

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: B.H.I.S. Fashions Ltd.
Address of the Factory	: Hossain Market (2 nd & 3 rd Floor) 671, Dattapara, Tongi, Gazipur, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: ACCORD
Date of Structural Inspection	: 1 st June, 2014
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 13 th April, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 13 th April, 2015
BGMEA Membership No.	: 4788

BASIC INFORMATION:

The assessed building was six storied RCC building having beam column framing system. The following information was noted:

i.	Building Usage Type	: Garment factory.
ii.	Structural System	: RCC beam column frame structure.
iii.	Floor System	: RCC beam slab frame system.
iv.	Floor Area	: Total floor area is 123,000 sft. approx.
v.	No. of Stories	: Six Storey
vi.	Construction Year	: Unknown. (Information not available in ACCORDs report)
vii.	Foundation Type	: Unknown. (Information not available in ACCORDs report)
viii.	Design Drawings	: Available.
ix.	Soil Investigation Report	: Unknown. (Information not available in ACCORDs report)
x.	Construction Materials	: Brick aggregate (Identified by removing plaster)
xi.	Generator	: Unknown. (Information not available in ACCORDs report)

RECOMMENDATIONS FOR CORRECTIVE ACTION:

The recommendations of corrective action for both Structural and Fire & Electrical Safety comprises in Short Term, Mid Term and Long Term basis.

The recommendations for **Structural Safety** corrective action are:

Short Term (Immediate) :

- Maintain current use of the floors and don't change use or increase occupation, either of which could increase loading.
- Factory Engineer to review design, loads and column stresses in all columns in the building.
- Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns. Verify reinforcement and grade of steel reinforcement used.
- A Detail Engineering Assessment of the entire building to be commenced, see attached Scope.
- Maintain current use of the floors and don't change use or increase occupation, either of which could increase loading.

Mid Term (6-weeks) :

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- Detail Engineering Assessment for the entire building to be completed.
- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
- Factory Engineer to review design, loads and column stresses in area identified above.
- Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns. Verify reinforcement and grade of steel reinforcement used.
- Building Engineer to assess capacity of purlins under vertical and wind loads and strengthen as appropriate

Long Term (6-months) :

- Continue to implement load plan.
- The joint of steel structure needs to be checked by building engineer and the bracing system is required to ensure the stability of the structure.
- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
- Steel roofs/structures should be designed and upgraded to support code vertical and wind loads by the building Engineer, or they should be vacated and removed.
- Building engineer to carry out a structural assessment of pipe supports and strengthen as appropriate.
- Building Owner to engage an Engineer to carry out As Built survey of building and produce accurate complete as-built drawings.

The recommendations for **Fire & Electrical Safety** corrective action are:

(A): Recommendations for Fire Safety corrective actions:

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<ul style="list-style-type: none"> • None.
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity</i></p>	<ul style="list-style-type: none"> • Factory need to have proper testing plan & record of fire safety equipment. • Factory needs to have sufficient number & width of aisles (0.9 m) at every floor. • Lights in storage area needed to be installed with protective covers and conduits. • Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct shall be minimum 2.9 m and when used as a storage facility there shall be a minimum clearance of one third the floor height from the ceiling to the top of the storage stack.

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<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • Factory needs to have as built drawing with proper dimensions showing all the means of escape. • All the exit doors need to be replaced by side swinging so that un-lockable fire rated doors can be opened easily in the direction of evacuation without the use of a key. • Provide handrail on both sides of stairways.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • Fire exit route from the stair-2, 3 and 4 needs to be fire separated by two hours rated construction & 1.5 hours fire rated opening with the others occupancies till to reach the area of refuge. • Childcare room is needed to be separated with 3 hour fire rated construction with 3 hour fire rated door. • Storage area need to be protected with 2 hours rated construction & 1.5 hours rated opening or doors • All the exits connecting to the staircases need to be protected with fire and smoke resistant enclosures and opening (2 hour rated enclosure and 1.5 hour rated door) and provide a protected route from all through the stairway to the final exits. • Install fire lift with backup power including have 1 hour fire rated & auto closing fire door in 2 hours fire rated lift core with backup power & having minimum capacity of 545 kgs • The factory need to install manually operated electrical fire alarm system and automatic fire alarm system with single or multiple call boxes on all occupied floors, including other tenanted floors of the building. • Need to Install 100 mm diameter Standpipe and hose system in the factory building. • Install 1 riser per 1000 m² of floor area and 38 mm diameter of fabric hoses with variable nozzle need to be installed. • Install standard standpipe and hose system as well as dedicated fire pump system to ensure required hose pressure at the highest and most remote part of the building. • Factory needs to install Siamese connection after installation of stand pipe system, hose system and fire pump. • Factory needs to install dedicated fire pump with sufficient capacity and backup power.

(B): Recommendations for Electrical Safety corrective actions:

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<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<ul style="list-style-type: none"> • None.
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity</i></p>	<ul style="list-style-type: none"> • None.
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • Ensure graded rubber mats are provided in front of all distribution boards. • Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of overheating { ambient+(20°C-40°C)} and take proper action.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • Ensure the substation room has adequate fire separation from the production area. • Ensure all high tension cables are laid following standard cable laying techniques. • Ensure the generator room has adequate fire separation from the production area. • Ensure each distribution board is provided with a circuit list and means of identification is provided as per list. • Install lightning protection system on the building.