

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: TASKIN APPARELS LTD.
Address of the Factory	: Shampur, Sadullahpur Road, Birulia, Dhaka.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 17 th June, 2015.
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 17 th June, 2015.
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 17 th June, 2015.
BKMEA Membership No.	: 1634

BASIC INFORMATION:

The assessed factory building is a 2 storied RCC building with beam column frame and beam slab floor system. A single storey shed is situated at east and north side of the RCC building. The following information was noted:

- i. Building Usage Type : Knit Garment Factory
- ii. Structural System : RCC beam column frame system.
- iii. Floor System : RCC beam slab.
- iv. Floor Area : Ground floor = 3667.5 sft , Entire building = 7335 sft (Approx.)
- v. No. of Stories : 2 Storey.
- vi. Construction Year : Construction of 1st phase started in 2007
Construction of 2nd phase started in 2010.
- vii. Foundation Type : Strip and Isolated Footing.(Recommended in soil test report)
- viii. Design Drawings : Unavailable.
- ix. Soil Investigation Report : Available.
- x. Construction Materials : Brick aggregate (Identified by removing Plaster).
- xi. Generator : The generator room was located under the shed at the north side of the building.

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) :

- As built architectural and engineering drawings to be prepared and submitted for approval by appropriate authorities. As part of this process the building engineer will be required to make a number of checks on the structural design as described in the following recommendations.

Long Term (6-months) : None.

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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>	<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. - 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. • Provide fire extinguisher at all floor 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 firefighting. • Combustible materials should keep away from electrical appliances. • 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. • 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. • Prepare proper plan and design for 4 hours fire rated

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	<p>barriers with 2 hours fire rated door at ground floor boiler room, which located at the adjacent to operational area.</p> <ul style="list-style-type: none"> • 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. • The stairway should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for stairway. • Produce design and plan for automatic detection system with automatic fire alarm. • Automatic alarm systems must be provided throughout the factory; the alarm must be automatically triggered on detection of a fire. • Prepare proper design and plan for dedicated fire pump with alternate backup power supply. • Replace existing 1 inch hose pipe 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 as per RMG guideline. • Visual alarm should be placed at the generator room. • Obtain building approval from issuing authority • Cover all units / floors in a valid fire license
<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 hours fire rated barriers with 2 hours fire rated door at ground floor boiler room, which located at the adjacent to operational area. • Install automatic detection system with automatic fire alarm. • Install dedicated fire pump with alternate backup power supply. • Provide sufficient number of hose pipe with respect to area and travel distance as per RMG guideline. • Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. • Provide dedicated storage tank for firefighting operation

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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>	<ul style="list-style-type: none"> • Over current protection devices (Circuit breakers) should be installed 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"> • Re-locate oil tanks away from control panels in generator room. • 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"> • Provide adequate illumination for substation. • All unwanted materials should be removed from transformer / Generator room. • Provide rubber mats of adequate size in front of all distribution panels. • Install smoke detection and provide firefighting equipment in the substation and generator room. • Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the sign. • 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 suitable & non-flammable protected supports and shades for hanged light fittings/fixtures. • Provide supports for main service line complete with adequate insulation.

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	<ul style="list-style-type: none">• 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 DB'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 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.• 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.• Seal the cable penetrations through walls adequately with fire resistive elements.• Provide adequate earthing to body and doors to all DBs / SDBs. Ensure that all electrical panels provided with proper and separate earth potential.
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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">• 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.• 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 and maintain easy access and proper height of switchboard / panel boards (< 2m from floor level).• 1. Wooden switchboards / 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).• 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 DB's with non-flammable materials. In addition:<ul style="list-style-type: none">1. Ensure that DB panels / Switchgears to be vermin /
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	<p>damp proof.</p> <p>2. Ensure all unused holes / openings in DBs to be blocked properly.</p> <ul style="list-style-type: none">• 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5. <p>2. Ensure that connections between conductors / equipments provided to durable electrical continuity and adequate mechanical strength and protection.</p> <p>3. The continuous earth connection is provided back to the main intake supply earth.</p> <ul style="list-style-type: none">• 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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