

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Techno Fashion
Address of the Factory	: 14, Moushire, Challaband, Azampur, Uttara Dhaka, Bangladesh.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-10-28
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-10-28
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-10-28
BGMEA Membership No.	: 2769

BASIC INFORMATION:

i. Building Usage Type	: Garment Factory
ii. Structural System	: R.C.C Building
iii. Floor System	: Two way Beam Slab
iv. Floor Area	: The typical plinth area is 6453.53 sft. And total production floor Is 12907.07sft
v. No. of Stories	: GF + 4 Floors (5- Storey), No Basement.
vi. Construction Year	: 1999
vii. Foundation Type	: Shallow Foundation.
viii. Design Drawings	: Available (Approval for 6-Storey commercial building on 13 th February, 1997 from RAJUK)
ix. Soil Investigation Report	: Available.
x. construction Materials	: Brick Aggregated.
xi. Generator	: At eastern side of ground floor of same building.

RECOMMENDATIONS FOR CORRECTIVE ACTION: No critical or high risk observation was found during the day of assessment in the factory which can hamper the regular operations. A non – conformity was found during the assessment for which long term corrective action has been recommended. There is no need to suspend operation in the factory.

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: N/A
Long Term (6-months)	: 1. Exposed rebar needs to be covered by lean graded concrete as per direction of building engineer.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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"> • Rearrange the evacuation pathway to ensure the minimum width. • 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. • Provide sufficient fire extinguisher at 1st & 2nd floor of the factory.
<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. • Exit door should have minimum clear width 0.9 meter. • 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 4 hours fire rated wall with 2 hours fire rated doors at ground floor generator room, which located at the adjacent to stair-01 finished area. • Prepare proper plan and design for 2 hrs fire rated wall with 1.5 hrs fire rated door for storage area. • Prepare proper plan and design for 4 hours fire rated construction with 2 hours fire rated doors at 1st floor boiler room, which located at the adjacent to finishing section.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<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 and control panel (Also needs to cover the floors occupied by other tenants). • Install Manual activation call point at all exit routes • Provide adequate nos. of smoke detectors to cover the whole factory building. • 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. • Power backup supply should be provided for fire alarm system. • 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"> • Provide 4 hours fire rated wall with 2 hours fire rated doors at ground floor generator room, which located at the adjacent to stair-01 finished area. • Provide 2 hrs fire rated wall with 1.5 hrs fire rated door for storage area. • Provide 4 hours fire rated construction with 2 hour's fire rated doors at 1st 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. • Provide sufficient number of hose pipe with respect to area and travel distance as per RMG guideline. • 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 devices (Circuit breakers) should be installed at all distribution panels.
<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>	<p>N/A</p>
<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 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.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul style="list-style-type: none">• 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.• Individual Fuse protection should be provided to every 15/20 A socket.• 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 danger signage.• 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.• 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.
--	---

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<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 hour fire rated walls all around the transformer / generator room on ground level.• Provide calibrated Ammeters / Voltmeters at distribution boards (LT/MDBs).• Review capacity of standby generator on basis of loads for essential lighting / AC / Equipment / Services. Replace generator with larger capacity or install second generator if review indicates existing unit is too small.•<ol style="list-style-type: none">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.•<ol style="list-style-type: none">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).• 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.
---	---