Latest Garments Ltd. (10077)

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Identified Priority 1 Concerns

None Identified.

Identified Priority 2 Concerns

Slight over-stress in columns, established through column load run-down.

Concerns regarding the lateral stability of the building in one direction, due to the presence of down-stand beams only in one direction.

Large amounts of storage load at ground floor level, immediately adjacent to internal partition wall. This can introduce un-designed-for lateral loading on the wall.

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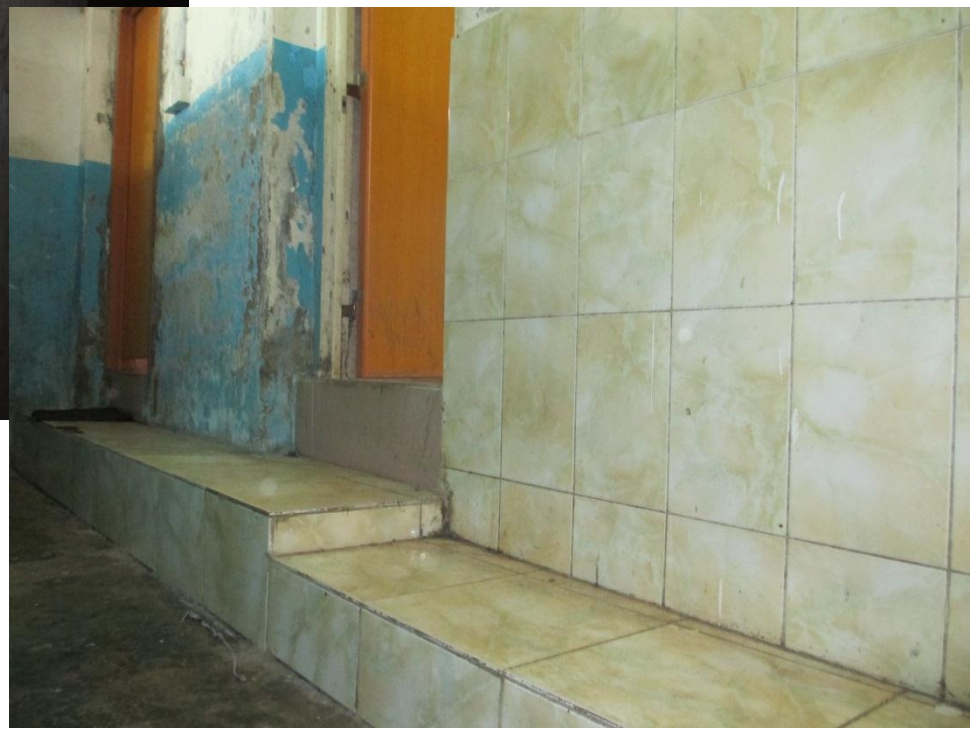
1st Priority 2 Concern

Left, the ground floor column from which the plaster was removed to establish that brick aggregate had been used. Below is the significant floor build-up under the toilet areas, which contributes significantly to the stress in the columns.



Following the scanning of a typical internal column to establish the reinforcement, and the column load run-down spreadsheet, a ‘yellow’ rating for the column stress was established.

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2nd Priority 2 Concern

To the right is an internal image from the factory, showing very deep down-stand beams in one direction, providing stability through moment frame action. In the other direction however, no sufficient lateral stability system could be established. This should be further investigated in the form of a Detailed Engineering Assessment.

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3rd Priority 2 Concern

This image shows a significant amount of uncontrolled storage at ground floor level. Although this does not cause any concerns with regard to the overall stability of the building, the stacking of this material against the internal partition wall imposes a lateral load that may not have been designed for.

This loading causes concern for the stability of this particular internal wall, and as such the loading should be controlled so as to not lean on the wall and apply any horizontal load.

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Identified Priority 3 Concerns

Some portions of the steel roof over 3rd floor level (built up above concrete roof level) have questionable anchorage details. Further investigation is recommended.

Some water ingress was visible in the soffit above 2nd floor level, immediately beneath concrete roof level. An appropriate waterproofing system is recommended.

Cracked column supporting lintel in external generator room building, requires repair.

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1st Priority 3 Concern

These images show anchorage details for steel roofs across the site. These are present at the roof over 3rd floor level as well as the individual buildings around the perimeter of the site.

In some case an attempt has been made to anchor the truss or rafter down to the concrete post or brick wall supporting it, however in many cases this appeared insufficient. These details should be reviewed by the Factory Engineer and improved where necessary.

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2nd Priority 3 Concern

There were numerous signs of water ingress across the soffit over 2nd floor level (the underside of the roof slab). This can cause degradation to the slab and its reinforcement if allowed to develop.

Apparently a slope is to be added to the roof. This must be done under the close supervision of a Structural Engineer, paying particular attention to the following aspects:

1. Waterproofing layer to the surface of the build-up to be sufficient to ensure water ingress into the brick build-up does not occur.
2. Build-up should not add such a load as to have any negative effect on the structural integrity of the roof or supporting structural elements.

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3rd Priority 3 Concern

This cracked pier supports the lintel over the doorway into the generator room, located just outside the main factory building.

In a minor wind loading situation, the lintel could become unstable and cause a threat to the safety of anyone nearby. As such suitable repair works should be carried out, designed and overseen by the Factory Engineer.

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Overall Stability System

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View from ground floor level, where floor-to-ceiling height is slightly greater than elsewhere.

As can be seen here, very deep concrete beams with haunches are present in one direction. This provides ample lateral stability for the building in this direction through moment frame action.

Perpendicular to these beams, however, only the rigidity of the slab provides any stability, with some small contribution from the rigid perimeter walls.

We require that these items be investigated in a Detail Engineering Assessment

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Water Ingress at Roof Level

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Bottom left; small signs of ponding at roof level. Left and right; evidence of water ingress on the underside of the roof slab, viewed from 2nd floor level.

The pile of aggregate to the left is purportedly to be used to create a slope on the roof for water runoff. This should be overseen by a Structural Engineer to ensure a sufficient slope, appropriate waterproofing, and avoidance of excessive load.

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Priority Actions

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Problems Observed Summary

ITEM 1: (Priority 2) Slight over-stress of columns, with a load run-down Factor of Safety between 1.5 and 1.86.

ITEM 2: (Priority 2) Lateral stability system of the building is to be established, with down-stand beams only in one direction.

ITEM 3: (Priority 2) Storage at ground floor level is stacked against an internal partition wall, introducing lateral loading.

ITEM 4: (Priority 3) Anchorage of the steel roof trusses over 3rd floor level is to be checked in further detail and improved if necessary.

ITEM 5: (Priority 3) Signs of water ingress were evident to the soffit above 2nd floor level; the underside of the concrete roof slab.

ITEM 6: (Priority 3) Column supporting lintel over the door into the external generator room is cracked almost through the entire cross section.

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Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Slight over-stress of columns, with a load run-down Factor of Safety between 1.5 and 1.86.	Factory Engineer to review design, loads and column stresses, particularly in areas where floor build-up is excessive (toilet blocks). Verify insitu concrete stresses by 100mm diameter cores from columns in this area.	6-weeks
2	Slight over-stress of columns, with a load run-down Factor of Safety between 1.5 and 1.86.	Produce and actively manage a loading plan for all floor plates within the factory, giving consideration to floor capacity and column capacity.	6-months
3	Lateral stability system of the building is to be established, with down-stand beams only in one direction.	Detailed Engineering Assessment to be carried out, to establish suitability of existing lateral stability system. Any deficiencies or necessary remedial works to be established.	6-weeks
4	Lateral stability system of the building is to be established, with down-stand beams only in one direction.	Implement any structural alterations recommended through the DEA.	6-months
5	Storage at ground floor level is stacked against an internal partition wall, introducing lateral loading.	Reduce storage height to 2m, and control so that it is not leaning on the wall. Loading plan to be produced, paying attention to the prevention of lateral loading.	6-weeks
6	Storage at ground floor level is stacked against an internal partition wall, introducing lateral loading.	Suitable storage height to be established and maintained. Storage to be controlled, to ensure stacks/piles are self-supporting.	6-months
7	Anchorage of the steel roof trusses over 3rd floor level is to be checked in further detail and improved if necessary.	Factory Engineer to review suitability of anchorage details of steel roofs. Any additional restraint deemed necessary to be implemented and overseen by Engineer.	6-months
8	Signs of water ingress were evident to the soffit above 2nd floor level; the underside of the concrete roof slab.	Waterproofing layer to be applied to concrete roof. If slope is to be applied, Engineer must oversee works to ensure that surfacing is sufficiently waterproof (and thick enough to avoid cracking) and that the build-up is not so thick as to cause any excess stress to roof slab or supporting columns.	6-months
9	Column supporting lintel over the door into the external generator room is cracked almost through the entire cross section.	Plaster to be broken out to establish that reinforcement is present and undamaged. If this is the case, local repair to be carried out. If reinforcement is damaged, Factory Engineer to design and oversee removal and re-installation of reinforced concrete pier.	6-months