RIBA Academy

Health & Safety of Facades

"Safety by Design" for Architects

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RIBA Architecture.com

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Designer CDM Guidance

www.diohas.org
For Design Risk Management detailed guidance & discussion

2

1.5 The Architecural Designer's Viewpoint (DIOHAS)

What is a Significant Risk Management as opposed to a Trivial Risk Management?

Lack of **understanding by CDM Advisors** and others about **what "Designers"** really **need to know** about Health & Safety. i.e. **As against what can reasonably be addressed by the competent principal and trade contractors.**

Expectations of CDM Advisors and others of **Designers' Health & Safety knowledge** is often **excessive e.g. Engineers, Architects, Interior designers etc. all have different requirements and levels of knowledge.**

Designers **can only consider so much** with regard to Health & Safety but how much?
Significant, project specific, unusual issues only and not everything.

Written Design Risk assessments have proven to be a tedious waste of time **adding no value.**
They have even caused **"Designer disenchantment"** with CDM.

Designers have to deal with CDM documentation within the myriad of other design considerations but often **too much unnecessary bureaucracy** is still expected **by CDM Advisors and others causing a further Design Stage Disconnect within the industry.**

Architectural designer competence defined by HSE as sufficient skills, knowledge and experience and provided by the RIBA.

Project **pre-qualification** H&S paperwork is often **unnecessarily excessive. A sample PAS 91 process has been recommended by the HSE.**

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Envelope Maintenance Systems - Manually Based

The Problem/Challenge
Cleaning glazing to elevations at **high level and in difficult locations.**

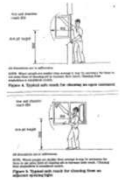
The Risks
Falls from height due to inappropriate work systems, poorly designed fabric or operative error.

The Solution
Early design consideration of cleaning options. Relatively low technology and low cost techniques to be considered, more reliant on manual efforts than mechanical assistance. Ladders, opening windows, long water – fed pole, reach and wash and roped access systems **all rely on trained operators and good management control systems** for their safety. All are inherently safe in the appropriate situations and when implemented correctly. **Limitations of use to be fully understood.**

The Benefits
Allows **economies of scale** to be proportionately applied to all building types. Enables **quicker and more immediate** response to cleaning demands. Roped access allows work positioning to **difficult undercuts and geometrically intricate areas.**

Key Points
Careful consideration of all relevant associated legislation is necessary especially the Working at Height Regulations to determine the most appropriate system or combination of systems for each building design. Large, flat and high elevations are less suited to these systems.


Ladder Limitations


Opening Window Criteria


Special roped access areas


Water-fed pole

24 DIOHAS - PROPORTIONATE AND PRACTICABLE CDM FOR DESIGNERS

SECTION 4: FACADE ACCESS AND MAINTENANCE 2/9

4

Envelope Maintenance Systems - Mechanically Based

The Problem/Challenge
Cleaning and maintaining glazing to elevations at high level in a safe manner.

The Risks
Falls from height due to **unsuitable systems or inappropriately designed building fabric.** Systems of work that require high levels of supervision for their effectiveness are susceptible to human error. Falling objects can endanger people.

The Solution
Early consideration of cleaning options should be made in relation to building form, scale and site constraints.
Careful selection of engineered mechanical systems is needed to ensure that the required cleaning and maintenance tasks can be undertaken.

The Benefits
Economic and safe maintenance systems appropriate to the scale, form and type of building. Provide the client with long-term maintenance strategy and **budgetary considerations.** If possible provide a **safe working platform** in line with the Work at Height Regulations hierarchy.

Key Points
Review relevant viable options for mechanical systems at an **early stage**. Mechanically assisted work placement systems require early discussion with **specialists.** Non-manned **robotic systems** eliminate work at height but **can limit design solutions**. Mechanical systems are best suited to large areas with little geometrical complexity. Any access from the **ground**, including cherry pickers and MEWPs require stable hardstanding and **influences landscaping.**


MEWP


BMU


Cradle


Robotic

5

Fall Prevention Methods - Permanent

The Problem/Challenge
To provide collective roof edge protection all around the new building where regular access to roof plant is required. Visual roof edge details were important to the design team and planners.

The Risks
Falls from height by maintenance operatives during roof and plant maintenance operations.

The Solution
A built-in 950mm parapet upstand design with integral sun shading brise-soliel feature. Ref; HSG - for maintenance areas.

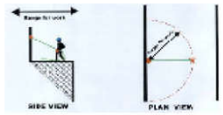
The Benefits
No need to assess frequency of access to roof areas.
Edge protection system does not require harness training or rescue arrangements.
No perimeter handrail due to integral parapet.
No need for additional edge guarding.

Key Points
Permanent edge protection provides an optimum safety solution and is at the top of the work at height hierarchy as a passive and collective protection system. Co-operation of client and project team required to avoid being "value engineered" out.
There may be project reasons why this BROADLY ACCEPTABLE method may not be considered proportionate for other project reasons.


Mansafe cable and lanyard system


Fall Arrest


Edge Protection Railings


Fall Restraint protection, prevents falls

6

Unusual Roofs Maintenance Access - Dubai Metro

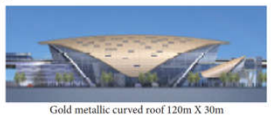
The Problem/Challenge
To establish an **appropriate means of roof surface and glazing cleaning** on 40 overground station roofs of iconic structural form in the hot Middle Eastern climate of Dubai.

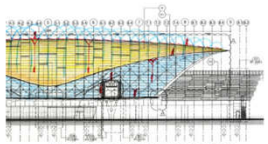
The Risks
Falls from height and heat exposure on curved metal roofs and glazed elevations above operational railway and busy 6-lane motorway adjacent.

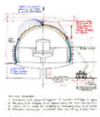
The Solution
Variety of roof access options analysed including BMU's, cherry pickers and roped access, with possible use of roof cleaning sprinkler system. All discounted on grounds of impracticability and safety to operatives and road users. Design team and client agreed solution was a **purpose designed robotic system.**

The Benefits
Man access to roofs eliminated for general maintenance purposes.

Key Points
Details of **sun-shading devices** critical to allow passage of robot. Roof apex robot attachment system, **water supply** and mansafe fall restraint harness system to be developed in detailed design with specialist subcontractors.


Gold metallic curved roof 120m X 30m


Roped access +sprinkler options analysis


Cherrypicker option


Robotic system at top

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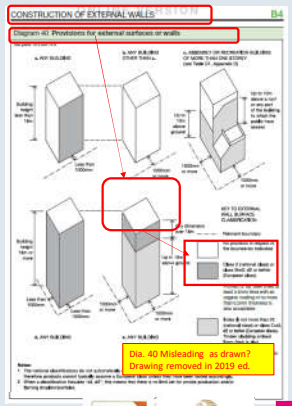
RW1

Construction of external walls



Then:2017

Class 0 (national class) or class B-s3, d2 or better (European class)

Class "0" **surface spread of flame** was acceptable & ACM was "Class 0"

No reference to notes 12.5-12.9 in Dia.40?

The refurbishment complied with the ADB but this proved **NOT** to meet the Building Regulations 2010 in 2017

Now:2018 +

Nov. 2018:- Changed to Class A1 or A2-s1-d0

3500+ other buildings have CLASS "0" cladding so are the designers & contractors ALL guilty??.....OR

Is this an unintended consequence of regulatory relaxation by previous governments?

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Designer
FIRE FAÇADE
Guidance

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This is what we have now?

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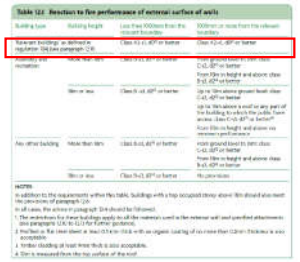
Approved Document B Section B4



"12.6 In a building with a storey 18m or more in height (see Diagram D6 in Appendix D) any insulation product, filler material (such as the core materials of metal composite panels, sandwich panels and window spandrel panels but not including gaskets, sealants and similar) etc. used in the construction of an external wall should be class A2-s3, d2 or better"

But how do architects know what materials are A2-s1,d0 or better?
We need the product data sheets with certified tests and certificates!
That are not fraudulent!

Surely this change is an acceptance by the MHCLG/DLUHC that the previous ADB Diagram 40 & text was "not fit for purpose"

Table 12.1 in Vol. 2 (& Table 10.1 in Vol. 1)

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Cavity barriers pre-Grenfell (pg. 80)

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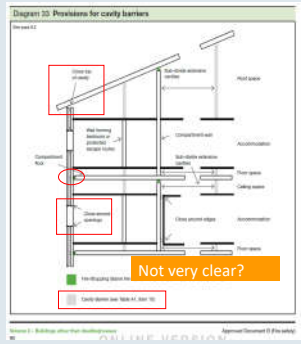

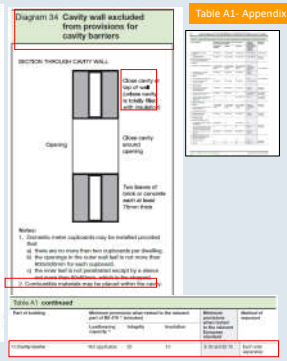

Table A1- Appendix A (pg. 122/3)

+ Flats?

Paul Hyatt "I have been appalled and dismayed by the incomprehensibility of Approved Document B" (RIBA expert witness to enquiry)

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Cavity barriers pre-Grenfell (pg. 66)

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Locations of cavity barriers clarified in preference to fire-stopping. Dwellings and Flats have separate sections?

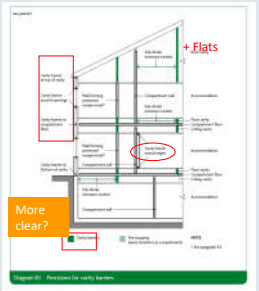
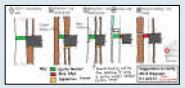


Table A1- Appendix A – now Table B3 Appendix B

RIBA Suggested improvements



Post Grenfell clarifications of ADB Vol 1 with Flats included in Dwellings

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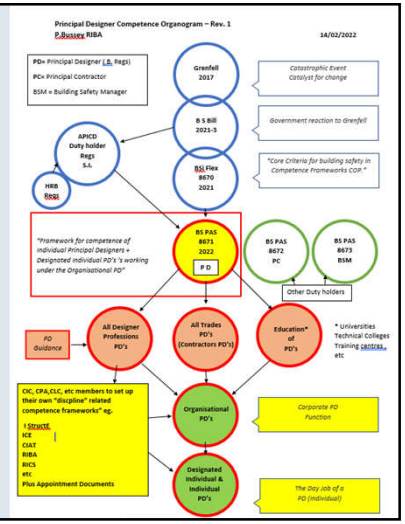
Principal Designer (BSA) Comptence Framework Bsi PAS 8671



RIBA & ARB will need to set the level of competence required by Architects within this Framework

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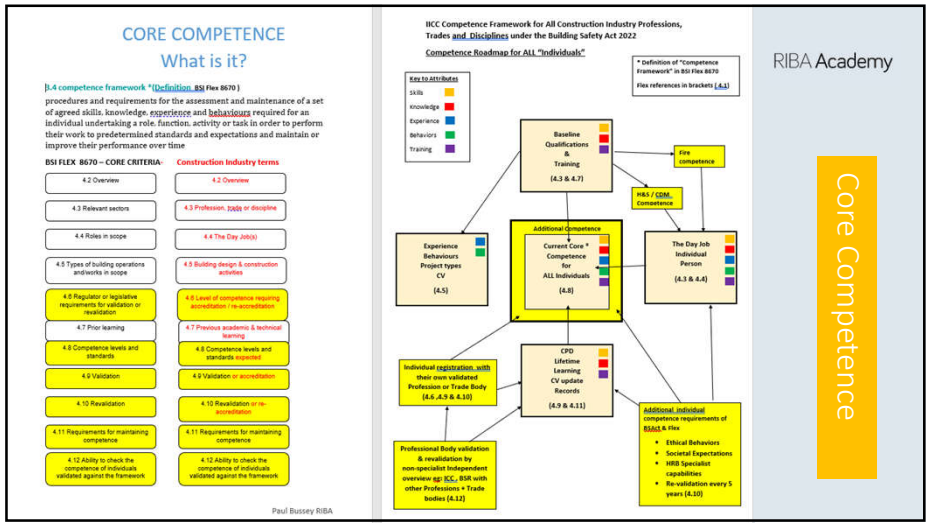
CORE COMPETENCE
What is it?
BSI FLEX 8670 – CORE CRITERIA
Construction Industry terms
IICC Competence Framework for All Construction Industry Professions, Trades and Disciplines under the Building Safety Act 2022
Competence Roadmap for ALL "Individuals"
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Core Competence
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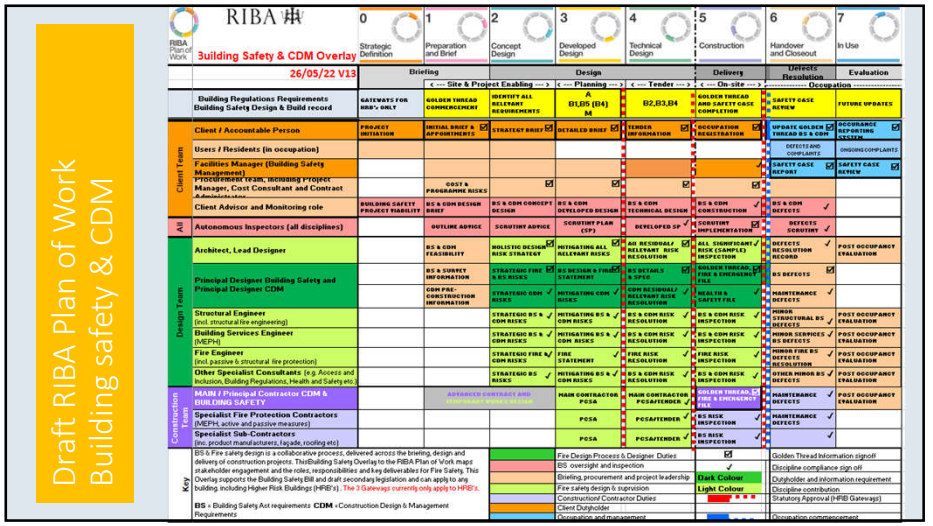
Draft RIBA Plan of Work
Building safety & CDM
RIBA
Building Safety & CDM Overlay
26/05/22 V13

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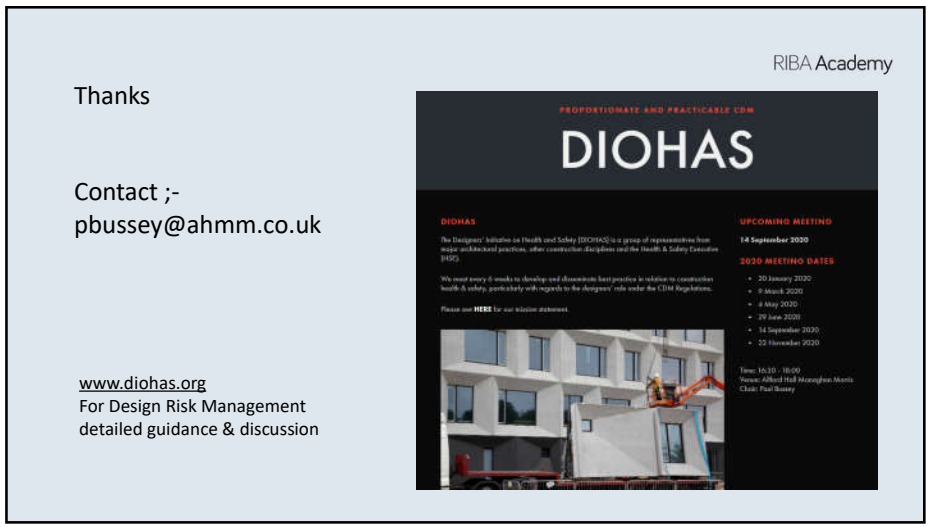
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Thanks
Contact ;-
pbussey@ahmm.co.uk
www.diohas.org
For Design Risk Management
detailed guidance & discussion
PROPORTIONATE AND PRACTICABLE CDM
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UPCOMING MEETING
14 September 2020
2020 MEETING DATES

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