

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

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Name of the Factory	: <b>BLITHE FASHION LTD.</b>
Address of the Factory	: Horinachala, KashimpurRoad, Konabari, Gazipur
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	: 3 May, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 20 May, 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	: RC beam & column frame system with a 2-way slab
iii. Floor System	: Beam slab
iv. Floor Area	: The factory has total floor area (G+6) of 11430.44sqft
v. No. of Stories	: 7 storied
vi. Construction Year	: 2011
vii. Foundation Type	: Unavailable
viii. Design Drawings	: Available (Stamped by Gazipur Local Authority between December 2012 and January 2013)
ix. Soil investigation Report	: Available (Dated July 2010)
x. Construction Materials	: Mixture of brick & stone aggregated
xi. Generator	: Southeast corner ground floor

**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. Maintain current use of the floors ensure live loading is controlled at a limit of 2kN/m<sup>2</sup> and that storage areas as existing are controlled to 3kN/m<sup>2</sup>, pending Engineering review.
2. Factory Engineer to review design, loads and columns stresses in all columns.
3. Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from min. 4 columns.
4. Control loading as indicated in Item 1 above.

Mid Term (Within 6 Weeks):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Results of Column loading and capacity review to be issued for review.

Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Factory Engineer to verify dimensions noted above and update drawings as required.

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

Immediate (Within 1 month):

1. Remove all storage from exit stairs and egress paths.
2. 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.
3. 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.
4. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.
5. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Short Term (Within 3 Months):

1. Separate the hazardous materials storage room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
2. Separate the boiler, generator room by a minimum 2-hr fire rated construction. Seal and/or protected all openings to maintain the required fire separations
3. 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 combustibile storage by a minimum clear distance of 3m.
4. Provide minimum aisle widths of 36-in.
5. Inspection, testing, and maintenance for the fire alarm system it was not in accordance with NFPA 72.
6. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.
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): NA

Long Term (More than 6 months):

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

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

Immediate (Within 1 month):

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1. Phase barriers made of non-combustible insulating material preferably rubber between different phases (above 230V) must be installed to prevent flashover.

### Short Term (Within 3 Months):

1. Provide cable tray/channel made of noncombustible material preferably steel or PVC pipe to support the cables instead of flexible pipe in this case. If the use of flexible PVC conduit is required than use industrial grade flexible cable.
2. Provide steel pipe for supporting the service line. Ensure the insulation of the cable does not get damage during installation.
3. Provide steel pipe for supporting the service line. Ensure the insulation of the cable does not get damage during installation. Seal the remaining penetrations by fire rated material.
4. Provide cable gland at the cable entry of the panel. Ensure the gland size is same as the cable and if any addition gap remains, seal using noncombustible material preferably steel sheet.
5. Disconnect the panel from electrical system and rearrange all the wirings inside the panel. While rewiring ensure the cables are not touched to the bus bar organized inside duct if required.
6. Disconnect (switch off) the panel from electric supply and rearrange the panel wiring. Ensure the cables do not get touched with the bus bar. Duct can be used for organizing the cables.
7. Remove multiple cables terminating at a terminal in bus bars and terminate single cable at a single point of bus bar. Use pin type bus bar for connecting multiple circuit breaker if the main bus bar does not have enough space. Confirm the capacity of the bus bar does not get overloaded.
8. All panels must be connected to earth at least at two points for guaranteed earth connection. All metal parts of electrical appliances and devices must be connected to earth. Panel doors and other metal parts used must be connected with earth bond.
9. Provide earth connection to the panel doors and other metal parts. Braid cable can be used for making door earth connection.
10. Install a cable tray made of non-combustible material to terminate the generator output cables. Ensure the tray is covered and prevents dust, debris and lint on the cables.
11. Install an over current protection device as main circuit breaker and ensure the breaker rating lower than the main cable's current carrying capacity.
12. Provide an acid proof battery stand for holding the batteries and ensure every battery has sufficient space around it for easy maintenance and periodic inspection.
13. Disconnect the electric supply to the duct and clean all the cables and other components of the duct. Provide cover made of non-combustible material preferably metallic sheet on the duct to prevent ingress of dust and lint.
14. Flexible PVC conduit wiring must be additionally supported on cable tray and risers.
15. Cables in boiler room must be supported and protected. Cables on concrete floors near entrance may be placed such that it will not obstruct the exit/entrance.
16. Disconnect the supply and rearrange the wirings and use strip connector for making joints between cables. Provide junction box for the joint so that dust cannot get into the joint.

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17. Provide PVC pipe for supporting cables. If the cable has to be on the floor than use foot grade PVC pipe for supporting the cables. Ensure the penetrations are sealed by fire rated material.
18. Provide cable tray made of non-combustible material for routing cables from one place to another. Put the circuit breaker inside a metal enclosed panel.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA