

Progressive Collapse of Structure at Mogden STW



BV employed a subcontractor to dismantle existing SAS building superstructure
Subcontractor is on BV approved supplier list, a recent good reference was given following similar work the subcontractor carried out at our Hampton site

Subcontractor visited site, prepared the RAMS which was further developed with BV site based personnel

Method proposed was to dismantle rather than demolish, because of the adjacent Thames Water buildings and to prevent damage to the existing slab, which is to be retained

Only the front columns gridline B are surrounded in concrete

The sequence for dismantling was to remove the cladding and perimeter masonry walls; then take down the cladding rails, roof trusses and the columns along grid line A

As the columns along grid B were encased in concrete, the plan was to remove the concrete using an excavator after the rest of the structure had been dismantled.

This meant that the gridline B columns would be left free-standing whilst the rest of the dismantling work continued

Plant used included cherry picker to access the steel frame and a HIAB to lift the steel onto the back of the lorry bed



On the day of the incident the cladding and walls had already been removed. Steel was being stockpiled at one end of the slab, to be loaded later onto the lorry. The original plan was to load the steel directly onto the lorry, but the trusses were too big and a larger vehicle would be required

Trusses 6-4 had been removed

The truss along line 3 had been disconnected and was being lowered to the ground, as it did the truss caught on column B6 causing it to fall.

B6 fell onto the adjacent column which in turn fell onto the next column...in total 5 columns fell

Column B2, still connected to its truss, fell resulting in the truss landing on the basket of the MEWP, the persons in the basket sustained no injuries



Inspection revealed the columns that fell were insufficiently connected to the slab. Projection of the anchors varied between 20mm to 40mm below the underside of the steel packing, below the base plate

What went wrong?

- We did not understand the building construction - unfixed columns
- S/Con departed from RAMS for Lifting Operation
- We provided inadequate Protection Measures and Exclusion Zone

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We did not understand the building construction - unfixed columns

S/Con departed from RAMS for Lifting Operation and started the dismantling from the opposite end of the structure

We did not check & monitor S/Con adequately

Protection Measures and Exclusion Zone to the adjacent TW buildings was insufficient

Our Post Incident Control was not robust and people re-entered the area

Key Learning Point

If you make assumptions, validate them

We assumed

- the structure would be stable as it was dismantled
- the person slinging the loads was a B&V authorised slinger
- none of the steelwork was likely to fall on the TW cabins or the pump station
- none of the steelwork was likely to fall on the boom of the MEWP
- nobody would re-enter the incident area after we closed the heras fencing
- someone else was responsible for checking, monitoring and in control

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We assumed

- the structure would be stable as it was dismantled
 - Where connection details are covered and this cannot be validated then we must not assume it will be stable. So no unsupported members (e.g. columns or walls) permitted during dismantling operations
- the person slinging the loads was an authorised slinger
 - There was no check on who was carrying out this activity to authorise them in accordance with the Golden Rules
- none of the steelwork was likely to fall on the TW cabins or the pump station
 - Protection measures in place were not adequate to prevent this, the exclusion zone should have been extended
- none of the steelwork was likely to fall on the boom of the MEWP
 - The MEWP should have been clear of lifting operations
- nobody would re-enter the incident area after we closed the heras fencing
 - We should have locked the fence or put a guard on the entry
- someone else was responsible for checking, monitoring and in control

Revised procedures

- Control of incidents
 - New role of Incident Controller (IC) to **control the scene and events** following an incident
- New Guidance on Dismantling and Demolition