

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: CLASSIC ATTIRES LTD.
Address of the Factory	: Ambagh Road, Konabari, Gazipur
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 12 July, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 12 July, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 12 July, 2015
BKMEA Membership No.	: 858

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 : Shed 1: Single Storey Shed
Shed 2: Single Storey Shed
Generator-Boiler Shed: Single Storey Shed
Batching room: Single Storey Shed.
- iii. Floor System : Shed 1: Truss roofing,
Shed 2: I-Joist roofing,
Generator-Boiler Shed: I-Joist roofing,
Batching room: Timber frame roofing.
- iv. Floor Area : Total built-up area = 19,258 sft (Approx.)
- v. No. of Stories : Shed 1, Shed 2, Generator Shed and Batching room : Single-Storey sheds
- vi. Construction Year : Phase 1: Construction started in 2003
Phase 2: Construction started in 2005
Phase 3: Construction started in 2009
- vii. Foundation Type : Unknown
- viii. Design Drawings : Not available
- ix. Soil Investigation Report : Not Available
- x. Construction Materials : Prefabricated steel, Steel pipes and angles.
- xi. Generator : The generator room was located at the ground floor on the building plinth at the North-West side.

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) : 1. Factory Engineer to investigate the distressed wall segment and plan for retrofitting or replacement options. Factory management to carry out any necessary steps as per suggestion of the factory engineer regarding the distressed wall segment

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

- Mid Term (6-weeks) : 1. As-built architectural and structural drawings of the factory buildings to be prepared and submitted for approval by appropriate authority. As part of this process the building engineer will be required to make a number of checks on the inconsistencies between the structural design and the as-built construction.
- Long Term (6-months) : 1. Sections of plaster finish to brick wall to be removed to investigate if dampness penetrates into the building walls.
2. The corroded elements to be checked and assessed by the factory Engineer.
3. The Factory Engineer to check the drainage system of the specified location and suggest remedy solutions for the drainage problem.
4. Factory management to carry out any necessary steps as per suggestion of the factory engineer regarding damping, corrosion and lack of drainage

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 • Remove all temporary items from all escape routes, aisles and passageway. • Provide aisle marking with arrow guiding and exit signage on all Evacuation pathways or provided with overhead signage fixed at ceiling level. - Illuminated 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. - Signage should be uniform. • Provide sufficient fire extinguisher at production shed and to keep the record for re filling & properly tagged. • The first aid hose and standpipe performance should be checked periodically and properly tagged. • Provide additional firefighting equipment like sand & water buckets near exit or easily accessible area for first phase fire fighting.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul style="list-style-type: none"> • Combustible materials should keep away from electrical source and all the lighting in storage area must have protecting covers and wiring must be in conduits. • 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"> • 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 2 hrs fire rated barrier with 1.5 hrs fire rated door for storage area. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at ground floor generator, boiler & chemical room, which located at the adjacent to dyeing 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. • Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline. • Obtain fire license / permit from issuing authority with full covered area. • Obtain building approval from 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 2 hrs fire rated barrier with 1.5 hrs fire rated door for storage area. • Provide 4 hour's fire rated barriers with 2 hours fire rated door at ground floor generator & boiler room, and 2 hours fire rated door at chemical room which located at the adjacent to dyeing section. • Install automatic detection system with automatic fire alarm. • Install dedicated fire pump with alternate backup power supply. • Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. • Provide dedicated storage tank for firefighting operation

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

(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 device (MCB/MCCB) was not installed for outgoing circuit at all 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"> • All strands cables at exposed ends should be properly soldered / crimped and insulated
<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 Generator room. • Provide rubber mats of adequate size in front of all distribution panels. • Install smoke/heat detector and provide firefighting equipment in the generator room. • 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. • 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 distribution panels • Provide cable connections with properly soldered / welded lugs at 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

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>insulation.</p> <ul style="list-style-type: none"> • 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 proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground. • Provide separate earthing connection to electrical equipment's. 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 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 adequate ventilation arrangements for generator room. • Provide 4 hour fire rated door & walls all around the generator room on ground level. • Provide adequate cable trenches with non-flammable covers at substation areas. • The Area of generator room is compliant but three unused generator should be removed from the generator room. • Provide and maintain proper clearance in all sides of generator for ease of maintenance. • Review capacity of standby generator on basis of loads for essential lighting. Replace generator with larger capacity or install second generator if review indicates existing unit is too small. • Provide and maintain easily accessible in the panel boards. • 1. Wooden panel boards should be replaced by non-flammable materials. 2. Prefer switchboards made of non-flammable materials. • 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 (DB)'s with non-flammable materials. In addition: 1. Ensure that DB panels / Switchgears to be vermin / damp proof 2. Ensure all unused holes / openings in DBs to be blocked properly.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul 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.• Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.
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