

## **Summary of Preliminary Assessment on Structural, Fire and Electrical Safety**

---

Name of the Factory	: West-Line Fashion (Pvt.) Ltd.
Address of the Factory	: Kalmeshor, National University, Board Bazar, Gazipur, Dhaka
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 29 <sup>th</sup> March, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 29 <sup>th</sup> March, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 29 <sup>th</sup> March, 2015
BGMEA Membership No.	: 5386

### **BASIC INFORMATION:**

The assessed factory is a 3-storey RCC factory building with flat slab structural system. The following information was noted: The following information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : RCC Flat Slab Column Structure.
- iii. Floor System : RCC Flat Slab.
- iv. Floor Area : Plinth level area is 4224 sq.ft. and Entire building area 13,464 sq.ft. (Approx.)
- v. No. of Stories : 3 Storey (No Basement.)
- i. Construction Year : 2014.
- ii. Foundation Type : Shallow open footing foundation.
- iii. Design Drawings : Available (approval for 8 storey RCC building from LGED, Gazipur Sadar on 24th August 2008 for Industrial use).
- iv. Soil Investigation Report : Available.
- v. Construction Materials : Brick Aggregate. (Identified by removing Plaster)
- i. Generator : Generator is kept in west side at ground floor of the 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:

Short Term (Immediate) : None.

Mid Term (6-weeks) : None.

Long Term (6-months) :

- i. Lateral Stability system needs to be checked by building engineer.
- ii. Slenderness ratio of columns needs to be checked by 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"> <li>• Remove all temporary items from all escape routes, aisles and passageway.</li> <li>• Periodically check alarm call points, alarm &amp; detection system - Maintain the record properly.</li> <li>• The hose pipe performance should be checked periodically and properly tagged.</li> </ul>
<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"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• Doors in stair should be outward opening, side-swing, self-closing, non-lockable 0.75 hour fire rated doors in all stair way encloses.</li> <li>• Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room, sub-station &amp; boiler room and also 2 hours fire rated barrier with 1.5 hours fire rated wall at finishing goods store, which located at the adjacent to final exit.</li> <li>• Provide 1.5 hours fire rated door at Ground floor fabric store.</li> <li>• The egress paths should be illuminated with emergency lighting with power back-up supply &amp; illumination should be a minimum of 10 lux for all corridors &amp; exit</li> </ul>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>doors. Aisles should be provided with a minimum 2 lux.</p> <ul style="list-style-type: none"> <li>• The stairway should be illuminated with emergency lighting with power back-up supply &amp; illumination should be a minimum of 10 lux for stairway.</li> <li>• Design and plan to provide automatic detection system with automatic fire alarm.</li> <li>• Provide adequate nos. of smoke detectors to cover the whole factory building.</li> <li>• Design and plan to install dedicated fire pump with alternate backup power supply.</li> <li>• Replace existing 1 inch hose pipe replace with 1.5 inch hose pipe to meet the requirement of RMG guideline.</li> <li>• Stand pipe supplying first aid hose should have minimum pressure of 200 KPa.</li> <li>• Power backup supply should be provided for fire alarm system.</li> <li>• Visual fire alarm should be place at the high noise area. (Generator room)</li> <li>• Obtain the fire license with covered area from the proper issuing authority.</li> <li>• Obtain the boiler license from the proper issuing authority.</li> <li>• Obtain the boiler operator license from the proper issuing authority.</li> </ul>
<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"> <li>• Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room, sub-station &amp; boiler room and also 2 hours fire rated barrier with 1.5 hours fire rated wall at finishing goods store, which located at the adjacent to final exit.</li> <li>• Install automatic detection system with automatic fire alarm.</li> <li>• Install dedicated fire pump with alternate backup power supply.</li> <li>• Stand pipe supplying first aid hose should have minimum pressure of 200 KPa.</li> </ul>

### ***(B): Recommendations for Electrical Safety Corrective Actions:***

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<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"> <li>• Over current protection devices (Circuit breakers) to be installed at all main distribution panels.</li> </ul>
<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"> <li>• All strands cables at exposed ends should be properly soldered / crimped and insulated.</li> <li>• 1. Remove all the inflammable materials from surrounding of electrical circuitry at MDBs/SDBs.</li> <li>2. Ensure that all electric circuitry clean of inflammable materials.</li> <li>3. Conduct periodic maintenance and maintain the records.</li> <li>• Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box.</li> <li>• Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground.</li> </ul>
<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"> <li>• Provide adequate ventilation arrangements for indoor substation.</li> <li>• Provide adequate illumination for substation.</li> <li>• Provide rubber mats in front of all distribution panels.</li> <li>• Install smoke detection and provide firefighting equipment in the substation and generator room.</li> <li>• 1. Provide and maintain at least 10 lux illumination at floor level for exit sign.</li> <li>2. Provide alternate / emergency backup for illuminating the exit signs for at least 30 minutes.</li> <li>• Individual Fuse protection should be provided to every 15/20 A socket.</li> <li>• Provide suitable &amp; non-flammable protected supports and shades for hanged light fittings/fixtures.</li> <li>• The supports for main service line should be provided adequate insulation.</li> <li>• Provide cable connections with properly soldered /</li> </ul>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>welded of lugs. Ensure that all the electrical connections properly secured with lugs and glands.</p> <ul style="list-style-type: none"> <li>• Select conductors with adequate sizing without exceeding permissible thermal limits for insulation.</li> <li>• 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.</li> <li>• Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use, voltage, no. of phases.</li> <li>• Seal the cable penetrations through walls adequately with fire resistive elements.</li> <li>• Provide separate earthing connection to electrical equipment's at sewing section. 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.</li> <li>• Provide adequate earthing to body and doors to all MDBs / DBs. Ensure that all electrical panels provided with proper and separate earth potential.</li> </ul>
<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"> <li>• 1. Provide updated SLD matching the existing installation at the factory.</li> <li>2. SLD to indicate exact positions of all points of switch boxes and other outlets.</li> <li>3. SLD to be approved by the engineer-in-charge.</li> <li>• 1. Provide updated Electrical layout drawing prepared after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc.</li> <li>2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation.</li> <li>3. As built drawing to be approved by the engineer-in-charge.</li> <li>• Provide 4 hour fire rated walls all around the transformer / generator room on ground level.</li> <li>• Provide adequate cable trenches with non-flammable</li> </ul>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

---

	<p>covers at substation areas.</p> <ul style="list-style-type: none"><li>• Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 36m<sup>2</sup>.</li><li>• Provide and maintain proper clearance in all sides of generator for ease of maintenance.</li><li>• 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.</li><li>• Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted).</li><li>• Provide the wiring in PVC conduits or in metallic GI pipes. Ensure that all electrical wiring should be covered in proper conduit pipes.</li><li>• Seal the cable entry-exit points at distribution panels with non-flammable materials.<ol style="list-style-type: none"><li>1. Ensure that HT / LT panels / Switchgears to be vermin / damp proof.</li><li>2. Ensure all unused holes / openings in DBs to be blocked properly.</li></ol></li><li>• <ol style="list-style-type: none"><li>1. Provide the ECC to meet minimum cross-sectional area as per table 4.5.</li><li>2. Ensure that connections between conductors / equipment's provided to durable electrical continuity and adequate mechanical strength and protection.</li><li>3. That continuous earth connection is provided back to the main intake supply earth.</li></ol></li><li>• Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels.</li></ul>
--	---