

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

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Name of the Factory	: Sparkle Knit Composite Ltd.
Address of the Factory	: Kabirpur, Savar, Dhaka
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 30 November, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 30 November, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 30 November, 2015
BGMEA Membership No.	: 5104

### **BASIC INFORMATION:**

The single storey Steel structure building (PEB building) is a beam column frame (Steel) structure & at the roof profile sheet added which is supported by rafter. The following information was noted:

i. Building Usage Type	: Dyeing, Knitting Factory.
ii. Structural System	: PEB Building.
iii. Floor System	: Steel Beam column frame structure.
iv. Floor Area	: The typical plinth area of dyeing shed is 7370 sft, The typical plinth area of finishing shed is 7040 sft, The typical plinth area of knitting shed is 5850 sft Total operational area is 27040 sft.
v. No. of Stories	: GF+ 1 Mezzanine Floor (Dyeing Shed) GF ( Finishing shed) GF ( Knitting shed)
vi. Construction Year	: Knitting shed- 2005 Dyeing Shed- 2010 Finishing shed- 2013
vii. Foundation Type	: Shallow foundation
viii. Design Drawings	: Single- storied commercial building from Shimulia Union Parishad, Savar on 16 <sup>th</sup> February 2014.
ix. Soil Investigation Report	: Available
x. Construction Materials	: 50 ksi steel (as per structural drawing).
xi. Generator	: The generator room is located outside the main 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:

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: N/A
Long Term (6-months)	: 1. As built architectural and engineering drawings to be prepared for the Knitting Shed and submitted for approval by appropriate

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authorities. As part of this process the building engineer will be required to make a number of checks on the as-built construction.

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><input type="checkbox"/> Factory management should checked alarm call points, alarm &amp; detection system periodically and maintained the record properly.</li> <li><input type="checkbox"/> Periodically check fire pumps.</li> </ul> <p>Maintain record properly</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The first aid hose and standpipe performance should be checked periodically and properly tagged.</li> <li><input type="checkbox"/> Provide additional fire fighting equipment like sand &amp; water buckets near exit or easily accessible area for first phase fire fighting.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> 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><input type="checkbox"/> 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><input type="checkbox"/> 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><input type="checkbox"/> Produce proper plan and design for another exit door at mezzanine floor, which discharge outside of the factory building within 23 meter travel distance.</li> <li><input type="checkbox"/> Produce design and plan for automatic detection system with automatic fire alarm.</li> <li><input type="checkbox"/> Dedicated fire pump should have own generator for alternative power backup.</li> <li><input type="checkbox"/> Visual alarm should be placed at the generator room.</li> </ul>
<p>Long Term</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Execute the another exit door at mezzanine floor.</li> </ul>

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<i>(The remedial works indicated must be carried out within a period of 6 months)</i>	<input type="checkbox"/> Install automatic detection system with automatic fire alarm.
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### **(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>	N/A
<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>	<input type="checkbox"/> All strands cables at exposed ends should be properly soldered / crimped and insulated
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<input type="checkbox"/> All unwanted materials should be removed from transformer / Generator room. <input type="checkbox"/> Provide electrical graded rubber mats of adequate size in front of all distribution panels. <input type="checkbox"/> Install smoke detection and provide firefighting equipment in the substation and generator room. <input type="checkbox"/> Provide and maintain clear and legible identifications numbers & names on all incoming and outgoing circuits of HT / LT panels. <input type="checkbox"/> 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. <input type="checkbox"/> Provide cable connections with properly soldered / welded lugs at (LT/MDB/DB/SDB)'s. Ensure that all the electrical connections are properly secured with lugs. <input type="checkbox"/> Avoid looping of cable at MCB, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards. <input type="checkbox"/> Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. <input type="checkbox"/> Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box. <input type="checkbox"/> Seal the cable penetrations through walls adequately with fire resistive elements. <input type="checkbox"/> Provide proper separate earthing/grounding to transformer. Ensure that transformer body frame to have two separate and distinct connections to the earth / ground.

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	<ul style="list-style-type: none"> <li><input type="checkbox"/> Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground.</li> <li><input type="checkbox"/> Provide adequate earthing to body and doors to all 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><input type="checkbox"/> 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><input type="checkbox"/> 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><input type="checkbox"/> Provide adequate cable trenches with non-flammable covers at substation areas.</li> <li><input type="checkbox"/> Provide calibrated Ammeters / Voltmeters at distribution boards (LT/MDBs).</li> <li><input type="checkbox"/> Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted).</li> <li><input type="checkbox"/> Seal the cable entry-exit points of (LT/MDB/DB/SDB)'s with non-flammable materials. In addition:             <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><input type="checkbox"/> 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5.</li> <li>2. Ensure that connections between conductors / equipment are provided to durable electrical continuity and adequate mechanical strength and protection.</li> <li>3. The continuous earth connection is provided back to the main intake supply earth.</li> </ul>