

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

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Name of the Factory	: Swan Sweaters Ltd. (U-2)
Address of the Factory	: Jugirchala, Mouchak, Kaliakoir, Gazipur
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-10-29
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-10-29
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-10-29
BGMEA Membership No.	: 4043

### **BASIC INFORMATION:**

The following information was noted:

- i. Building Usage Type : Garment Factory
- ii. Structural System : Tin Shed Building supported by beam column frame structure.
- iii. Floor System : Ground floor.
- iv. Floor Area : The typical plinth area of 6 storied RCC building is 30607 sft.  
Total Operational area is 30607 sft.
- v. No. of Stories : Single Storey shed building, No basement.
- vi. Construction Year : 2005.
- vii. Foundation Type : Not Identified.
- viii. Design Drawings : Not Available.
- ix. Soil Investigation Report : Not Available.
- x. construction Materials : Brick Aggregated.
- xi. Generator : The generator room is located at the ground floor of the factory building.

**RECOMMENDATIONS FOR CORRECTIVE ACTION:** No critical or high risk observation was found at the factory which may pose harm to production and workers as well during assessment. Some non- conformity was found at the factory on the day of assessment, for which mid-term & long term corrective actions have been recommended. There is no need to suspend operation in the factory.

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: 1. As built architectural & engineering drawing to be prepared and submitted for approval by appropriate authority. As part of this process building engineer will be required to make a number of checks on the as built construction.
Long Term (6-months)	: 1. The connections of steel structure and requirement of cross bracing needs to be checked by building engineer. The bracing system is required to ensure the stability of the structure.

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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>• Rearrange the evacuation pathway to ensure the minimum width.</li> <li>• Remove all temporary items from all escape routes, aisles and passageway.</li> <li>• Provide aisle marking with arrow guiding and exit signage on all Evacuation pathways or provide overhead signage fixed at ceiling level. <ul style="list-style-type: none"> <li>- It should be clearly visible at all time,</li> <li>-Signage should be uniform</li> </ul> </li> <li>• Factory management should be checked alarm call points, alarm &amp; detection system periodically and maintained the record properly.</li> <li>• The first aid hose and standpipe performance should be checked periodically and properly tagged.</li> <li>• Combustible materials should keep away from electrical source.</li> <li>• Fire drill should be conducted quarterly (4 times a year) in existing buildings as detailed under the Fire Safety Plan &amp; should kept record properly.</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>• Prepare proper plan and design for 2 hrs fire rated barrier with 1.5 hrs fire rated door for storage area.</li> <li>• Seal all openings in walls with fire resistant materials having 2 hours fire rating.</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 doors. Aisles should be provided with a minimum 2 lux.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Produce design and plan for automatic detection system with automatic fire alarm.</li> <li>• Install Manual activation call point at all exit routes</li> <li>• Provide adequate nos. of smoke detectors to cover the whole factory building.</li> <li>• Prepare proper design and plan for dedicated fire pump with alternate backup power supply.</li> <li>• Power backup supply should be provided for fire alarm system.</li> <li>• Permit total floor area in fire license from issuing authority.</li> <li>• Obtain building approval from issuing authority.</li> </ul>
<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"> <li>• Provide 2 hrs fire rated barrier with 1.5 hrs fire rated door for storage area.</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:***

<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"> <li>• All strands cables at exposed ends should be properly soldered / crimped and insulated.</li> <li>• Provide weather proof casing for switchboards exposed to weather (located outside the building).</li> </ul>
<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"> <li>• All unwanted materials should be removed from Generator room.</li> <li>• Provide graded rubber mats of adequate size in front of all distribution panels.</li> <li>• Install smoke detection in the generator room.</li> <li>• Provide and maintain clear and legible identifications numbers &amp; names on all incoming and outgoing circuits of HT / LT panels.</li> <li>• 1. All stranded conductors &gt; 6mm<sup>2</sup> to be provided with cable sockets. 2. All stranded conductors &lt; 6 mm<sup>2</sup>, at exposed end should be soldered / crimped.</li> <li>• 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.</li> <li>• Provide cable connections with properly soldered / welded lugs at MDB and DBs. Ensure that all the electrical connections are properly secured with lugs.</li> <li>• Avoid 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 load, voltage, number of phases.</li> <li>• Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box.</li> <li>• 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.</li> <li>• Provide adequate earthing to body and doors to DBs. Ensure that all electrical panels provided with proper and separate earth potential.</li> </ul>

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<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. 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.</li><li>• 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.</li><li>• Provide adequate ventilation arrangements for indoor substation.</li><li>• Provide 4 hour fire rated walls all around the transformer / generator room on ground level.</li><li>• 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.</li><li>• Provide calibrated Ammeters at distribution boards (MDB).</li><li>• 1. Wooden switchboards / panel boards should be replaced by non-flammable materials. 2. Prefer switchboards made of non-flammable materials.</li></ul>
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