

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: South Bengal Apparels & Bartick Boutique Ltd.
Address of the Factory	: Sadapur, Puranbari, Savar, Dhaka
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 9 th May, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 9 th May, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 9 th May, 2015
BGMEA Membership No.	: 5334

BASIC INFORMATION:

The factory building is a three storied RCC building with beam and column system and flat slab system. The following information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : Partial plinth of factory: RCC and angled props
Partial plinth of factory: RCC beam-column frame structure.
- iii. Floor System : Partial plinth of factory: Shed building
Partial plinth of factory: RCC beam-slab floor system..
- iv. Floor Area : Typical plinth area Approx. 11,000 sft. The total operational floor area of the factory is Approx. 11,200 sft.
- v. No. of Stories : Ground floor + Semi-floor
- vi. Construction Year : Phase 1: Sewing and Cutting sections, constructed in 2011
Phase 2: Finishing section and go-downs, constructed in 2012.
Phase 3: RCC segment, constructed in 2013.
- vii. Foundation Type : Not Available
- viii. Design Drawings : Available (17th June, 2011 from Bongaon Union Parishad at Savar, Dhaka.)
- ix. Soil Investigation Report : Not Available
- x. Construction Materials : Brick Chips used in RCC segment.
- 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) | : |
| Mid Term (6-weeks) | : 1. Factory Engineer to verify stability of the load bearing system and provide strengthening measures as required. |
| Long Term (6-months) | : 1. Carry out any remedial actions as directed by the Building Engineer for stability system.
2. As-built architectural and structural drawings of the building to be prepared and submitted for approval by appropriate authority.
As part of this process the building engineer will be required to |

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

make a number of checks on the inconsistencies between the structural design and the as-built construction.

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>	<ul style="list-style-type: none"> • The minimum clear width of the pathway should be 0.9 meter • - Provide aisle marking with arrow guiding and exit signage on all Evacuation pathways or provided with overhead signage fixed at ceiling level. - Exit sign should be posted above the exit door, - It should be clearly visible at all time, - Provide directional signs wherever necessary. - All exit doors should be clearly marked for easy identification. • The first aid hose and standpipe performance should be checked periodically and properly tagged. • Fire drill should be conducted quarterly (4 times a year) in existing buildings as detailed under the Fire Safety Plan & should kept record properly.
<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. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room, which located adjacent to Floor exit-1(South-west) final exit • Prepare proper plan and design for 2hours fire rated construction with 1.5 hours fire rated door at ground floor fabric store area for fire separation from sewing section • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor boiler, which located at the adjacent to finishing section • The egress paths should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for all corridors & exit doors. Aisles should be provided with a minimum 2 lux. • Produce design and plan for automatic detection system with automatic fire alarm. • Prepare proper design and plan for dedicated fire pump with alternate backup power supply.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul style="list-style-type: none"> • Replace existing 1 inch hose pipe replace with 1.5 inch hose pipe to meet the requirement of RMG guideline. • Prepare plan and design for dedicated water storage tank for firefighting operation. • Obtain fire license from issuing authority • Obtain the boiler license from the proper issuing authority. • Obtain the boiler operator license from the proper issuing authority.
<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"> • Provide 4 hour's fire rated barriers with 2 hours fire rated doors at ground floor generator room, which located adjacent to Floor exit-1(South-west) final exit without proper fire separation. • Provide 2 hours fire rated construction with 1.5 hours fire rated door at ground floor fabric store area for fire separation from sewing section • Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor boiler, which located at the adjacent to finishing section • Install automatic detection system with automatic fire alarm. • Install dedicated fire pump with alternate backup power supply. • Provide dedicated storage tank for firefighting operation

(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>	<ul style="list-style-type: none"> • Over current protection devices (Circuit breakers) to be installed at distribution panels.
<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"> • Re-locate oil / fuel tanks away from control panels in generator room. • 1. All stranded conductors > 6mm² to be provided with cable sockets. 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • All strands cables at exposed ends should be properly soldered / crimped and insulated. • 1. Remove all the inflammable materials from surrounding of electrical circuitry at MDBs/SDBs. 2. Ensure that all electric circuitry clean of inflammable materials. 3. Conduct periodic maintenance and maintain the records. • Provide cable joints of porcelain / PVC connectors with PIB

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>tape wound around before placing the cable in the box.</p> <ul style="list-style-type: none"> • 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"> • 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. • 1. Provide updated Electrical layout drawing prepared after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc. 2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation. 3. As built drawing to be approved by the engineer-in-charge. • All unwanted materials should be removed from transformer / Generator room. • Provide rubber mats in front of all distribution panels. • Install smoke detection and provide firefighting equipment in the substation and generator room. • 1. Provide High / Medium Voltage DBs marked with "Danger" signage. 2. Ensure that all DBs shall have marked with "Danger" signage. • Individual Fuse protection should be provided to every 15/20 A socket. • Relocate the MDBs with easy access. Ensure that all MDBs / SDBs should have easy accessibility. • Provide suitable & non-flammable protected supports and shades for hanged light fittings/fixtures. • The electrical panels to be of metal case and should be marked with “Danger 415 Volts” and identified with proper phase marking and danger signage. • Provide proper clearance of 0.8 - 1.0 m in front of all distribution panels/switchboards. • Provide cable connections with properly soldered / welded lugs at (LT/MDB/DB/SDB)'s. Ensure that all the electrical connections are properly secured with lugs and glands. • Power cables/ telecommunication cables / antenna cables should be laid separately. • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • Avoid looping and bunch of cable at MCCB/MCB or bus bar terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul style="list-style-type: none"> • Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use, voltage, no. of phases. • Provide separate earthing connection to electrical equipments. 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 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"> • Provide 4 hour fire rated walls all around the transformer / generator room on ground level. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 24m². • Provide and maintain proper clearance in all sides of generator for ease of maintenance. • 1. Design to have proper segregation of different end used loads. 2. Wiring design to have separate and distinct sub-circuits for power and heating system. 3. All DBs to be placed conveniently. 4. Wiring to be neat, tidy and located near ceiling. • Provide calibrated Ammeters / Voltmeters at distribution boards (LT/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). • Provide the wiring in PVC conduits or in metallic GI pipes. Ensure that all electrical wiring should be covered in proper conduit pipes. • 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. • 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5. 2. Ensure that connections between conductors / equipments 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.