

## Feature: deflection heads

# HITTING THE ROOF

Deflection heads have long been accepted as an unavoidable expense to protect interior fittings from stress. But how necessary are they?

WHEN RICHARD ROGERS (NOW Lord Rogers) designed the iconic Lloyd's of London insurance building in St Mary Axe in the heart of the City, he was revolutionary on the inside as well as on the outside. The specification for the internal walls – erected back in 1986 – demanded three-section telescopic deflection heads capable of  $\pm 25\text{mm}$  of movement.

Less than six years later, when the IRA set off a bomb just down the road, the building shook like ballyhoo and the external windows shattered. But legend has it that inside the building just a door or two needed rehanging. All the internal walls and floors bounced back into place without damage.

Deflection heads capable of that degree of movement are a standard size nowadays. And they have a valid role to play when fitting internal walls flush to fixed floors and ceilings. But contractors, and even

manufacturers, are raising concerns that deflections heads are being specified on every job – even with suspended ceilings which, suspended on wire, will absorb the small amount of movement in a structure. Deflection heads, they say, simply add to the costs. They also have a detrimental effect on the slim aesthetics often requested by designers.

“More and more architect practices are putting deflection heads in as standard. Nine out of 10 times they don't need them,” says Nigel Hunter, senior specifications manager at Komfort. “It is particularly noticeable with the large London practices. A lot of it is just nervousness. It has definitely been overspecified, but it has got particularly bad over the past 12 to 18 months.”

In the case of one job he is working on at the moment, Hunter says the client could have saved



WHEN THERE'S A SUSPENDED CEILING... THAT IS THE BIGGEST WASTE

£20,000 if the deflection heads had been omitted. “There needs to be an education programme. Why do you need deflection heads as well as a suspended ceiling? We have successfully argued on some projects that they aren't needed but a lot of the time the architects insist,” he says.

Andrew Foy, operations director at Stortford Interiors, agrees. “We do get asked for them when there is a suspended ceiling. That is the biggest waste. If we're asked for our opinion, we'll tell them.



"If it is a customer we know well we'll leave it out at the tender stage and tell them it has been left out because it is not necessary. Even when deflection heads are needed, they are overspecified – it's a belt and braces exercise."

Foy has in front of him a specification for a suspended ceiling and 25mm deflection heads. The ceiling, he says, could be pushed up 50mm with bare hands. "The spec appears to have been cut and pasted from a text book," he says. "I won't put them in on ➤

Deflection heads proved invaluable for the Lloyd's building when an IRA bomb blast nearby

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### CASE STUDY: LLOYD'S BUILDING



Clestra's project at Lloyd's of London has refreshed the building's deflection capabilities



The Lloyd's building at St Mary Axe in the City of London is being given an internal facelift. Despite the futuristic exterior, the original internal walls were wood-panelled – a traditional look to link the shiny new edifice with the 300-year-old history of the Lloyd's insurance market. Lloyd's started in 1688 in Edward Lloyd's coffee shop where gentleman traders struck deals to share the risks of ships sinking.

Since the building opened in 1986 many of the traditional ways of working at Lloyd's have modernised, albeit more slowly than in many other industries. Last month, for example, Lloyd's announced a trial using iPads to replace the slips of paper still taken round to underwriters' desks by insurance brokers.

Keith Parsons, interior services manager at Clestra, is in charge of removing the wood panelling and fitting predominantly silver-framed glass partitions instead. The firm started about three years ago and has been slowly and steadily working thorough the 12-floor building to keep disruption to a minimum.

"It has been a progressive change. For three or four years now we have been doing half a floor at a time, moving occupants into the other half and working round them.



We started with the main reception and shop and then the third floor, fifth and sixth and a bit on the seventh and eight," Parsons says.

"The original deflection heads were designed and built specifically for Lloyd's because of the amount of tolerance they wanted. We now have standard two-piece track that is used by many more people."

The track mounts to the ceiling and the inner piece is pushed apart by springs and held in place by cables. "The cables stop it falling apart and the springs give it rigidity," says Parsons.

"It's pretty much the first time we've been back since the originals were fitted – apart from when the bomb went off and we had to adjust a few doors," he says. "The original deflection heads did their job when the bomb went off and allowed the building to move and move back."



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### FEW CAN TAKE THOSE RISKS... THERE'S NO DEFLECTION FOR RISING INSURANCE PREMIUMS

this tender but often we get told 'I'm the architect and you're not'."

Too right, says Jack Pringle, partner at architect Pringle Brandon. He openly admits to specifying deflection heads every time. It's the structural engineers who specify the amount of flex in a building, not the architects, he says. "Nobody believes it is going to flex that much, but despite most of us thinking that level of deflection is never going to be needed we have to specify it if the structural engineers say so," says Pringle.

It all comes down to liability. The

structural engineers are covering their backs. Even the most basic of calculations will automatically give an 18m span a deflection of 50mm, Pringle points out, so the structural engineer may specify a sliding head to cover 100mm. He believes it is not worth an architect risking ignoring the written advice of the specialist.

Pringle also points out that many customers would balk at 50mm of deflection being taken up by the suspended ceiling. "Do you want the suspended ceiling to buckle by 50mm if there is deflection? I think if that happened, our clients would

be calling us back in again," he says. It would be the architect – or their professional indemnity insurer – who would have to pay to have it rectified.

Peter Capelhorn, technical director at Scott Brownrigg, is also a board member of RIBA and speaks for RIBA's practice committee. While he accepts that everyone is covering their own back, he blames the procurement procedure.

"It's not about the technical solution; it's about the liabilities on the contract," he says. And in today's litigious world, few can take

those risks. There's no deflection for rising insurance premiums. Professional indemnity insurance prices have been going the through the roof for all firms – even those that have never had claims.

"It's down to the procurement route. The procurement route won't always give the right solution," says Capelhorn. "The way a lot of the industry has gone is that architects are working for contractors who want everything done as cheap as chips and the architect is on a hiding to nothing.

"The structural engineers say if there is ever a moment when you get a whole load of problems at once then you need a deflection of 50mm. The architect has no option but to specify that. What we should be doing is sitting down and working out what the real deflection is, not the theoretical deflection," Capelhorn says.

He believes projects need to be built using Building Information Modelling (BIM). "You should use BIM to draw the scheme in finite detail before you go into procurement," he says. "If clients spent a bit more up front, they'd make savings later. Instead, they are pushing ahead too rapidly and all these things are left until it is too late. They are done on the fly at that stage, with everyone covering their own backs."

SAS marketing director Malcolm Stamper believes deflection heads have their place with the large floor sizes of today's offices but agrees the issue calls for careful design. His firm is working on products that integrate deflection heads into the ceiling from the word go. He adds: "In the past ceiling and partitioning manufacturers have not worked together but increasingly they are offering a more integrated solution."

Because more buildings are being designed with exposed soffits as part of sustainable temperature control strategies, deflection heads are likely to stay the norm when installing partitioning. But there is an opportunity to both reduce cost and save materials by taking a more realistic view when specifying partitioning to the underside of suspended ceilings.

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