

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: ACELON KNIT COMPOSITE LTD.
Address of the Factory	: 55/1 SM Maleh Road. Tanbazar, River view, Narayanganj.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-07-28
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-11-29
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-11-29
BKMEA Membership No.	: 1149.

BASIC INFORMATION: The present garment factory is a four storied Industrial building with steel frame with composite floor system. The following general information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : Not Identified (Inaccessible)
- iii. Floor System : Not Identified (Inaccessible)
- iv. Floor Area : Not Identified (Inaccessible)
- v. No. of Stories : GF+9 Floors (10 Storey with a basement).
- vi. Construction Year : Not Identified (Inaccessible)
- vii. Foundation Type : Not Identified (Inaccessible)
- viii. Design Drawings : Not Identified (Inaccessible)
- ix. Soil Investigation Report : Not Identified (Inaccessible)
- x. construction Materials : Not Identified (Inaccessible)
- xi. Generator : Not Identified (Inaccessible)

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:

Could not be assessed due to inaccessibility.

The recommendations for **Fire & Electrical Safety** corrective action are:

(A): Recommendations for Fire Safety corrective actions:

Immediate <i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i>	N/A
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<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. • Provide fire extinguisher at generator room and to keep the record for re filling & properly tagged. • The first aid hose and standpipe performance should be checked periodically and properly tagged. • Combustible materials should keep away from electrical appliances and all the lighting in storage area must have protecting covers and wiring must be in conduits.
<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 doors in all stair way encloses.(Also require fire rated door at the floor occupied by other tenants) • 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.(Also require fire rated entry lobby at the floor occupied by other tenants) • Prepare proper plan and design for fire rated barrier for 2 hour fire rating separated corridor with 1.5 hour fire rated door at ground floor. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at 7th floor boiler room, which located at the adjacent to finishing section. • 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 and control panel.(Also needs to cover the floors occupied by other tenants) • Install Manual activation call point at all exit routes • 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. • Prepare proper design and plan for fire lifts equipped with approved

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	<p>intercommunication (including two way voice communications) with the fire command station or control room on the ground floor lobby of the building.</p> <ul style="list-style-type: none"> • Complete full design and plan for providing fire command station equipped with detailed floor plans along with clearly demarcated locations of fire detection and fighting devices and through the panel board able to detect fire alarm from any floor. • A suitable public address system should be provided for communicating to all floors as well as facilities to receive messages from all floors. • Visual alarm should be placed at the generator room. • Implement to a single fire safety management system with approvals from all tenants in the factory building. • Obtain the boiler license from the proper issuing authority. • Obtain the boiler operator license from the proper issuing authority.
<p>Long Term (The remedial works indicated must be carried out within a period of 6 months)</p>	<ul style="list-style-type: none"> • Install smoke proof fire rated entry lobby at emergency stairways to separate from the area of incidence.(Also require fire rated entry lobby at the floor occupied by other tenants) • All stairway to have direct access to any designated refuge area which requires 2 hour fire rated construction with 1.5 hour fire rated door at ground floor for fire separated corridor. • Provide 4 hours fire rated barriers with 2 hours fire rated door at 7th floor boiler room, which located at the adjacent to finishing section. • Install automatic detection system with automatic fire alarm and control panel.(Also needs to cover the floors occupied by other tenants) • 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 • 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. • Provide fire command station equipped with detailed floor plans along with clearly demarcated locations of fire detection and fighting devices and through the panel board able to detect fire alarm from any floor.

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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>N/A</p>
<p>Short Term <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. • 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 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 rubber mats of adequate size in front of all distribution panels. • Install smoke detection and provide firefighting equipment in the substation and generator room. • 1. Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the signage. • 2. The source of illumination should be providing not less than 50 lux. • 1. All stranded conductors > 6mm² to be provided with cable sockets. • 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • The electrical panels to be of metal case and should be marked with “Danger 415 Volts” and identified with proper phase marking and

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	<p>danger signage.</p> <ul style="list-style-type: none"> • 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. • 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. • 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"> • 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. 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). • For buildings > 20m high, provide at least one vertical shaft of 200 x 400 mm for every 1500 sq.m. floor area. • 1. Wooden switchboards / panel boards should be replaced by non-

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	<p>flammable materials. 2. Prefer switchboards made of non-flammable materials.</p> <ul style="list-style-type: none">• 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'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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