

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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Name of the Factory	: PABNA KNIT DESIGN LTD.
Address of the Factory	: Plot #2, Road#4, Block#8, Section#02, Mirpur, Dhaka, Bangladesh
Dhaka Present Status of the Factory	: <b>Not in Operation</b>
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 16 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 20 April, 2014

**Basic Information:** The present garment factory is a commercial building with beam-column frame system. The following general information was noted:

i.	Building Usage Type	: Garment factory
ii.	Structural System	: R.C. Beam and column frame with 2-way spanning solid slabs at basement to roof level
iii.	Floor System	: Beam slab
iv.	Floor Area	: Each floor area of the building is 5000sqft
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 1990
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Signed in 1991 by RAJUK)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Building Courtyard

**Recommendations for Corrective Action:** The recommendations of corrective action for both Structural and Fire & Electrical Safety are as follows:

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

Immediate (Now):

1. Install temporary vertical propping (Building Engineer to design) to the west (rear) cantilever beams from yard level to underside of first floor.
2. Loads to be reduced in the areas highlighted on page 5 pending verification of column capacity by the Building Engineer.
3. A Detail Engineering Assessment of the Factory Building to be commenced, see attached Scope.

Mid Term (Within 6 Weeks):

1. Detail Engineering Assessment to be completed.
2. Produce and actively manage a loading plan for all floor plates within the Building giving consideration to floor capacity and column capacity.
3. Building Engineer to investigate the cause of the cracking and the reason for the repairs.
4. Building Engineer to provide detailed calculations for the temporary roof structures and the associated light steel roof, as part of Detail Engineering Assessment. These should confirm their ability to withstand all wind loading pressure, suctions and uplift forces.

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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5. Building Engineer to carry out a design check on the spiral stairs and to extend it all the way to ground. Design of handrails should also be reviewed.
6. Building Engineer to design and detail appropriate edge protection.

### Long Term (Within 6 Months):

1. Actions identified in the Detail Engineering Assessment to be implemented.
2. Continue to implement loading plan.
3. Carry out any remedial or other works as necessary.
4. Implement findings from Detail Engineering Assessment.
5. Implement findings from design check.
6. Ensure appropriate edge protection is put in place.

### The recommendations for Fire Safety corrective actions are:

#### Immediate (Within 1 month):

1. Remove locking features from all egress doors / gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
2. Keep egress paths and stairs clear of storage.
3. Remove all storage from exit stairs and egress paths.
4. Replace all gates / sliding doors along the means of egress with side-hinged, swinging egress doors. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
5. Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole building evacuation upon any manual fire alarm station activation.
6. Provide exit signs above all exits to the exterior and all doors to the exit stairs.

#### Short Term (Within 3 Months):

1. Separate the boiler & transformer by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
2. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction. Where separate storage rooms are not feasible, provide defined storage areas and limit the storage arrangement as follows:

-Maximum height of 2.4m and maximum area of 23m<sup>2</sup>

-If sprinkler protected: maximum height of 3.66m and maximum area of 93m<sup>2</sup>

Separate areas of unenclosed combustible storage by a minimum clear distance of 3m.

3. Provide minimum 1.5-hr fire rated doors and seal all unprotected openings to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing and positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic closing devices tied to the fire alarm system.
4. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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5. Provide minimum aisle widths of 36-in.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
7. Test the emergency lighting system on each floor and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.

### Mid Term (within 6 Months):

1. Provide additional notification appliances such that the fire alarm system is audible throughout the building in accordance with NFPA 72.
2. Insert automatic smoke detectors tied into the fire alarm system. Configure the fire alarm system to initiate occupant notification upon activation of any two smoke detectors in addition to the manual fire alarm stations.

### Long Term (More than 6 months):

1. Replace the fire alarm system with a new, listed addressable fire alarm system in accordance with NFPA 72.

### **The recommendations for Electrical Safety corrective actions are:**

#### Immediate (Within 1 month):

1. Seal the penetrations using appropriate fire rated material. Ensure the cables' insulation is safe from damage by the sharp edges of concrete.
2. Shutdown the transformer and clean all the components of the room. Establish a routine maintenance program to ensure the room is clean all the time.
3. Shutdown the transformer and replace the silica gel. Establish a routine inspection program and include transformer as a part of it.
4. Shutdown the transformer and fill the conservator tank up to the required level. Establish a routine inspection program and include transformer as a part of it.
5. Provide a cable tray or ladder made of noncombustible material preferably metal to support and protect the cables. Ensure the cables are not in touch water for long time.
6. Remove all the materials not related to generator from generator room and ensure no combustible material is stored inside the generator.
7. Remove all the combustible material and shoes kept in front of the panel. Maintain minimum one (1) meter clearance in front of the panel for easy maintenance and inspections.
8. Remove all the combustible material kept in front of the panel. Maintain minimum one (1) meter clearance in front of the panel for easy maintenance and inspections.
9. Disconnect the supply to duct and clean all internal cables. Provide cover made of noncombustible material preferably metal to prevent ingress of dust, debris and lint.
10. Cable must be covered throughout its length and garbage materials must be removed.
11. Provide proper earth bond to each panel. Flexible braid cable can be used longer lasting.

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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12. Switch off the panel main breaker and clean all the interior components of the distribution board. Seal all the opening using noncombustible material. Use cable glands at the entry/exit of the cables. Establish a routine cleaning program for all electrical panels.

### Short Term (Within 3 Months):

1. Provide cable tray made of noncombustible material preferably metal to support and protect the cables.
2. Install the protection devices inside a metallic enclosure.
3. Disconnect the supply to the duct and replace the cover with some noncombustible material preferably metal.

### Mid Term (Within 6 months):

1. Provide minimum 1 meter clearance in front of the distribution board for easy maintenance and inspection. Relocate the panels if necessary.
2. Relocate the generator to provide proper working space around it. Follow Accord standard to determine the size of the generator room according to the capacity.

### Long Term (More than 6 months):

1. Disconnect the supply to the duct and replace the wooden duct with ducts made of noncombustible material preferably metal. Provide covers on the duct to prevent ingress of dust and debris.
2. Disconnect the electric supply and replace the wooden board with a metallic or PVC board.