

Radiant Sweater Ind. Ltd. (9945)

Sayem Fashions Ltd. (11476)

Kamarjuri, National University, Gazipur

(+ 23.954178N, 90.372575E)

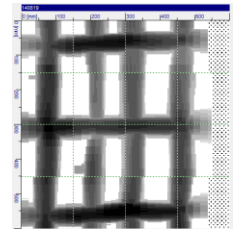
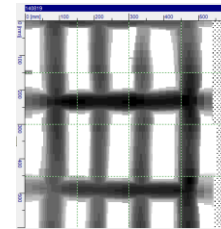
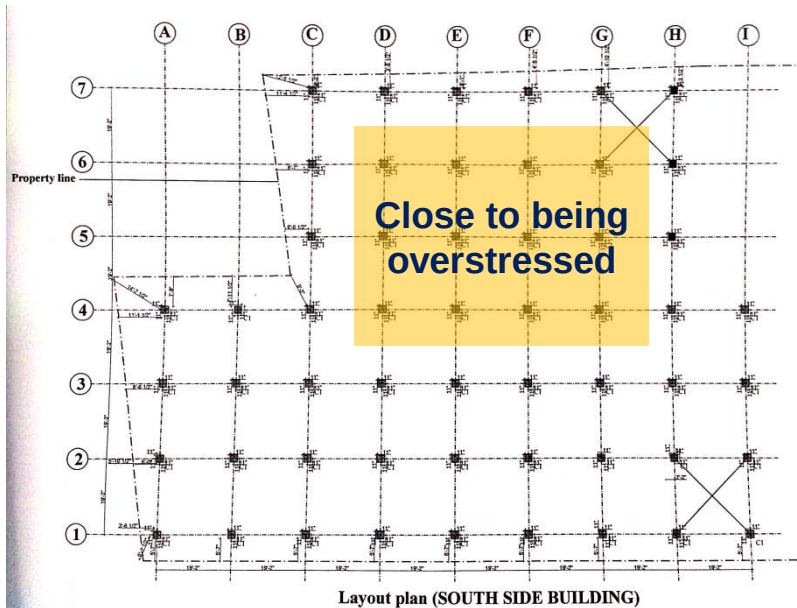
19.AUGUST.2014



Identified Priority 1 Concerns

- The internal columns at ground level are close to being overstressed in Building 1.
 - Uncontrolled heavy storage loading in Building 1.
- Uncontrolled heavy storage loading on cantilevered slabs in Building 1 and Building 3.

The internal columns at ground level at Building 1 shown below are close to being overstressed. The size of these column is 500 x 500 mm at ground level and carry 8 storeys of Building 1 with 5.75 m and 5.75 m length spans. Uncontrolled heavy storage loading of 4.1 kPa and 6.1 kPa was also found on 2nd floor and 4th floor respectively.

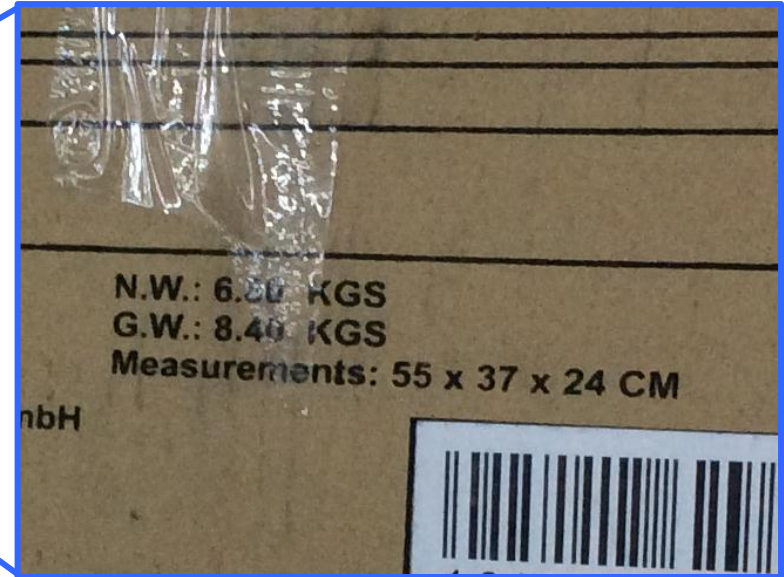


From the information above, for Building 1, 8 storeys, the calculation check of these columns show that they are close to being overstressed (FoS = **1.37**).

Remark: The sizes of the column's rebar are assessed to be similar to those specified on the structural drawings.

	In situ	Drawing
Size	500 x 500 mm	550 x 550 mm
Vertical rebar	12-Ø22mm (1.82%)	12-Ø22mm +12-Ø16mm (2.31%)
Aggregate	Brick	Brick

2nd Fl.



4th Fl.



Uncontrolled heavy storage loading was found on 2nd floor and 4th floor in Building 1. We believe the loading on 2nd floor and 4th floor to be 4.1 kPa and 6.1 kPa respectively. Loading in these areas should be reduced to 2.0 kPa and we require that these items be investigated in a Detailed Engineering Assessment. Loading plans should be developed and displayed in all areas.



Building 1



Building 1



Building 3

Uncontrolled heavy storage loading was found on cantilevered slabs at every floor level of Building 1 and 2nd floor and 3rd floor at Building 3. The loading was also leaning on the brick walls that lack lateral load resistance. Loading in these areas should be removed and we require that these items be investigated in the Detailed Engineering Assessment.

Identified Priority 2 Concerns

- Cracks on beams in Building 1.
- Inadequacies between the drawings and the actual as-built conditions.
- Capacity check of roof slab supporting water tanks in Building 1.
 - Stability and capacity of lightweight roof.
- Stability and capacity of steel staircase at Building 1 and Building 2.
 - Movement joint to be properly established between Building 1 and Building 2.

1st Floor



3rd Floor



4th Floor



Cracks on 1st floor, 3rd floor and 4th floor beams in Building 1. The cause of cracks should be investigated by appropriate methods and then repaired.



The sizes of columns and beams measured in situ are smaller than those specified in structural drawings.

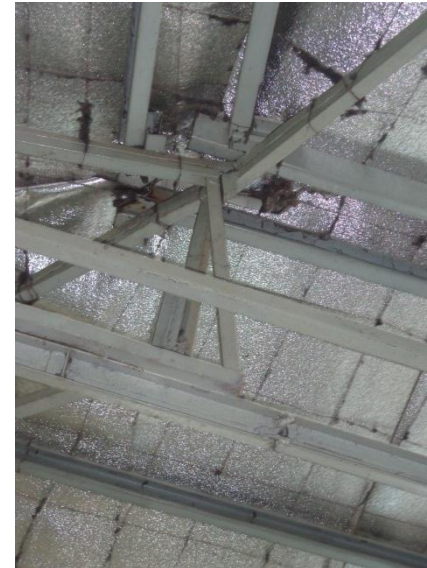
The actual conditions need to be surveyed and then the structural drawings revised.



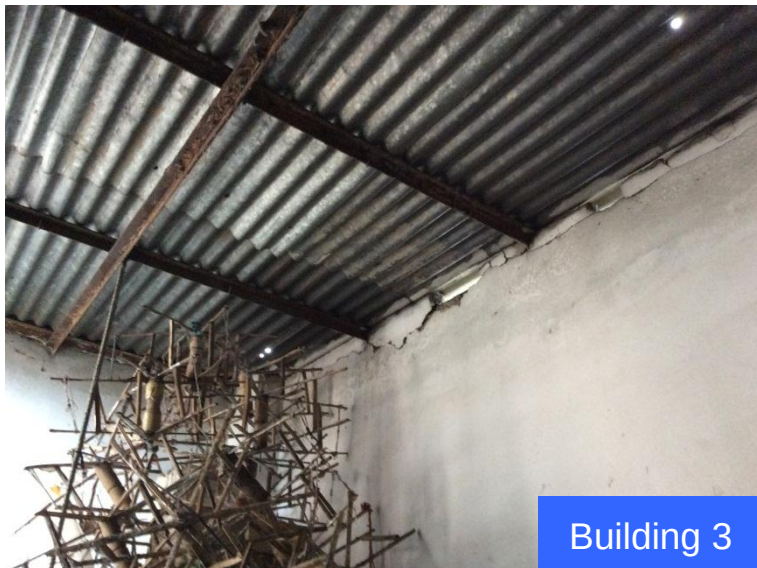
Concerns with the roof slab supporting 2000 Litre water tanks on Building 1. A capacity check of these slabs and all related elements needs to be carried out.



Building 1



Building 2



Building 3

Concerns with the lightweight roof at the top level of these buildings. Stability and capacity must be checked especially with the connections. Stability under wind uplift needs to be checked in particular.



Building 1

Concerns with stability and capacity of the steel stair on the 7th floor of Building 1 and the steel stair in front of Building 2.

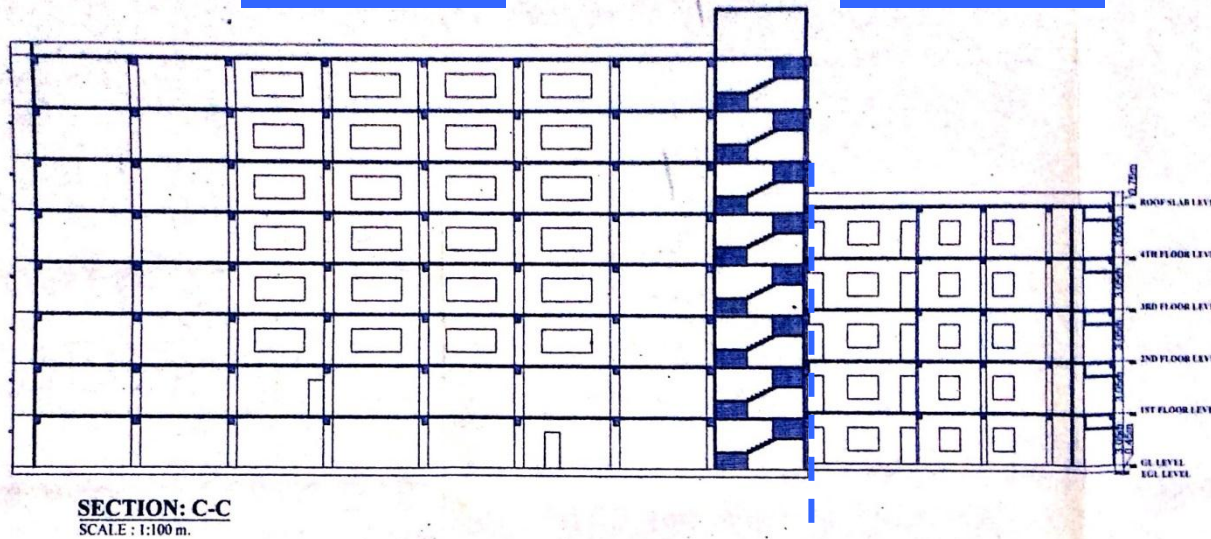


Building 2

These should be investigated and/or strengthened.

Building 1

Building 2



Building 1 and Building 2 were partially connected together. The movement joint should be established properly where shown.

----- Movement Joint

Identified Priority 3 Concerns

- No parapet wall or guardrail present at top level at Building 3.
 - Reinforcement left exposed at top level.
- No fireproofing material for structural steel elements (if required).

Building 3



There is no parapet wall around the perimeter of top level of Building 3.

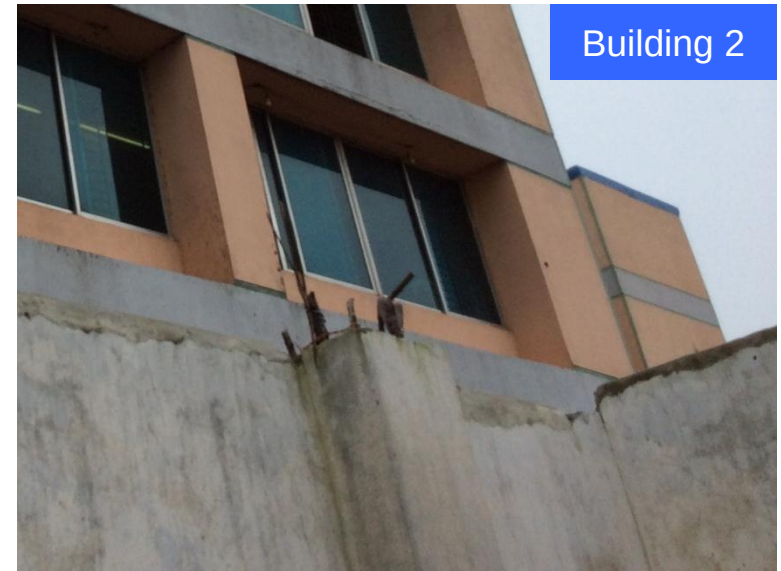
Building 3



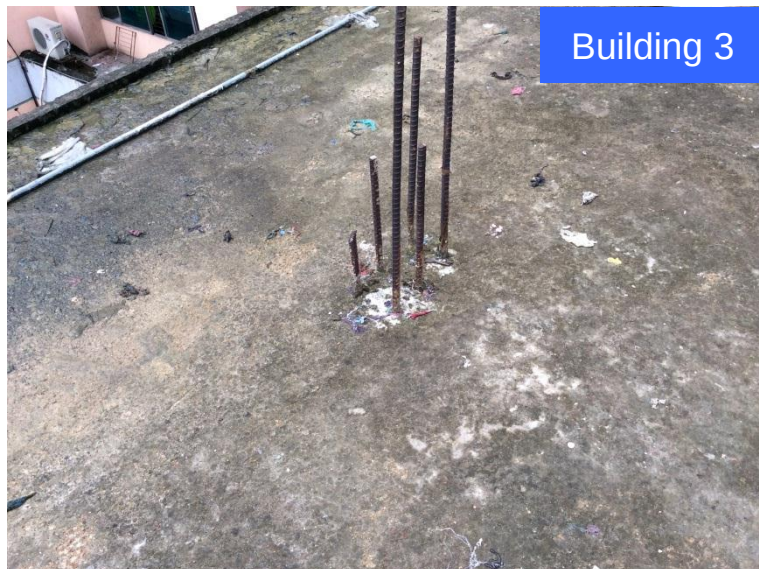
Whilst not a structural issue, this is a significant health and safety risk and should be rectified.



Building 1

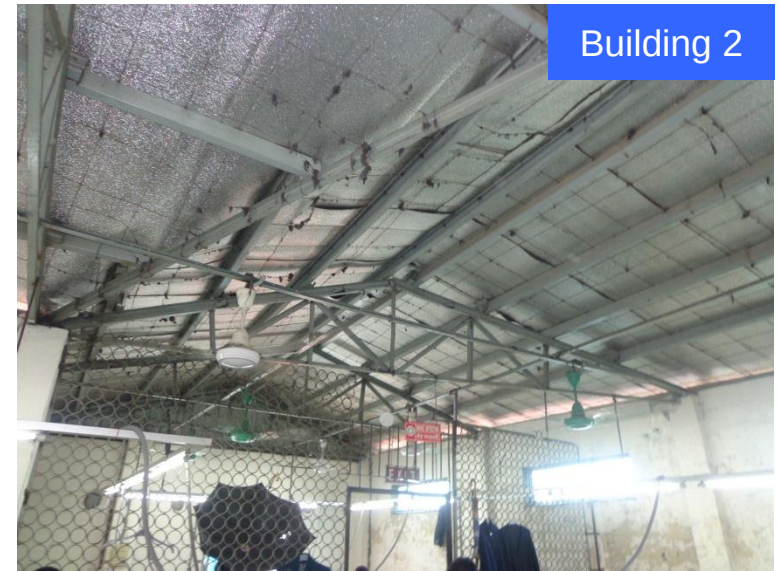


Building 2



Building 3

Reinforcement is left exposed at top level of Building 1, Building 2 and Building 3.



No fireproofing material was noted on any structural steel elements (if required).

Overall Stability System

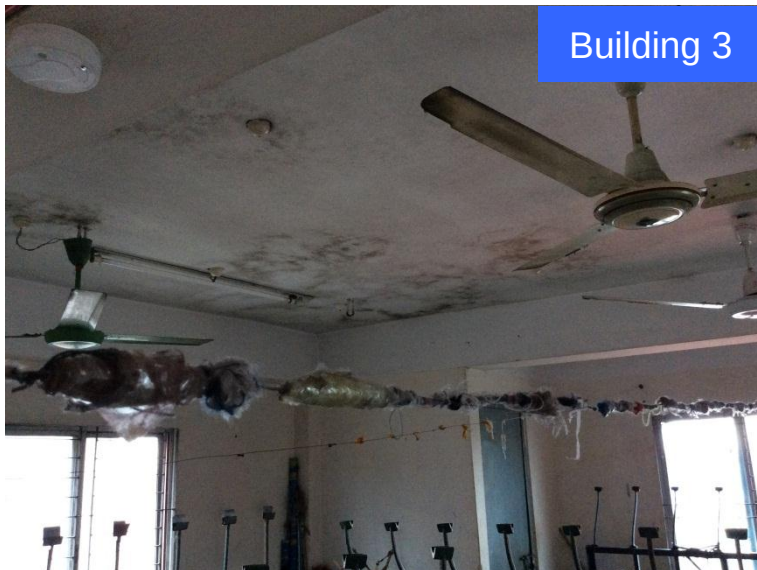


The lateral loading resistance for Building 1, 8-storey building, Building 2 and Building 3; 5-storey buildings are provided by moment frame action without any shear wall and the façade brickwork walls lack moment capacity due to their poor connections with the surrounding columns and beams.

We require that the stability of these buildings is investigated as part of a Detailed Engineering Assessment.



Water Ingress



Water distress was noted on slabs, beams, columns and walls of these buildings. Water ponding was also found on the top level.

Priority Actions

Problems Observed Summary

ITEM 1:	(Priority 1)	The internal columns at ground level are close to being overstressed in Building 1.
ITEM 2:	(Priority 1)	Uncontrolled heavy storage loading in Building 1.
ITEM 3:	(Priority 1)	Uncontrolled heavy storage loading on cantilevered slabs in Building 1 and Building 3.
ITEM 4:	(Priority 2)	Cracks on beams of Building 1.
ITEM 5:	(Priority 2)	Inadequacies between the drawings and the actual as-built conditions.
ITEM 6:	(Priority 2)	Capacity check of roof slab supporting water tanks on Building 1.
ITEM 7:	(Priority 2)	Stability and capacity of lightweight roofs.
ITEM 8:	(Priority 2)	Stability and capacity of steel staircases in Building 1 and Building 2.
ITEM 9:	(Priority 2)	Movement joint to be properly established between Building 1 and Building 2.
ITEM 10:	(Priority 2)	Overall stability systems.
ITEM 11:	(Priority 3)	Distress due to water ingress.
ITEM 12:	(Priority 3)	No parapet wall or guardrail present at top level on Building 3.
ITEM 13:	(Priority 3)	Reinforcement left exposed at top level.
ITEM 14:	(Priority 3)	No fireproofing material for structural steel elements (if required).

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Priority 1 - The internal columns at ground level are close to being overstressed in Building 1.	Maintain and control the floor loading on every floor to ensure the total load does not exceed 2.0 kPa. Factory Engineer to review design, loads and columns stresses in area identified above. Verify in-situ concrete stresses either by cores or existing cylinder strength data for [the identified columns / cores from 4 columns]. A Detailed Engineering Assessment of Factory to be commenced immediately.	Immediate - Now
2	Priority 1 - The internal columns at ground level are close to being overstressed in Building 1.	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. The Detailed Engineering Assessment to be completed and any recommended actions carried out.	6-weeks
3	Priority 1 - The internal columns at ground level are close to being overstressed in Building 1.	Maintain and continue to implement floor loading plans.	6-months
4	Priority 1 - Uncontrolled heavy storage loading in Building 1.	Reduce stacking height to ensure total load does not exceed 2.0 kPa. A Detailed Engineering Assessment is required to review the design and loads. Factory Engineer to state the maximum weight that is allowed per square meter. Suggest that state the value on notice boards in these areas. (Loading Plans).	Immediate - Now
5	Priority 1 - Uncontrolled heavy storage loading in Building 1.	Adopt some sort of signage/staff guidance to ensure that the maximum weight of storage is not exceeded. (Loading Plans).	6-weeks
6	Priority 1 - Uncontrolled heavy storage loading in Building 1.	Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future. Maintain and implement Loading Plans.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Priority 1 - Uncontrolled heavy storage loading on cantilevered slabs in Building 1 and Building 3.	Remove heavy storage loading in the area identified above. A Detailed Engineering Assessment is required to review the design and loads. Factory Engineer to state the maximum weight that is allowed per square meter. Suggest that state the value on notice boards in these areas. (Loading Plans).	Immediate - Now
8	Priority 1 - Uncontrolled heavy storage loading on cantilevered slabs in Building 1 and Building 3.	Adopt some sort of signage/staff guidance to ensure that the maximum weight of storage is not exceeded. (Loading Plans).	6-weeks
9	Priority 1 - Uncontrolled heavy storage loading on cantilevered slabs in Building 1 and Building 3.	Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future. Maintain and implement Loading Plans.	6-months
10	Priority 2 - Cracks on beams of Building 1.	The Factory Engineer to investigate the cause of cracks by appropriate methods. The distress found is to be suitably rectified and then repaired.	6-weeks
11	Priority 2 - Inadequacies between the drawings and the actual as-built conditions.	Factory Engineer to survey the actual conditions and revise the drawings. Any results of the Detailed Engineering Assessment which affect the structure should be taken on board.	6-weeks
12	Priority 2 - Inadequacies between the drawings and the actual as-built conditions.	Carry out and complete any results of the DEA.	6-months
13	Priority 2 - Capacity check of roof slab supporting water tanks on Building 1.	Factory Engineer to review design, loads and related elements in area identified above to confirm capacity for these items. Or The items in the area identified above should be removed.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
14	Priority 2 - Stability and capacity of lightweight roofs.	Factory Engineer to review design, loads and related elements in area identified above to confirm capacity and stability for these items.	6-weeks
15	Priority 2 - Stability and capacity of steel staircases in Building 1 and Building 2.	Factory Engineer to review design, loads and related elements in area identified above to confirm capacity and stability for these items. These items should be strengthened or replaced with appropriate permanent structural elements.	6-weeks
16	Priority 2 - Movement joint to be properly established between Building 1 and Building 2.	The Factory Engineer should investigate to prove the capacity of the building in its existing state, a further building approval should be gained for the building as it exists, as altered since the original approval. Alternatively, the extension building should be separated by a non-structural joint and allowed to act as a fully structurally independent structure.	6-weeks
17	Priority 2 - Movement joint to be properly established between Building 1 and Building 2.	Do not construct any further buildings connected to the existing building without thorough structural design and full building approval.	6-months
18	Priority 2 - Overall stability systems.	A Detailed Engineering Assessment of the overall building to be carried out and in particular, stability and foundation aspects should be investigated in detail.	6-weeks
19	Priority 3 - Distress due to water ingress.	Waterproofing on the roof slab is to be applied. Moreover the roof slab drainage system should be investigated and improved.	6-months
20	Priority 3 - No parapet wall or guardrail present at top level on Building 3.	A suitable perimeter parapet wall or guardrail should be constructed along the building perimeter.	6-months
21	Priority 3 - Reinforcement left exposed at top level.	For both durability and serviceability, rust proof paint or any appropriate methods is recommended.	6-months
22	Priority 3 - No fireproofing material for structural steel elements (if required).	Fireproofing material for structural steel element is recommended as suggested in BNBC Codes. Maintain standard of quality control and protection of the fire protection.	6-months