

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: ALERT FASHION LTD.
Address of the Factory	: J. Alam Tower, Abdul Latif Road, Middle Haliashahar, Bandar, Chittagong
Present status of the factory	: Under Operation.
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-12-23
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-12-23
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-12-23
BGMEA Membership No.	: 4324
BKMEA Membership No.	: 1702

BASIC INFORMATION: The building is a 4 storied RCC building. The following general information were noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : RCC Beam Slab Frame.
- iii. Floor System : RCC Beam Slab.
- iv. Floor Area : The typical plinth area of 6 storied RCC building is 4110 sft. Total operational area is 24660 sft.
- v. No. of Stories : 6-Storey building, No basement.
- vi. Construction Year : 2004
- vii. Foundation Type : Not Identified.
- viii. Design Drawings : Available (approval for 6- storied residential building from Chittagong Development Authority (C.D.A.) on 31st July, 2008)
- ix. Soil Investigation Report : Available.
- x. construction Materials : Bricks
- xi. Generator : The generator room is located at ground floor in a shed adjacent to the factory 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:

Specific column was found to be moderately stressed, which may pose risk to operation in the factory. Based on this non-conformity, mid-term and long term corrective actions have been recommended.

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: 1. Factory Engineer to review design, loads and columns stresses in area identified above.

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2. Verify in situ concrete stresses either by 100mm dia. cores or existing cylinder strength data for B14, B1 & A4 column or 100mm dia. cores from 4 columns.

Long Term (6-months)

: 1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

2. As built architectural and engineering drawing to be prepared. As part of this process building engineer will be required to make a number of checks on the structural design.

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. <ul style="list-style-type: none"> - 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. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. • 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.

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	<ul style="list-style-type: none"> • Combustible materials should keep away from electrical appliances and all the lighting in Ground floor (Bonded store) 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"> • Prepare proper plan and design for one more exit in GF floor south side to ensure the easy way to outside of building. • 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 1.5 hours fire rated doors in all stair way encloses.(Also require fire rated door at the floor occupied by other tenants) • 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 2nd floor 1 nos electric boiler, which located at the adjacent to rest of the operational areas. • Provide smoke and heat vents on the roof / ceiling / wall at godown 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. • 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.

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	<ul style="list-style-type: none"> • 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. • Cover all units / floors in a valid fire license • Implement to a single fire safety management system with approvals from all tenants in the factory building.
<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"> • Implement the plan and design for one more exit • Provide 2 hrs fire rated barrier with 1.5 hrs fire rated door for storage area. • Provide 4 hours fire rated barriers with 2 hours fire rated door at 2nd floor 1 nos electric boiler, which located at the adjacent to rest of the operational areas. • 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. • Installed the hose connection in right location or 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.

(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>
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<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"> • Re-locate oil / fuel tanks away from control panels in generator room. • 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 (<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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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 electrical graded 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. <ul style="list-style-type: none"> 2. The source of illumination should be providing not less than 50 lux. • Individual Fuse protection should be provided to every 15/20 A socket. • 1. All stranded conductors > 6mm² to be provided with cable sockets. <ul style="list-style-type: none"> 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • <input type="checkbox"/> Provide cable connections with properly soldered / welded lugs at

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	<p>(LT/MDB/DB/SDB)'s. Ensure that all the electrical connections are properly secured with lugs.</p> <ul style="list-style-type: none"> • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • Avoid bunching 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 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 indoor substation. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 36 m², or relocate the generator room. • 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 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). • 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.

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	<p>2. Ensure that connections between conductors / equipment are 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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