

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Yagi Bangladesh Garments Ltd.
Address of the Factory	: Sazed Tower, North Baron, Savar, Dhaka.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 11th June, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 11th June, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 11th June, 2015
BGMEA Membership No.	: 5268

BASIC INFORMATION:

The assessed factory is an 8- storey RCC factory building with beam column frame structural system. The following information was noted:

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| i. Building Usage Type | : Garment factory |
| ii. Structural System | : R.C.C. Beam Column Frame. |
| iii. Floor System | : Beam Slab. |
| iv. Floor Area | : Total floor area is 1, 12,000 sq. ft. approx. |
| v. No. of Stories | : 8 storey. |
| vi. Construction Year | : 2010 |
| vii. Foundation Type | : Shallow foundation (spread footing). |
| viii. Design Drawings | : Available (Approval for an 8-Sorey commercial building from Yiarpur Union Parishad on 18th August, 2007). |
| ix. Soil Investigation Report | : Available. |
| x. Construction Materials | : Stone Aggregated |
| xi. Generator | : Ground floor. |

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) : None.

Mid Term (6-weeks) :

- Factory Engineer to review design, loads and columns stresses in area identified above.
- Verify in-situ concrete stresses by 100mm dia. core for E4 column.

Long Term (6-months) :

- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

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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>	<p>N/A</p>
<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>	<p>N/A</p>
<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"> • Replace all existing exit doors on evacuation routes, exit doors with side hinged type door, which swing outward and in the direction of travel. Swinging of the door should not constrict the width of the corridor / passage below 0.9 meter. • Remove all locking device from all egress door. All exit doors should be open-able from the side they serve without the use of a key. • Provide handrails on both side of each stairway with height of 0.9m measured from the nose of stair to the top of the handrail. • Doors in stair should be outward opening, side-swing, self-closing, non-lockable 2 hours fire rated self-closing door in all stair way encloses. • Prepare design for installation of fire rating smoke proof enclosure. 2 hours fire rating doors for exit should not be less than that of 4 hours fire resistance rating of the walls of the smoke proof fire rated entry lobby at all floor with other tenants. • Provide 1.5 hrs fire rated door at finishing section for stairway smooth evacuation. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor boiler, generator & substation room, which located at the adjacent to west & south side final exit. • Prepare proper plan and design for 1.5 hrs fire rated door for storage area. • Prepare proper design and plan for dedicated fire pump with alternate backup power supply. • Prepare proper design and plan for fire lifts equipped with approved intercommunication (including two way voice communications) with the fire command station or control room on the ground floor lobby of the building.

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<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"> • Install smoke proof fire rated entry lobby at emergency stairways to separate from the area of incidence. • Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor boiler, generator & substation room, which located at the adjacent to west & south side final exit. • Provide 1.5 hrs fire rated door for storage area. • Install dedicated fire pump with alternate backup power supply. • Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. • Install fire lifts equipped with approved intercommunication (including two way voice communications) with the fire command station or control room on the ground floor lobby of the building.
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(B): Recommendations for Electrical 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>	<p>None.</p>
<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"> • All strands cables at exposed ends should be properly soldered / crimped and insulated. • Relocate switchboards away from gas stoves / sinks / washing area / laundry (> 2.5 m). • Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground.
<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"> • Refill the silica gel and breather oil cup. Ensure that accessories of transformers like breathers and silica gel must be in order at substation. • 1. Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the sign. 2. The source of illumination should be providing not less than 50 lux. •

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	<ol style="list-style-type: none"> 1. Remove all the inflammable materials from surrounding of electrical circuitry at SDBs. 2. Ensure that all electric circuitry clean of inflammable materials. 3. Conduct periodic maintenance and maintain the records. <ul style="list-style-type: none"> • Provide cable connections with properly soldered / welded lugs at (MDB/SDB)'s. Ensure that all the electrical connections are properly secured with lugs. • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • Avoid bunch of cable at bus bar terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards. • Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. • Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box. • Provide separate earthing connection to electrical equipment. Ensure that earth potential provided for all parts of equipment / installation (other than live parts) and that continuous earth connection is provided back to the main intake supply earth. • Provide adequate earthing to body and doors to all LT/MDBs / DBs. Ensure that all electrical panels provided with proper and separate earth potential.
<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"> • <ol style="list-style-type: none"> 1. Provide updated SLD matching the existing installation at the factory. 2. SLD to indicate exact positions of all points of switch boxes and other outlets. 3. SLD to be approved by the engineer-in-charge. • <ol style="list-style-type: none"> 1. Provide updated Electrical layout drawing prepared

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	<p>after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc.</p> <p>2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation.</p> <p>3. As built drawing to be approved by the engineer-in-charge.</p> <ul style="list-style-type: none">• Provide adequate clearance in all sides of main HT/LT panel boards/transformer for easy maintenance.• Area of substation / transformer to meet requirements of Table 4.3 of RMG Guideline; the area should be 45m², or relocate the substation/ transformer room.• Provide and maintain proper clearance in all sides of generator for ease of maintenance.• Provide calibrated Ammeters and Voltmeters at MDBs.• Provide and maintain easy access and proper height of switchboard / panel boards (< 2m from floor level).• Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted).• Seal the cable entry-exit points of (LT/MDB/DB/SDB)'s with non-flammable materials. In addition:<ol style="list-style-type: none">1. Ensure that HT / LT panels / Switchgears to be vermin / damp proof.2. Ensure all unused holes / openings in DBs to be blocked properly.•<ol style="list-style-type: none">1. Provide the ECC to meet minimum cross-sectional area as per table 4.5.2. Ensure that connections between conductors / equipment provided to durable electrical continuity and adequate mechanical strength and protection.3. The continuous earth connection is provided back to the main intake supply earth.
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