

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

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Name of the Factory	: Rose Sweater Ltd..
Address of the Factory	: Mogarkhal, Bijoy Sarak, Joydevpur, Gazipur
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 9 <sup>th</sup> February, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 22 <sup>nd</sup> February, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 22 <sup>nd</sup> February, 2015
BGMEA Membership No.	: 3529

### **BASIC INFORMATION:**

The factory building is a three storied RCC building with beam and column system and flat slab system. The following information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : RCC Beam Column Frame.
- iii. Floor System : RCC Beam Slab.
- iv. Floor Area : The typical plinth area is 10,464 sq. ft. and total floor area is 63,131 sq. ft.
- v. No. of Stories : Ground floor + 5 Floors, (6 Storey), No Basement
- vi. Construction Year : 2012.
- vii. Foundation Type : Spread Footing.
- viii. Design Drawings : Available (Approval for 6 storey industrial building from Gazipur Upazila Parishad on 31st January, 2011).
- ix. Soil Investigation Report : Available.
- x. Construction Materials : Brick aggregate.
- xi. Generator : East side of staircase at 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:

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|------------------------|--|
| Short Term (Immediate) | : N/A  |
| Mid Term (6-weeks)     | : N/A  |
| Long Term (6-months)   | : 1. Proper roof drainage system and water proofing need to be implemented as per guidance of building engineer. |

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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>• The minimum clear width of the pathway should be 0.9 meter</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>• Provide 1.5 hours fire rated door at (1st floor, ware house) for separation for other operational area.</li> <li>• Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at 1st floor chemical room, which located at the adjacent to north-east exit.</li> <li>• 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</li> <li>• Prepare proper design and plan for dedicated fire pump with alternate backup power supply.</li> <li>• Replace existing 1 inch hose pipe with 1.5 inch hose pipe to meet the requirement of RMG guideline.</li> <li>• Prepare plan and design for dedicated water storage tank for firefighting operation.</li> <li>• Implement to a single fire safety management system with approvals from all tenants in the factory building.</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, which located at 1st floor chemical room, which located at the adjacent to north-east exit.</li> <li>• Install automatic detection system with automatic fire alarm and control panel. (Also needs to cover the floors occupied by other tenants).</li> <li>• Install dedicated fire pump with alternate backup power</li> </ul>

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	<p>supply.</p> <ul style="list-style-type: none"> <li>• Stand pipe supplying first aid hose should have minimum pressure of 200 KPa.</li> <li>• Provide dedicated storage tank for firefighting operation</li> </ul>
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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>	<ul style="list-style-type: none"> <li>• All strands cables at exposed ends should be properly soldered / crimped and insulated.</li> <li>• Relocate switchboards away from gas stoves / sinks / washing area / laundry (&gt; 2.5 m).</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>• 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 and maintain clear and legible identifications numbers &amp; names on all incoming and outgoing circuits of LT panels.</li> <li>• 1. Wiring design should have separate and distinct sub-circuits for power and heat source. 2. Switchboards / wiring to be located away from steam / heat pipelines.</li> <li>• Provide cable connections with properly soldered / welded lugs at (LT/MDB/SDB)'s. Ensure that all the electrical connections are properly secured with lugs and glands.</li> <li>• Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity 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 load, voltage, number of phases.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box.</li> <li>• Seal the cable penetrations through walls adequately with fire resistive elements.</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>• Substation should be on lowest floor level, with easy access for maintenance.</li> <li>• Maintain the minimum height of 3.6 m for the substation room. Increase the height or relocate it.</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>• Relocate generator set in substation building / adjacent to substation room.</li> <li>• Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be.....m<sup>2</sup>, or relocate the generator room.</li> <li>• Provide and maintain proper clearance in all sides of generator for ease of maintenance.</li> <li>• Provide calibrated Ammeters / Voltmeters at distribution boards (LT/MDBs).</li> <li>• Energy meters should be installed at convenient height (At least 1.5 m above ground) with proper protection.</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>• 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5. 2. Ensure that connections between conductors / equipments 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.</li> <li>• Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.</li> </ul>