparation of construction work.

## Events

### IFT Rosenheim celebrates 40 years of research into facades.

This year's annual gathering of members of the European testing and research centre attracted a record attendance of 880 delegates.



Herr Sieberath, Director of IFT Rosenheim addresses the 40th anniversary assembly

The laboratory has come a long way in 40 years since the first windows were tested in a humble garden shed. With some of the finest facilities in Europe, the centre now employs 105 staff in various branches of research and testing.

Speakers addressed issues of European and UK markets, sound and thermal insulation, ventilation control, sealing, composite construction, tolerance, CE marking, legislation, quality assurance, electronics, future technologies, resource conservation and sustainability.

Progress on developing technologies, such as semi transparent photo voltaic glazing made using organic pigments dyes to collect energy was also summarised.

### SFE Visits Test Lab

The Society of Façades Engineering visit to Wintech's Telford test centre in September gave members an opportunity to meet others within the society and listen to talks about the work of the laboratory and associated topics. They then toured the departments, learning about box window and full size rig tests, building air leakage and various impact and loading tests.

### NCE Conference—Delivering Iconic Energy Efficient Exteriors

Delegates gathered for a one day conference at the Oval in London to hear lectures on topical subjects such as thermal efficiency, procurement, refurbishment and blast protection.

## Coming soon

The Society of Façade Engineering will shortly be announcing classes of membership to be adopted and minimum requirements for meeting each class. Existing members will receive notifications and further information in due course.

## Your Take

In the last edition of Elevation we posed the question of whether de-ionised water adversely affects facades. Here we report on feedback.

Tucker Pole UK produce the systems that de-ionise water for cleaning facades. Their fact sheet on the matter states that water is 99% pure after passing over polymer resin that adsorbs (rather than absorbing) impurities onto its surface. The resultant water is slightly acidic... in fact acidity may actually be lower than that of acid rain from industrial polluted areas. It is acidic because carbon dioxide has been reduced along with the alkalinity it carries. The acidity helps in removing inorganic and organic dirt and reducing surface tension. Under long-term exposure it may remove corrosion products from metals typically used in the windows. Tucker also point out that heating DI water is inadvisable as it may have adverse effects on susceptible metals. But they emphasise that good quality aluminium will suffer no reaction from the extremely transient contact involved in cleaning.

Dow Corning importer, Geocel, advised us that they are not aware of any issues from deionised water having an adverse effect on cured silicone or MS polymer sealants in the context of window cleaning.

### Contacts

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Dow Corning UK +44 1676 528 000

## Diary

**21 February 2007** SFE evening event: Facades in a Material World  
Venue to be advised

**28 - 30 March 2007** ICBEST (International Conference for Building Envelope Systems and Technology) at University of Bath. [www.icbest.org](http://www.icbest.org)  
SFE annual general meeting will be convened on 28 March 4.30pm. All members are invited to attend and find out more about future plans and offer feedback.

**19 June 2007** 6.00pm SFE evening event: The City Towers. Lecture followed by walking tour of new city facades.

For membership and other information about the Society of Façade Engineering visit [www.cibse.org](http://www.cibse.org)

Please help us by submitting comments, articles, letters and information for publication to the editor, Mark Taylor, email: [SFE@cibse.org](mailto:SFE@cibse.org)