METRO KNITTING & DYEING MILLS LTD (9509)

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24 March 2014

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on Fire and Building Safety in Bangladesh

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Site Observations

High loads on storage areas

Excessive and uncontrolled storage of boxes and fabric.

Excessive Storage

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Presence of a connecting walkway between Buildings 2 and 7 and Buildings 6 and 8

Building Engineer to check that beams and columns have been designed to accommodate loads.

Connecting bridge

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Steel walkway connecting Building 6 and the overhang of building 8. Engineer to check that slabs, beams and columns have been designed to accommodate loads.

Connecting bridge

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Rebars left in place for future building

Rebars were left in place for the construction of a future adjacent building. The 2 building should be separated by a movement joint.

Future building

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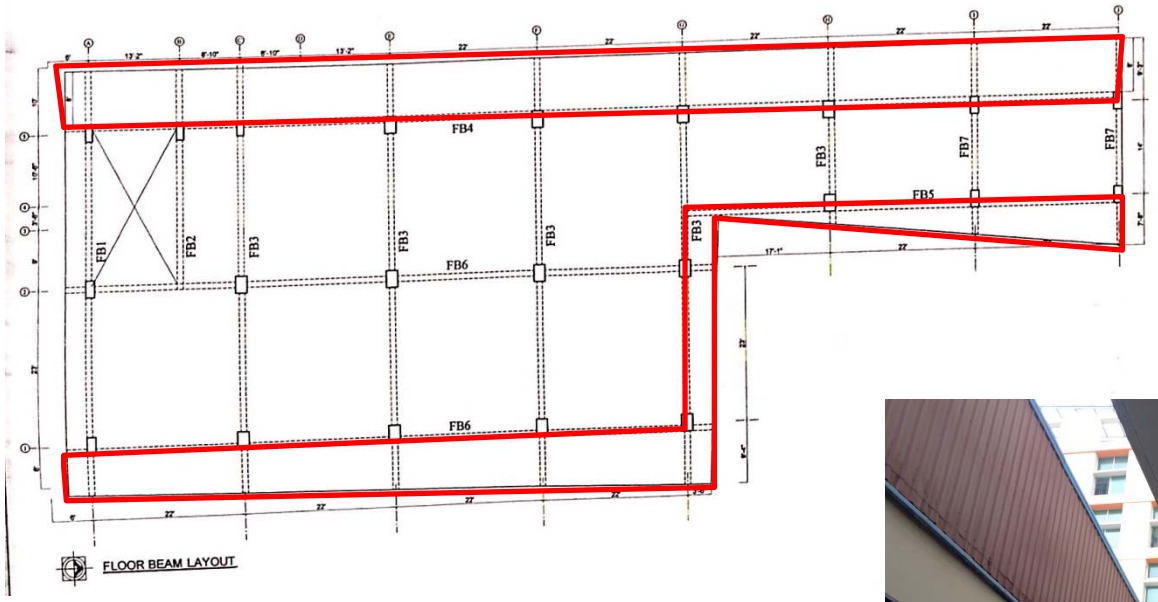
Storage located on slab overhangs of Buildings 8 & 11



Remove all storage from the overhangs to ensure the longevity of the building.

Overhangs

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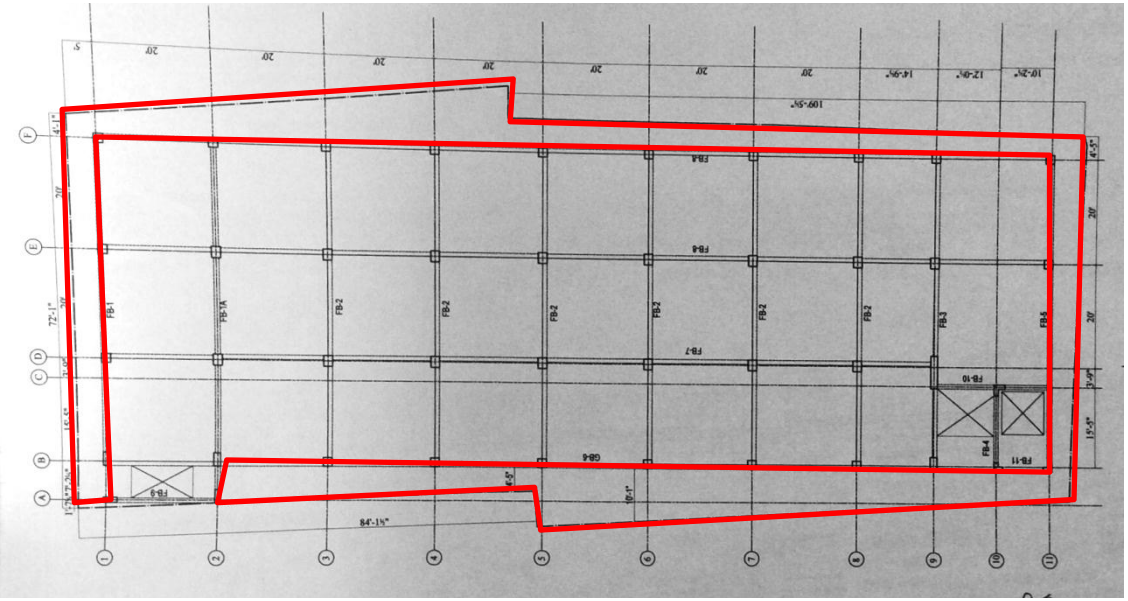

Remove all storage from the overhangs to ensure the longevity of the building.

Overhangs

R.C Fire water tank on Building 8 is leaking on the slab

The R.C fire water tank on the roof is leaking. Damage should be repaired and water proofing membrane added.

Water damage

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Roof appears not to have any waterproofing system applied

6th Priority 3 Concern (All buildings)

No waterproofing membrane was visible on the roof of the building. This means that any cracks in the surface finishes on the roof will allow water to seep into the concrete slab beneath the finishes, and cause long-term soaking of the slab.

Roof Floor does not appear to have any waterproof membrane to protect lower floor from water damage

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Priority Actions

Problems Observed Summary

ITEM 1: (1st Priority 1 – Building 1) The factor of safety of the column is less than 1.25. Factory engineer to review design, loads and column stresses.

ITEM 2: (2nd Priority 1 – Building 4) The factor of safety of the column is between 1.25 and 1.5. Factory engineer to review design, loads and column stresses.

ITEM 3: (3rd Priority 1 – Building 4, 7, 8, 11) Uncontrolled and excessive storage.

ITEM 4: (1st Priority 2 – Building 6) The factor of safety of the column is between 1.5 and 1.86. Factory engineer to review design, loads and column stresses.

ITEM 5: (2nd Priority 2 – Building 7) Presence of a walkway between Buildings 2 & 7

ITEM 6: (3rd Priority 2 – Buildings 6 & 8) Presence of a walkway between Buildings 6 & 8.

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Problems Observed Summary

ITEM 7: (1st Priority 3 – Building 7) The factor of safety of the column is about 1.86. Factory engineer to review design, loads and column stresses.

ITEM 8: (2nd Priority 3 – Building 7, 10) Rebars were left for future adjacent building.

ITEM 9: (3rd Priority 3 – Building 8) Remove storage from the overhangs.

ITEM 10: (4th Priority 3 – Building 11) Remove storage from the overhangs.

ITEM 11: (5th Priority 3 – Buildings 8) R.C water tanks is leaking on slab.

ITEM 12: (6th Priority 3 – ALL Buildings) Roof appears not to have any waterproofing system applied.

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Item 1 and actions

Preliminary load take-down calculations suggest that structure does not comply with the BNBC regulations with regard to required design loading and that even using significantly reduced loading still results in a structure which is incapable of sustaining the applied loads.

Priority 1 (Immediate – Now)	• Discuss with owner on the possibility of shutting down at least 3 floors of the building to reduce loading to within limits.
Priority 2 (within 6 – weeks)	• Building engineer to carry out thorough load checking of the entire structure, including slabs, beams and columns based on BNBC • Carry out intrusive testing of structure to determine actual concrete and rebar strength
Priority 3 (within 6-months)	• Develop live load plans for each usable floor and incorporate fail safe indication system • Consider whether to demolish the unused floors

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Item 2 and actions

Preliminary load take-down calculations indicate that the critical column's factor of safety is between 1.25 and 1.5.

Priority 1 (Immediate – Now)	• Factory Engineer to review design, loads and columns stresses. • Verify insitu concrete stresses by cores from 4 internal columns.
Priority 2 (within 6 – weeks)	• Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. • Detail Engineering Assessment to be completed
Priority 3 (within 6-months)	• Continue to implement load plan.

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Item 3 and actions

High storage loads.

Priority 1 (Immediate – Now)	• Immediately reduce stacking height of boxes and fabric to ensure total load does not exceed 3.0kPa.
Priority 2 (within 6 – weeks)	• Mark the maximum allowable height of fabric and box stacking to ensure full compliance with specified design loads.
Priority 3 (within 6-months)	• Produce and actively manage a loading plan, ensuring maximum height of storage is adhered to in the long-term.

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Item 4 and actions

Preliminary load take-down calculations indicates that the columns factor of safety is between 1.5 and 1.86.

Priority 1 (Immediate – Now)	• None required.
Priority 2 (within 6 – weeks)	• Factory Engineer to review design, loads and columns stresses. • Verify insitu concrete stresses by 100mm dia. cores from 4 typical internal columns.
Priority 3 (within 6-months)	• Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

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Item 5 and actions

Presence of connecting walkway

Priority 1 (Immediate – Now)	• None required.
Priority 2 (within 6 – weeks)	• The factory engineer is to verify the capacity of beams and columns.
Priority 3 (within 6-months)	• Carry out any remedial measures that the factory engineer considers necessary to ensure the long term stability of both the walkway and the building itself.

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Item 6 and actions

Presence of connecting walkway

Priority 1 (Immediate – Now)	• None required.
Priority 2 (within 6 – weeks)	• The factory engineer is to verify the capacity of beams and columns.
Priority 3 (within 6-months)	• Carry out any remedial measures that the factory engineer considers necessary to ensure the long term stability of both the walkway and the building itself.

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Item 7 and actions

Preliminary load take-down calculations indicate that the critical column's factor of safety is about 1.86

Priority 1 (Immediate – Now)	• None required.
Priority 2 (within 6 – weeks)	• None required.
Priority 3 (within 6-months)	• Verify insitu concrete stresses by cores from 4 internal columns. • Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. • Detail Engineering Assessment to be completed.

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Item 8 and actions

Future Building

Priority 1 (Immediate – Now)	• None required
Priority 2 (within 6 – weeks)	• None required
Priority 3 (within 6-months)	• Rebars to be cut and future building to be constructed with a movement joint.

Item 9 and actions

Storage on overhangs

Priority 1 (Immediate – Now)	• None required
Priority 2 (within 6 – weeks)	• None required
Priority 3 (within 6-months)	• Storage should be removed from overhangs. • Produce and actively manage a loading plan.

Item 10 and actions

Storage on overhangs

Priority 1 (Immediate – Now)	• None required
Priority 2 (within 6 – weeks)	• None required
Priority 3 (within 6-months)	• Storage should be removed from overhangs. • Produce and actively manage a loading plan.

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Item 11 and actions

R.C. Water tanks is leaking

Priority 1 (Immediate – Now)	• None required
Priority 2 (within 6 – weeks)	• None required
Priority 3 (within 6-months)	• Waterproof the tank to stop the leak. • Repair any damage done to the tank and slab. • Waterproof the slab under the tank to prevent further damage.

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Item 12 and actions

Roof appears not to have any waterproofing system applied.

Priority 1 (Immediate – Now)	• None required.
Priority 2 (within 6 – weeks)	• None required.
Priority 3 (within 6-months)	• Consider applying a new waterproofing membrane.