

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

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Name of the Factory	: DELUXE FASHIONS LIMITED.
Address of the Factory	: 179/180, Baizid Bostami Road, Nasirabad Industrial Area, Chittagong, 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	: 18 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 5 June, 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. beams and column frame with 2-way spanning solid slabs
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 7 storied
vi.	Construction Year	: 2009
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Approved by the Chittagong Cantonment Board in June 2006)
ix.	Soil investigation Report	: Available (Dated April, 2004)
x.	Construction Materials	: Stone chip aggregated
xi.	Generator	: Ground floor in a separate shed south side of the compound

**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. Factory Engineer to review design, loads and columns stresses in area identified above.
2. Verify insitu concrete strengths (using min. 4 no. 100mm dia. Cores) and existing reinforcement for all columns.
3. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
4. Steel roof to Dining Area and lean to structure at roof level, design should be checked by the Building Engineer to confirm that it includes an appropriate lateral stability system and, if required, the steel frame should be upgraded to support code vertical and wind loads.
5. Building Engineer to survey as constructed building. Updated drawings to be prepared showing the correct as constructed layout.

Long Term (Within 6 Months):

1. Continue to implement load management plan.

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2. Prepare/update calculations showing the structural adequacy of the building structure taking into account the factory design imposed loading and the as built structure.
3. Prepare controlled loading plans for all floors designating where storage can be placed and cannot be placed.
4. Building Engineer to review column design and potential for vehicle impact to columns adjacent to material delivery area. If appropriate impact protection to be provided.

### **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. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

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

1. Separate the boiler, generator and transformer room 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.
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 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.
5. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
6. Provide additional means of egress.
7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
8. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.
9. 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 exits.
2. Provide additional notification appliances such that the fire alarm system is audible throughout the building in accordance with NFPA 72.

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Long Term (More than 6 months): NA

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

Immediate (Within 1 month):

1. The earth strip provided inside panel must be replaced with larger cross section and longer strip to enable distribution of all earth connections.
2. Cables connecting to MCCB inside panel must be connected firmly with cable lugs.
3. Install separators between different phases of MCCB. Existing phase separators fabricated from insulating materials may not provide the required insulating properties for the type of MCCB installed.
4. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.

Short Term (Within 3 Months):

1. MCCB (electrical devices) mounted on the wall must be installed with protective enclosures.
2. Cables on floor may be supported on trays installed at safe locations.
3. Existing panels may be rearranged to provide adequate working space, especially when the panels are open.
4. Cables entering through panel top cover must be supported on ladders/ cable trays near panel to reduce stress on the cable glands.
5. Multiple cables connecting at a MCCB terminal must be disconnected. Existing multiple circuits may be distributed through bus bars.
6. Cables passing through permanent walls must be protected with rigid conduits/pipes and supported near entry point.
7. Cables contact with the checkered plate must be avoided or else the cables must be laid within an enclosed rigid tray.
8. Cables in the generator room must be supported using a rigid tray/riser.
9. The transformers must be enclosed with a rigid electrical panel.
10. Cables extended from BBT breaker to distribution boards various floors must be supported on trays/risers.
11. Existing BBT with ends open must be closed with end cover. Ends may be sealed to prevent ingress of lint and duct.
12. The BBT should not be used for supporting the flexible PVC conduit.

Mid Term (Within 6 months):

1. Transformer may be separated from panels by constructing barrier walls.
2. HT cable must be supported in cable trays or laid in trenches. The cable must be protected against physical injury.

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3. Cable must be supported at the panel base plate and terminated without stressing at the termination point.

Long Term (More than 6 months): NA