

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

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Name of the Factory	: COTTON CLUB (BD) L TD.
Address of the Factory	: South Jarun, Kashimpur, Gazipur, Bangladesh
Dhaka Present Status of the Factory	: <b>Under Operation</b>
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 5 October, 2013
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 27 March, 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 a 2-way solid slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 8 storied
vi.	Construction Year	: 2004
vii.	Foundation Type	: Piled foundations
viii.	Design Drawings	: Available
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Stone chip aggregated
xi.	Generator	: Building 6 North of Building 1

**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): NA

Mid Term (Within 6 Weeks):

1. Reduce stack heights to 1.5m.
2. Ensure that stacks of materials within the main factory building and fabric store are separated by a 0.5m gap all around.
3. Break out small area of cracked screed to check if cracks are also in structural slab. If cracks are in slab consult the Factory structural engineer for required action. The engineer is undertake this action giving consideration to Item 1 actions.
4. Engineer to monitor cracking to ensure it does not worsen.

Long Term (Within 6 Months):

1. Building Engineer to create controlled loading plans for all floors designating where storage can be placed and cannot be placed taking consideration of capacity of double height column at ground level. Engineer to take into consideration the existing hairline cracking noted in item 2 & 3.
2. Engineer to consider cracking when undertaking action for item 1.
3. Engineer to review penetrations made as part of recent electrical upgrade to ensure structural beams/ slabs have not been affected.

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### **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. Remove all storage from exit stairs and egress paths.
3. 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.

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

1. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
2. Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor level. Seal all penetrations and openings in floor/ceiling assemblies to maintain the fire separation.
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. 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.

5. Separate the hazardous materials / flammable liquid storage room by a minimum 2hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
6. Modify the egress door to swing in the direction of egress travel.
7. Reduce occupant load to not more than available exit capacity immediately. If the company would like to continue to have that many workers on those floors they will need to provide additional exits.
8. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.

#### 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.

#### 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.
2. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.

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

#### Immediate (Within 1 month):

1. Establish a routine cleaning program to keep neat and clean the transformer room. Shut the power of the transformer and clean the exterior of the transformer at scheduled period.
2. Install cable duct(installed on floor, at safe location) to protect the generator output cables and provide covers made of noncombustible material preferably metal to protect the cables' insulation from any physical damage as well as prevent the ingress of debris, dust and lint.
3. Provide phase separators between poles of MCCB made of noncombustible materials preferably use rubber having enough dielectric strength to insulate phases from each other.
4. Install cable covered tray/steel pipe clamped on floor (walk-way) to provide mechanical support to cables laid on the floor. Flexible conduit must not be used for long point wiring (except for special wirings).
5. Provide phase separators between poles of MCCB made of noncombustible materials preferably use rubber having enough dielectric strength to insulate phases from each other.

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

1. Cable shall be arranged in a cable tray installed inside the trench. Metallic cover (checkered plate) should be provided on cable trench to prevent the damage of cable insulation or falling of operator.
2. Flexible PVC conduits on walls and column must be additionally protected and supported on trays or risers.
3. Install cable tray with metallic cover to provide mechanical support to cables laid haphazardly on the floor to protect the cable from any physical damage due to the stepping of occupant onto these cables.
4. Cables passing through permanent walls must be protected in steel/PVC pipes and remaining holes around the pipe must be sealed. Seal all the penetrations using appropriate fire rated material and ensure the cable insulation does not get damaged during sealing work.
5. Earthing bus bar must be encased inside a metallic enclosure.
6. Excess length of cables must be trimmed and install cable tray with metallic cover to provide mechanical support to cables laid haphazardly on the floor to protect the cable from any physical damage due to the stepping of occupant onto these cables.
7. Cables/wirings passing through permanent wall must be protected continuous cable duct and remaining gaps must be sealed with fire resistant materials.

#### Mid Term (Within 6 months):

1. Transformer must be separated from panels by Construct a wall up to the ceiling keeping the provisions for installing necessary ventilation fan at suitable location. Keep the provision for appropriate door while constructing the wall. Assign a qualified engineer to design a required transformer room according to BNBC, Section-2.6.3.

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