

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Trade Wind Sweaters Ltd.
Address of the Factory	: Konabari Plaza, Konabari, Gazipur
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 28 th June, 2015.
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 28 th June, 2015.
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 28 th June, 2015.
BGMEA Membership No.	: 4145

BASIC INFORMATION:

The assessed factory building is a 7 storied RCC building with beam column frame and beam slab floor system. The following information was noted:

- i. Building Usage Type : Garment factory.
- ii. Structural System : RCC beam column frame system.
- iii. Floor System : RCC beam slab.
- iv. Floor Area : Total floor area is 84,000 sft. approx.
- v. No. of Stories : 7- Storey. No Basement.
- vi. Construction Year : 1998 to 2001 - GF to 4th floor.
2011 to 2012 - 5th to 6th floor.
- vii. Foundation Type : Shallow Foundation. (spread footing)
- viii. Design Drawings : Available (Approval for a 7-Sorey commercial building from LGED, Gazipur on 29th August, 2007)
- ix. Soil Investigation Report : Available.
- x. Construction Materials : Brick aggregate (Identified by removing Plaster).
- xi. Generator : Ground floor.

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) : None.

Long Term (6-months) :

- Proper roof drainage need to be implemented. Proper water proofing need to be applied on roof slab to penetrate water into slab as per direction of building engineer.
- Exposed reinforcement 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"> • The minimum clear width of the pathway should be 0.9 meter • 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. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. • 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. • 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. • Doors in stair should be outward opening, side-swing, self-closing, non-lockable 2 hours fire rated doors in all

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>stair way encloses including the other tenants</p> <ul style="list-style-type: none">• 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.• Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at at generator & boiler room, which is located adjacent to commercial shops at ground floor.• 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 4th floor boiler room• 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 addressable fire alarm at the whole building.• 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.• 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 intercommunication (including two way voice communications) with the fire command station or control room on the ground floor lobby of the building.• Complete full design and plan for providing fire command station equipped with detailed floor plans
--	---

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>along with clearly demarcated locations of fire detection and fighting devices and through the panel board able to detect fire alarm from any floor.</p> <ul style="list-style-type: none"> • Power backup supply should be provided for fire alarm system. • Obtain fire license / permit from issuing authority • 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. • Obtain the boiler license from the proper issuing authority.
<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"> • Install smoke proof fire rated entry lobby at emergency stairways to separate from the area of incidence. • Provide 4 hours fire rated barriers with 2 hours fire rated doors at at generator & boiler room, which is located adjacent to commercial shops at ground floor. • 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 4th floor boiler room. • Install automatic detection system addressable fire alarm at whole building. • 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.

(B): Recommendations for Electrical Safety corrective actions:

<p>Immediate</p> <p><i>(the factory should not continue to be</i></p>	<ul style="list-style-type: none"> • Over current protection devices (Circuit breakers) should be installed at Main distribution panel.
---	--

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<p><i>occupied until these non-conformities have been rectified):</i></p>	
<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.
<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 rubber mats of adequate size in front of all distribution panels. • Install smoke detection and provide firefighting equipment in the generator room. • Individual Fuse protection should be provided to every 15/20 A socket. • 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 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. • 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 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 equipments. Ensure that earth potential provided for all parts of equipment / installation (other than live parts) and that continuous earth connection is provided back

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>to the main intake supply earth.</p> <ul style="list-style-type: none"> • 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. 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. • Make suitable arrangements to prevent storm water to enter generator room. • Provide 1.5 hour fire rated door the generator room on ground level. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 30m², or relocate the generator room. • 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 calibrated Ammeter at distribution boards (MDBs). • Provide proper height of panel boards (< 2m from floor

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>level).</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 (DB)'s with non-flammable materials. In addition: 1. Ensure that DB 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 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.
--	--