# Hydroxide Knitwear Ltd

Mouchak, Kaliakoir, Gazipur-1751, Dhaka
(+24.0223N,+90.2958E)

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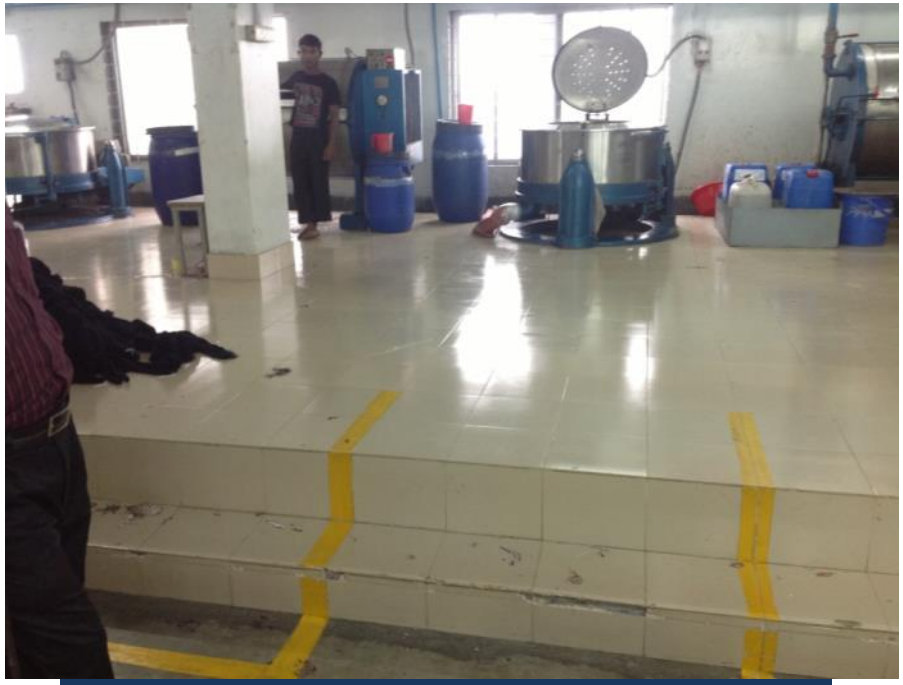
ACCORD on Fire and Building Safety in Bangladesh

ARUP

# Check on slab loads and design capacity required



400mm thk floor finish made of brick and mortar (approx. 7kpa) Exists in North-East bays on most floors

Yarn storage capable of reaching 6kpa live load. Exists in Northern bays on most floors

Imposed load capacity of slabs is not indicated on structural drawings. Engineer to check actual loads are less than design load capacity of columns and slabs throughout and propose load reductions if required.

**Check on slab loads and design capacity required**

# New stair to be structurally connected to existing building

A new exterior stair currently under construction.

It does not appear to be structurally connected to the existing building, rather it is just built along side. This will create a tall, flexible structure which could move separately from the main building, causing stability and pounding issues.

The engineer should design and implement a positive structural connection between the stair and the main building at each floor slab

**New stair structural connection required**

# Check on roof structure from localised high loading from water tanks required


Large water tanks mounted on roof slab, some over columns, some between columns.

Engineer to check that slab can carry the load, or re-position tanks, on new beams if required.

# Loading



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# Non-engineered outbuildings require structural refurbishment

Non-engineered lightweight canteen building unlikely to be strong enough for severe wind events or roof access loading. An Engineer should design a refurbishment of the existing structure, or replacement with an engineered structure

Steel storage structure supported on columns with low lateral stiffness. The structure risks falling over in wind or under heavy storage loads. An Engineer should design a refurbishment of the structure including a lateral bracing system, or replacement with an engineered structure

## Non-engineered outbuildings

# Priority Actions

# Problems Observed

1. Verify column stresses and in-situ columns strengths as internal column stresses appear high

2. Check on slab loads and design capacity required in areas of heavy loading
3. The engineer should design and implement a positive structural connection between the stair and the main building at each floor slab

4. Check required on roof structure from localised high loading from water tanks
5. Non-engineered outbuildings require structural refurbishment

| Item No. | Observation | Recommended Action Plan | Recommended Timeline |
|---|---|---|---|
| 1 | Verify concrete stresses in internal columns at Ground Floor which appear to be high | Factory Engineer to review design, loads and columns stresses for building | **6-weeks** |
| 2 | Verify concrete stresses in internal columns at Ground Floor which appear to be high | Verify insitu concrete stresses either by cores or existing cylinder strength from a minimum of 4 concrete columns | **6-weeks** |
| 3 | Verify concrete stresses in internal columns at Ground Floor which appear to be high | Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. | **6-months** |
| 4 | Check on slab loads and design capacity required | Vacate, relocate operations | **6-weeks** |
| 5 | Check on slab loads and design capacity required | Addition structures should be Designed and upgraded to support code vertical and wind loads by the building Engineer, or they should be vacated and removed. | **6-months** |
| 6 | The engineer should design and implement a positive structural connection between the stair and the main building at each floor slab | The engineer should design and implement a positive structural connection between the stair and the main building at each floor slab | **6-weeks** |

| Item No. | Observation | Recommended Action Plan | Recommended Timeline |
|---|---|---|---|
| 7 | Check on roof structure from localised high loading from water tanks required | Engineer to verify that slab has sufficient capacity to support fully filled water tanks plus concrete plinth | **6-months** |
| 8 | Non-engineered outbuildings require structural refurbishment | An Engineer should design a refurbishment of the existing structure, or replacement with an engineered structure (Canteen, elevated storage structure) | **6-months** |