D. S. Fashion Ltd.

Mamun Nagar, Bara Vabanipur, Kasimpur, Gazipur
(23.81179, 90.25374)

10th May 2014

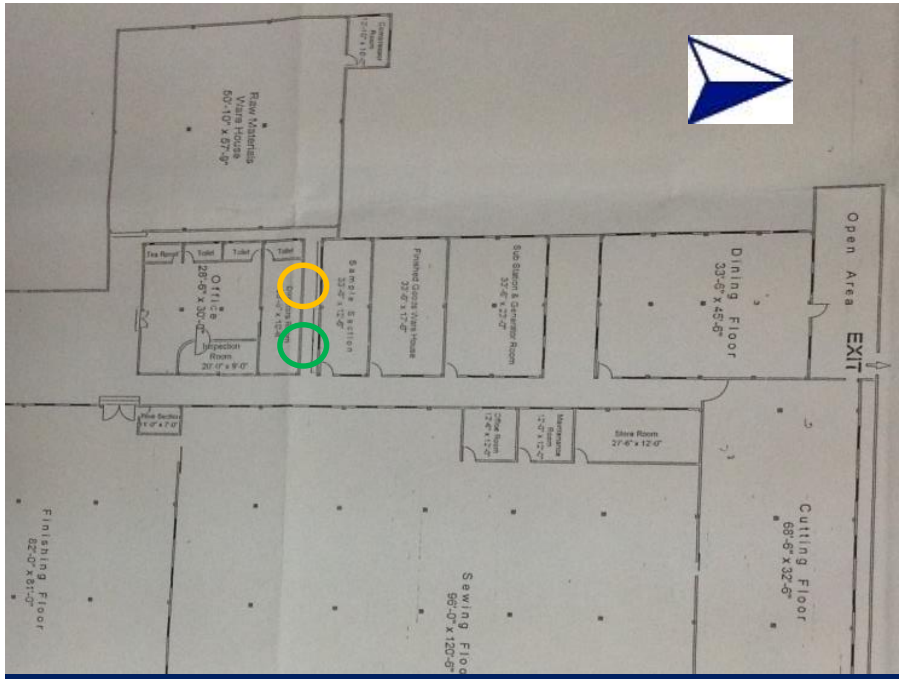
ACCORD on Fire and Building Safety in Bangladesh

ARUP

Observations

Non-engineered water tank support structure

- Support structures for two 2000-litre water tanks were observed on the eastern side of the site, between the Office and the Sample Room.
- The support structure to one tank is concrete framed.
- The other tank is supported by a non-engineered steel frame. This tank is to be emptied to reduce the load until such time as the steel-framed structure is strengthened or replaced as advised by the Building Engineer.



Layout of buildings on site

Water tank support structures

2000 litre tank supported by steel structure

2000 litre tank supported by concrete structure

Non-engineered water tank support structure

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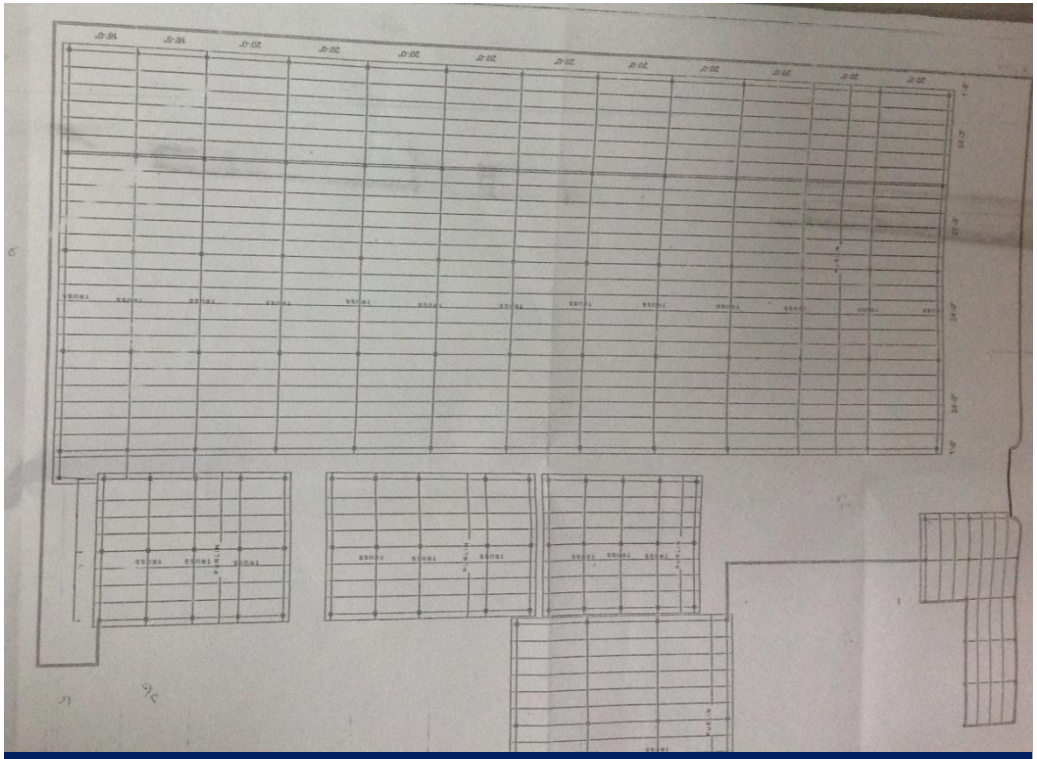
Lateral stability system unclear

- The lateral stability system to the all buildings on the site is unclear – no vertical or horizontal bracing has been provided.
- Provision for lateral stability is not highlighted in the as-built drawings.
- It is likely that the reinforced columns currently provide lateral stability through cantilever action.
- Building Engineer to carry out a lateral stability analysis of the buildings to review the design of the cantilevered columns, to assess if they can adequately resist the horizontal loads imposed
- If necessary, provide details of remedial works for the provision of vertical and horizontal bracing.



Layout of roof framing for all buildings on site

Even though suspended tile ceilings were present in the main building, the cutting room, the sample room and the offices, it was possible to see that there was no roof bracing present.

Lateral stability system unclear

Pin connection between portal frame and cantilevering RC columns – the horizontal force transferred into the top of the columns will need to be transferred into the foundation through cantilever action

No horizontal bracing provided in the roof (fabric store)

Lateral stability system unclear

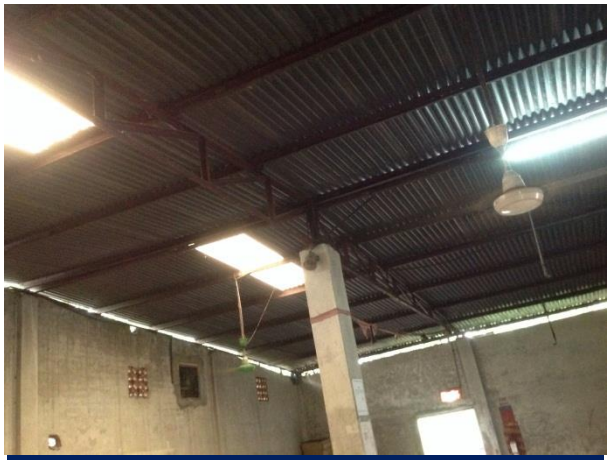
Lightweight roof structures

- All of the buildings on the site have lightweight roof structures.
- These roof structures, typically supported on concrete piers, do not appear to be engineered.
- Building Engineer to review the design of these structures, with special emphasis on connections and bracing, and to implement any upgrade works as required.

Shed 1

Shed 2

Shed 3



Shed 4

Shed 5

Shed 6

Lightweight roof structures

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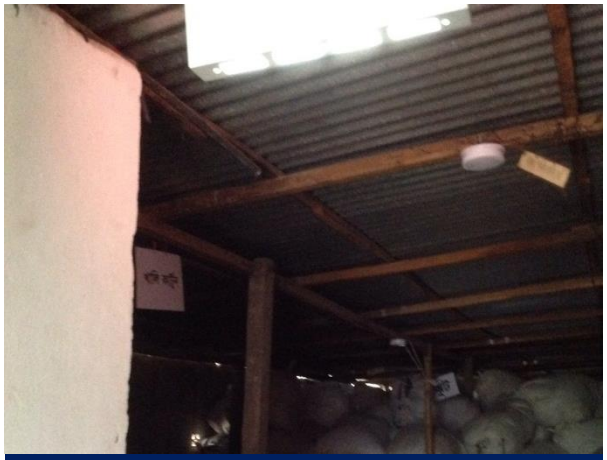
Shed 7

Shed 8



Shed 10

Open lattice to South Elevation – Shed 1

Lean-to cover to the West Elevation – Shed 1

Roof extension over generator

Lightweight roof structures

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Missing original documentation, and inaccuracies in documents provided

- Original documentation, including Structural and Architectural drawings, and soil investigation report, were not available on the day of the survey.
- The documents that were provided include a permit from the local authority, dated May 2009, and an undated permit application drawing.
- There are a number of inconsistencies between the permit drawings and what was observed during the visual inspection. These include a missing line of columns in the cutting room (Shed 2) and a re-arrangement of the building extents in the approved permit drawing. A ferro-scan of the reinforcement in the interior columns to Shed 1 indicated that there are four reinforcing bars in the columns. This is not as the permit drawing, which would indicate that there are six.
- Building Engineer to provide an updated set of as-built structural and architectural drawings for all of the buildings on the site.

Missing / Inaccurate Documentation

Priority Actions

Problems Observed

1. Non-engineered water tank support structure
2. Lateral stability system unclear
3. Lightweight roof structures
4. Missing documentation and inconsistencies in documents provided

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Non-engineered water tank support structure	Empty the water tank which is supported on the steel structure.	**Immediate - Now**
2	Non-engineered water tank support structure	Building Engineer to design and detail a new support structure or carry out appropriate strengthening works to the existing support structure to the water tank, taking into consideration all the code-defined vertical and horizontal loads imposed.	**6-weeks**
3	Lateral stability system unclear	Building Engineer to review the design of all the buildings on the site with regard to lateral stability.	**6-weeks**
4	Lateral stability system unclear	Building Engineer to assess whether the cantilever concrete columns are adequate to carry the horizontal loads	**6-weeks**
5	Lateral stability system unclear	Building Engineer to provide guidance on the requirement for horizontal bracing in the plane of the roof, so that the horizontal wind loads can be transferred to foundation level.	**6-weeks**
6	Lateral stability system unclear	Carry out any remedial works as determined by the Building Engineer.	**6-months**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Lightweight roof structures	All roof structure to be design checked to ensure adequacy for code vertical, horizontal and wind loads by the Building Engineer.	**6-weeks**
8	Lightweight roof structures	Undertake strengthening if required.	**6-months**
9	Lightweight roof structures	Building Engineer to produce appropriate documentation and as-built drawings.	**6-months**
10	Missing original documentation and inconsistencies in documents provided	Building Engineer to update the structural and architectural drawings to reflect the as-built layouts, incorporating any works carried out under Items 1 to 3 above	**6-months**