

KDS Garment Industries Ltd. (11099)

255, Nasirabad I/A, Baizid Bostami Road, Chittagong-4211

(+ 22.392953N, 91.820686E)

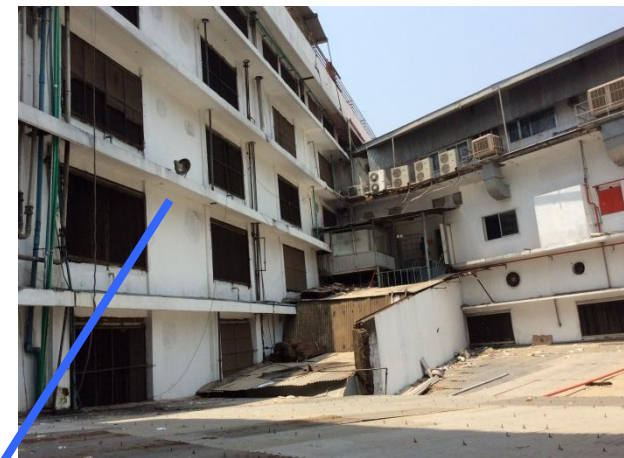
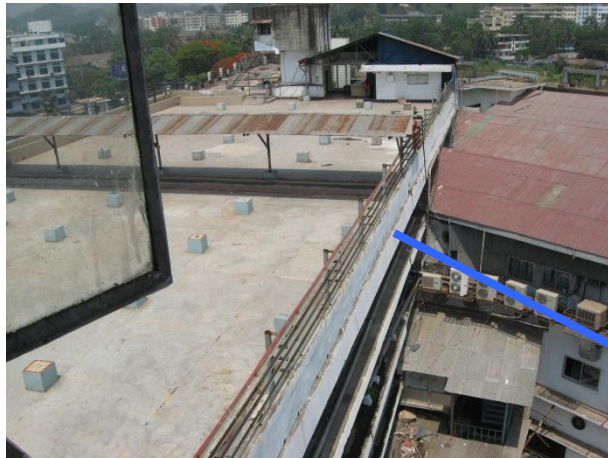
20.APRIL.2014



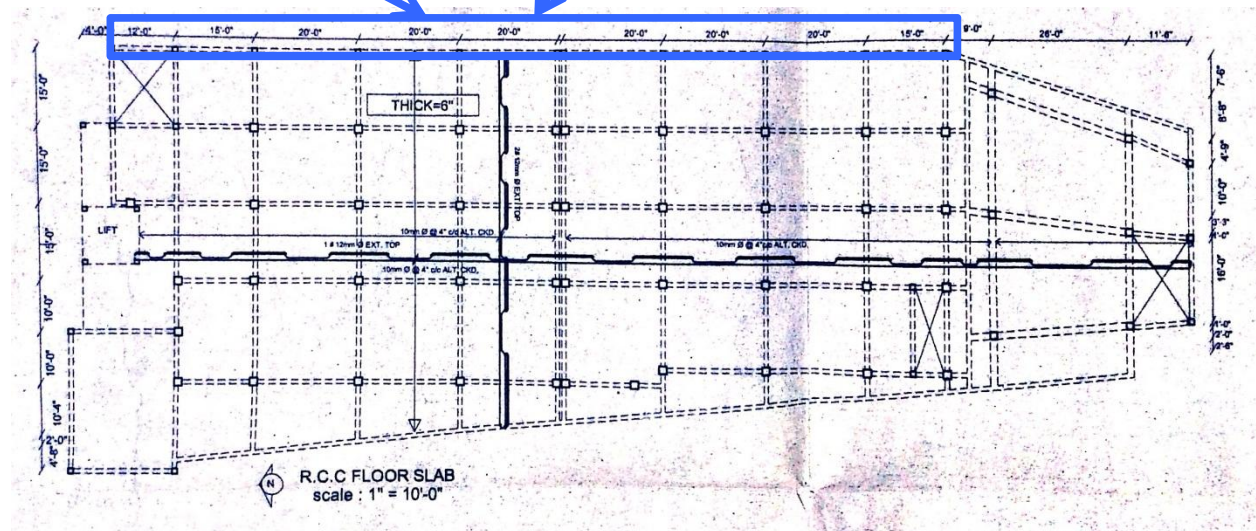
Identified Priority 1 Concerns

- The existing structural system does not match the construction drawings.
(Building 1 and Building 3).

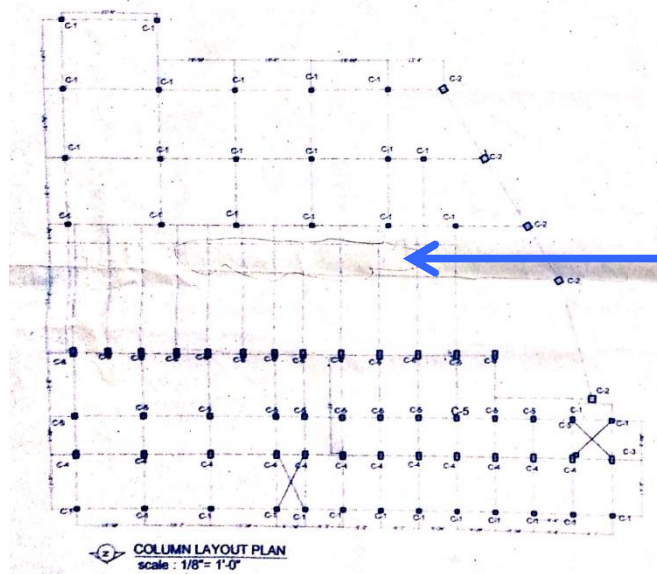
1st Priority 1 Concern



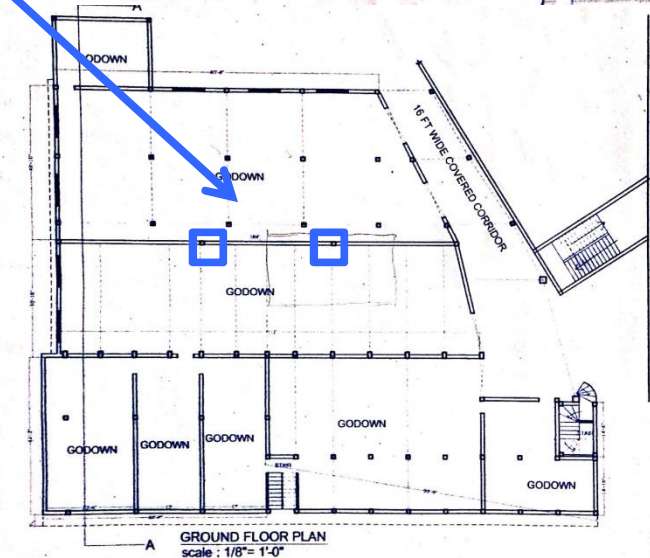
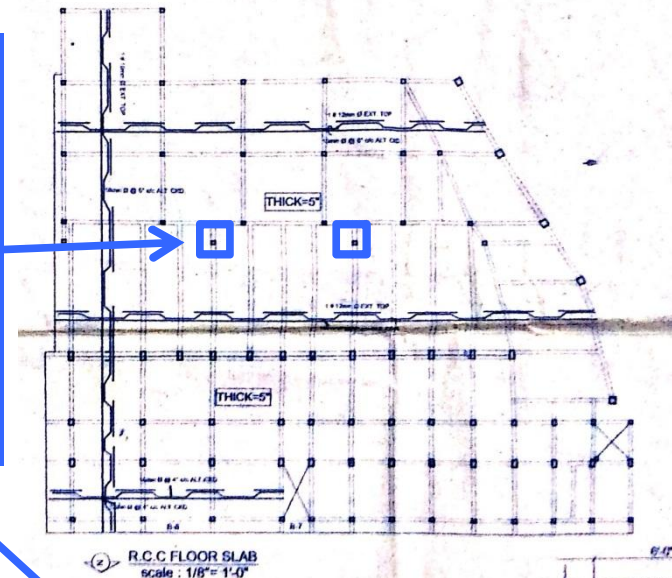
There are cantilevered slabs for rain protection that do not appear on the Building 1 drawings.



1st Priority 1 Concern



There are 2 columns that do not appear on Building 3 column layout or the foundation layout but they can be found on the slab layout and floor plan.

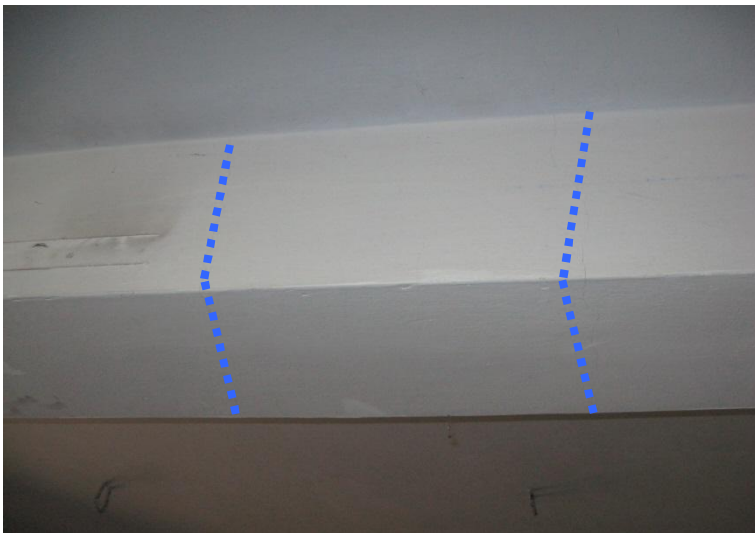
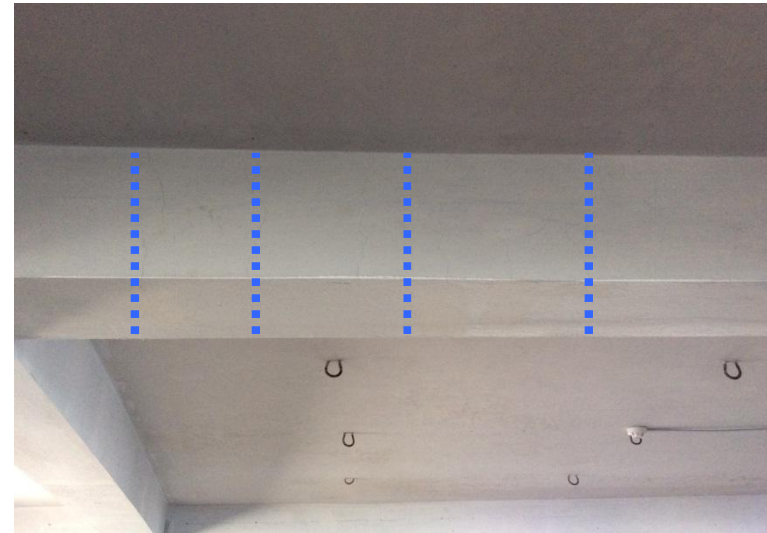


It is unclear whether the ground floor columns are in the line of wall. But columns were not found on 1st floor. Factory engineer should survey and revise the drawings.

Identified Priority 2 Concerns

- Cracks in structural elements (Building 1 and Building 2).
 - No movement joint properly established to separate each building.
 - No fireproofing material (if required)

1st Priority 2 Concern



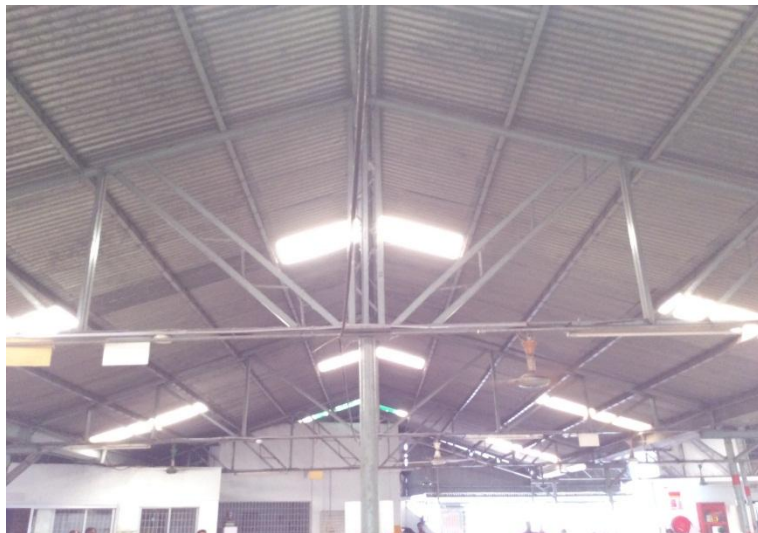
There are cracks found on the underside of beams in Building 1 and Building 2.

2nd Priority 2 Concern



There are no movement joints between Building 1 and Building 2 or between Building 1 and Building 3. Cracks were found in the floor finishes between Building 1 and Building 2.

3rd Priority 2 Concern



Structural steel elements of Building 3 and the Shed – it is not clear if fire proofing material is applied or is required.

Overall stability system / moment frame capacity



Concerns on the stability system for lateral loading and seismic loading. The façade brickwork walls lack moment capacity due to their lack of mechanical connection with the surrounding columns and beams.

We require that these items be investigated in a Detailed Engineering Assessment.

Water ingress (Building 1 & 2)



Damage due to water ingress was found on Building 1 and Building 2. Spalling of concrete and corroded rebar was found, especially on the upper levels of Building 2.



We were informed that the slab roofs had been treated with cementitious waterproofing. However, it is not clear if the system is still working.

Priority Actions

Problems Observed Summary

- ITEM 1: (Priority 1) Building 1 and Building 3: Construction documents do not match the actual built conditions**
- ITEM 2: (Priority 2) Building 1 and Building 2: Cracks on structural elements.**
- ITEM 3: (Priority 2) No movement joint properly established to separate each building.**
- ITEM 4: (Priority 2) Building 3 and Shed: No fireproofing material (if required).**
- ITEM 5: (Priority 2) Overall stability system / moment frame capacity.**
- ITEM 6: (Priority 2) Building 1 and Building 2: Evidence of water ingress.**
- ITEM 7: (Priority 3) Check for waterproofing material.**

Item 1 and actions

Building 1 and Building 3: Inconsistency in drawings and the actual built conditions.

Priority 1 (Immediate – Now)

- Factory Engineer to survey the actual conditions and revise the drawings.
- Factory Engineer to review design, loads and columns stresses to confirm suitability for loads applied.

Priority 2 (within 6 – weeks)

- Verify in-situ concrete stresses either by cores or existing cylinder strength data for affected areas.
- Detail Engineering Assessment to be completed covering these additional elements.
- Produce and actively manage a loading plan for all floor plates within the storage building giving consideration to floor and column capacities.

Priority 3 (within 6-months)

- Maintain and enforce the loading plans.

Item 2 and actions

Building 1 and Building 2: Cracks on structural elements.

Priority 1 (Immediate – Now)

- None required.

Priority 2 (within 6 – weeks)

- A Detailed Engineering Assessment of this area is to be carried out.
- The distress found is to be suitably repaired and the cause rectified.

Priority 3 (within 6-months)

- Maintain standards of quality control to ensure that loading plan is correctly followed so that problems do not arise in the future.

Item 3 and actions

No movement joint properly established to separate each building.

Priority 1 (Immediate – Now)

- None required.

Priority 2 (within 6 – weeks)

- The Factory's Building Structural Engineer should carry out a Detailed Engineering Assessment 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 existing buildings should be separated by a series of non-structural movement joints allowing each building to act independent ly.

Priority 3 (within 6-months)

- Do not construct any further buildings connected to the existing buildings without thorough structural design and full building approval.

Item 4 and actions

No fireproofing material applied for structural steel (if required).

Priority 1 (Immediate – Now)

- None required.

Priority 2 (within 6 – weeks)

- Fireproofing material for structural steel element is recommended based on Bangladeshi BNBC regulations.

Priority 3 (within 6-months)

- Maintain standard of quality control.

Item 5 and actions

Overall stability system / moment frame capacity.

Priority 1 (Immediate – Now)

- None required.

Priority 2 (within 6 – weeks)

- Request that the Detailed Engineering Assessment of overall building to be carried out and in particular, stability and foundation aspects should be investigated in detail.

Priority 3 (within 6-months)

- None required.

Item 6 and actions

Building 1 and Building 2: Evidence of water ingress.

Priority 1 (Immediate – Now)

- None required.

Priority 2 (within 6 – weeks)

- For both serviceability and durability, it's recommended to repair the distress found with suitable permanent methods.
- After repairing, appropriate waterproofing materials should be applied.

Priority 3 (within 6-months)

- Ensure that an appropriate layer of waterproofing is included on the final roof slab.

Item 7 and actions

Check for waterproofing material applied on the roof slab.

Priority 1 (Immediate – Now)

- None required.

Priority 2 (within 6 – weeks)

- None required.

Priority 3 (within 6-months)

- Engineer to inspect waterproofing material and its workability.
- Drainage system for the roof slab should be investigated and improved.