

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Chowdhury Composite Tex-Knit Ltd.
Address of the Factory	: 52/D, Baizid Bostami I/A, Nasirabad, Chittagong.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-02-22
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-02-22
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-02-22
BGMEA Membership No.	: 4313

BASIC INFORMATION:

The present garment factory is a roof truss shed supported with RCC column. The following general information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : RCC beam-column
- iii. Floor System : Beam slab system
- iv. Floor Area : The typical plinth area was 11,713 sq. ft. and total floor area was 35,841 sq. ft.
- v. No. of Stories : 3 Storey with a mezzanine floor at ground floor
- vi. Construction Year : 2007-2008
- vii. Foundation Type : Shallow Foundation (Spread footing - As per structural drawing)
- viii. Design Drawings : Available (Approval document was available at the factory from CDA on 26th April, 2010 for 6 storey garments factory building)
- ix. Soil Investigation Report : Available
- x. construction Materials : Brick Chips
- xi. Generator : Adjacent to the main gate, north-west portion of the building.

RECOMMENDATIONS FOR CORRECTIVE ACTION: No critical or high risk observations were found during the day of assessment in the factory which can hamper the regular operations in existing 3 storey building. But when the building would be built up to approved level (6 storey) and same live load would be found for remaining floors then high stressed would be observed in columns. But some non-conformities were found for which long term corrective actions are recommended. The following general information was noted:

Short Term (Immediate) : N/A

Mid Term (6-week) : N/A

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Long Term (6-months) : 1. Exposed reinforcement needs to be covered by lean graded concrete following the guidance of building engineer to stop the egress of moisture inside.

2. Sections of plaster finish to brick wall to be removed to investigate if dampness penetrates into the building wall. Investigation needed why it is occurring.

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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"> • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the 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. • Doors in stair should be outward opening, side-swing, self-closing, non-lockable 0.75 hours fire rated doors in all stair way encloses. • Provide 2 hours fire rated wall with 1.5 hours fire rated doors at storage for separation for other operational area. • Produce design and plan for automatic detection system with automatic fire alarm. • Prepare proper design and plant for dedicated fire pump with alternate backup power supply. • Prepare plan and design for dedicated water storage tank for

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	firefighting operation.
<p>Long Term</p> <p>(The remedial works indicated must be carried out within a period of 6 months)</p>	<ul style="list-style-type: none"> • Provide permanent storage area with 2 hours fire rated wall and 1.5 hours self-closing doors • 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

(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 (Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity)</p>	N/A
	<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.

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<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>3. As built drawing to be approved by the engineer-in-charge.</p> <ul style="list-style-type: none"> • All unwanted materials should be removed from transformer / Generator room. • Provide rubber mats of adequate size in front of all distribution panels. • Provide and maintain clear and legible identifications numbers & names on all incoming and outgoing circuits of HT / LT panels. • 1. All stranded conductors > 6mm² to be provided with cable sockets. 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • 1. Wiring design should have separate and distinct sub-circuits for power and heat source. 2. Switchboards / wiring to be located away from steam / heat pipelines. • 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 circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. • Seal the cable penetrations through walls adequately with fire resistive elements. • 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 MDBs / DBs. Ensure that all electrical panels provided with proper and separate earth potential.
	<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 56m², or relocate the generator

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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>	<p>room.</p> <ul style="list-style-type: none">• 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.• Seal the cable entry-exit points of (MDB/DB/SDB)'s with non-flammable materials. In addition: 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 / equipment's 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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