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Identified Priority 1 Concerns

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1st Priority 1 Concern

Excessive loading intensity in storage areas

Each box of garment product is estimated to be approximately 9kg. As they are stacked 9 boxes high, the total weight is 81kg (0.795kN) per stack.

Based on a plan area of 0.3mx0.5m per stack, the equivalent live load per stack is estimated to be:

$0.795kN/(0.3x0.5)m^2 = 5.3Kpa$.

The allowable live load is assumed to be a maximum of 3.0Kpa

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Identified Priority 2 Concerns

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1st Priority 2 Concern

Each water tank is estimated to be approximately 3000kg, the total weight is 12 Ton (117.7 KN) per the area of 1.2 x 6.0 m^2 . This is a loading intensity of approx. 10kPa. The structure locally needs to be checked to make sure that it is capable of supporting this load. In the mean time the tanks should be spread out to minimise the intensity.

The four 3000 litre water tanks are placed too close together.

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2nd Priority 2 Concern

Lack of proper waterproof layer

Waterproofing is not provided at the current roof level. In some locations the brick aggregate can be seen on the surface of the roof (5th floor). This poor construction has lead to the water ingress seen on some of the lower levels. Water penetration will allow corrosion of the reinforcement and could possibly lead to future structural failure.

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2nd Priority 2 Concern (Continued)

Water ingress on the stair wall

On the ceiling of the 4th floor level

On ceiling of 4th floor

On a column / wall in a stair well

Water ingress

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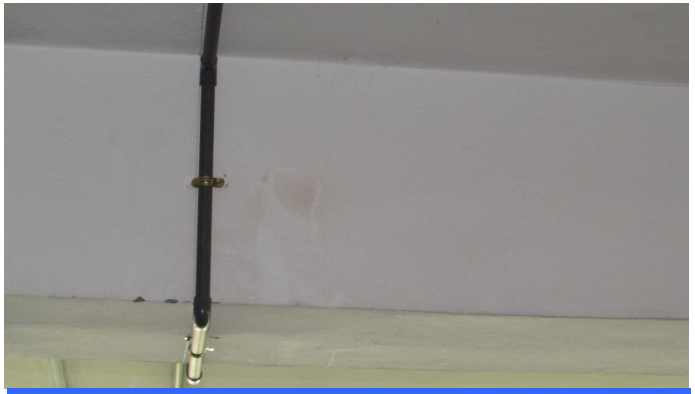
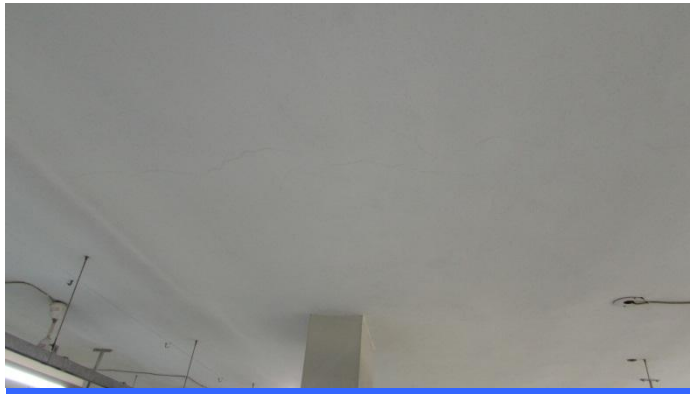
3rd Priority 2 Concern

Cracks and water ingress on the ceiling of 4th floor level

Cracks at the middle of a beam at 4th floor level (not clear in photo)



Cracks and water ingress on the beams of 4th floor level



Cracks on the soffit of lower levels.

Cracks on beams and slabs on various levels

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Identified Priority 3 Concerns

1st Priority 3 Concern

At the time of site investigation we were not provided with the full set of structural drawings. We were allowed to remove some concrete of a column at the ground floor level to determine re-bar diameter for. The columns surveyed are adequate with a reasonable loading assumption for the levels already built. However, adding one or more floors on the exiting structure needs to be investigated as part of a Detailed Engineering Assessment before commenced.
With our preliminary calculation, the building will be rated as AMBER if 3 concrete stories would be built on top of the existing 5 story building as per drawing permit

It is intended to construct new levels above 5th floor level

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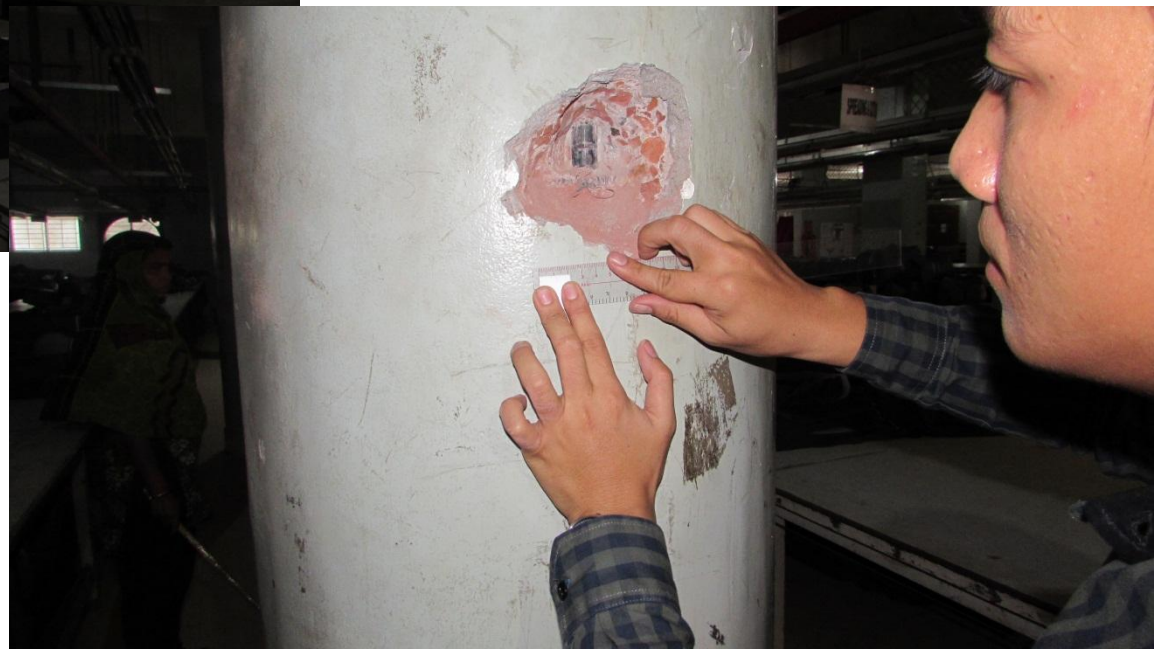
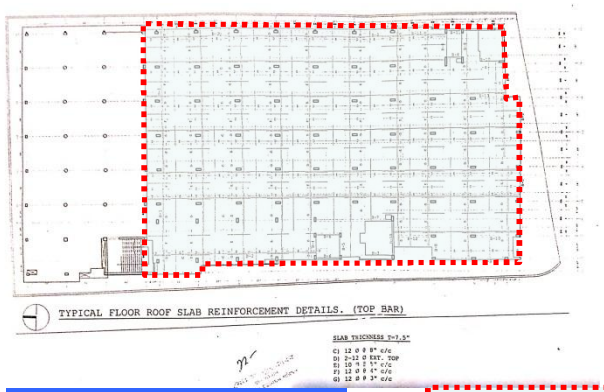
1st Priority 3 Concern (continued)



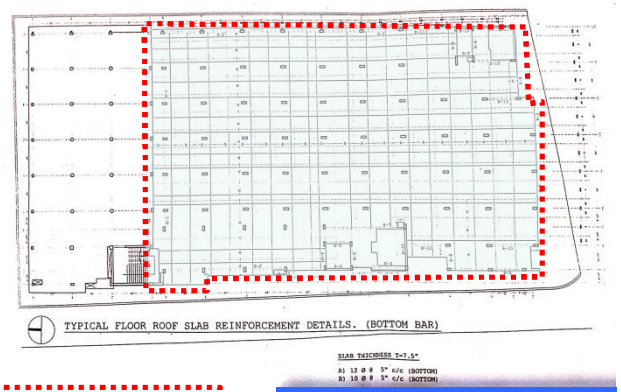
Removing concrete cover to measure bar diameters to allow checking of the loading capacity of the columns.

2nd Priority 3 Concern



Slab design of typical floor (top bars)

Part of building has been designed with flat slabs. All other structural drawings are missing



Slab design of typical floor (bottom bars)

The South side of building has flat slabs and concrete columns. No lateral stability system is evident. It is unclear what resists lateral loads.

A lack of lateral support system able to resist wind or earthquake loads. This should be investigated fully as part of a Detailed Engineering Assessment.

The set of structural drawings provided for the South side of the factory only covered the slab detailing. All other designs are missing.

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Priority Actions

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Problems Observed Summary

ITEM 1: (1st Priority 1) Excessive load intensity in storage areas.

ITEM 2: (1st Priority 2) Closely spaced water tanks on the roof (5th level).

ITEM 3: (2nd Priority 2) Cracks found on slab soffits and beams.

ITEM 4: (1st Priority 3) It is intended to add one or more floors on to the exiting structure. This needs to be investigated before started.

ITEM 5: (2nd Priority 3) There is a lack of a recognisable lateral support system.

ITEM 6: (3rd Priority 3) There is no waterproofing provided on the existing roof.

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Item 1 and actions

Excessive loading in storage areas, possible overloading of slabs.

Priority 1 (Immediate – Now)	• Immediately reduce the stacked height of product boxes to ensure total load does not exceed 3.0KPa.
Priority 2 (within 6 – weeks)	• Develop floor loading plans. Mark the maximum allowable height of produce stacking to ensure full compliance.
Priority 3 (within 6-months)	• Maintain the loading plans and ensure that they are followed.

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Item 2 and actions

Water tanks on the roof placed too close together.

Priority 1 (Immediate – Now)	• Carry out design checks on the roof structure to check that they are able to support these high loads.
Priority 2 (within 6 – weeks)	• Relocate and space the water tanks out on the roof level to avoid overloading for the supporting slab.
Priority 3 (within 6-months)	• None required

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Item 3 & 4 and actions

Cracks and water ingress noted on various ceilings and beams in the building. Especially on the soffit of the current roof level.

Priority 1 (Immediate – Now)	• None required
Priority 2 (within 6 – weeks)	• As part of the DEA, assess what has caused the cracking (part of the suggested Action 5.
Priority 3 (within 6-months)	• Provide a proper waterproof layer on the existing roof level. • Actions any recommendations resulting from the DEA.

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Item 5 and actions

All columns on the roof level have been prepared for future construction.

Priority 1 (Immediate – Now)	• Carry out a Detailed Engineering Assessment to ensure that the existing structure is capable of supporting all planned extra levels.
Priority 2 (within 6 – weeks)	• Cease construction at whatever level the Assessment determines the existing structure is capable of supporting.
Priority 3 (within 6-months)	• Provide a complete waterproofing system at the final top level. • Based on the building survey, the factory engineer is to develop full structural record drawings. • Implement the developed loading plan and strictly maintain.

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Item 6 and actions

The building appears to have a lack of recognisable lateral support system.

Priority 1 (Immediate – Now)	• None.
Priority 2 (within 6 – weeks)	• Assess the building's lateral stability capacity as part of the DEA.
Priority 3 (within 6-months)	• Provide any new forms of lateral structure that may be required as a result of the DEA.