

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

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Name of the Factory	: Vintage Textile Ltd.
Address of the Factory	: Plot# 01,Block# B,14, Fouzdarhat BSCIC I/E, Chittagong
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 29 December, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 29 December, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 29 December, 2015
BGMEA Membership No.	: 3442 & 3442

### **BASIC INFORMATION:**

The structural system of building is R.C.C frame structure. The structural system of the building was a 2-way beam slab system at all the floor levels implying logical vertical and lateral stability system. The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column system.
iii. Floor System	: RCC Beam slab.
iv. Floor Area	: GF+3nd floors
v. No. of Stories	: 2000
vi. Construction Year	: Not known
vii. Foundation Type	: Not Available
viii. Design Drawings	: Not Available
ix. Soil Investigation Report	: Available
x. Construction Materials	: Brick aggregate.
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)	: N/A
Mid Term (6-weeks)	: N/A
Long Term (6-months)	: 1. As built architectural and engineering drawings to be prepared for entire building. As part of this process the building engineer will be required to make a number of checks on the as-built construction. 2. Connection need to be checked and carry out any remedial actions as directed by the 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><input type="checkbox"/> The minimum clear width of the pathway should be 0.9 meter</li> <li><input type="checkbox"/> Provide aisle marking with arrow guiding and exit signage on all Evacuation pathways or provided with overhead signage fixed at ceiling level.</li> <li>- Illuminated exit sign should be posted above the exit door,</li> <li>- It should be clearly visible at all time,</li> <li>- Provide directional signs wherever necessary.</li> <li>- All exit doors should be clearly marked for easy identification.</li> <li><input type="checkbox"/> Factory management should be checked alarm call points, alarm &amp; detection system periodically and maintained the record properly.</li> <li><input type="checkbox"/> The first aid hose and standpipe 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><input type="checkbox"/> Prepare proper plan and design for one more exit in a way not to exceed the maximum travel distance</li> <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"/> Exit door should have minimum clear width 0.9 meter.</li> <li><input type="checkbox"/> Prepare proper plan &amp; design for staircase.</li> <li>- Minimum clear width should be 0.9 meter.</li> <li><input type="checkbox"/> 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><input type="checkbox"/> Doors in stair should be outward opening, side-swing, self closing, non-lockable 0.75 hours fire rated doors in all stair way encloses.</li> <li><input type="checkbox"/> Provide 1 hour fire rated construction at unprotected opening window, which is adjacent</li> </ul>

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	<p>to external staircase.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Exit door should have minimum clear width 0.9 meter.</li> <li><input type="checkbox"/> Prepare proper plan and design for fire rated barrier for 1 hour fire rating separated corridor at ground floor in front of compressor room and floor exit-1 corridor</li> <li><input type="checkbox"/> Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room and compressor room.</li> <li><input type="checkbox"/> Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at boiler floor generator room, which located at the adjacent to operational area.</li> <li><input type="checkbox"/> 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> <li><input type="checkbox"/> 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><input type="checkbox"/> Produce design and plan for automatic detection system with automatic fire alarm.</li> <li><input type="checkbox"/> Install Manual activation call point at all exit routes</li> <li><input type="checkbox"/> Provide adequate nos. of automatic smoke detectors to cover the whole factory building.</li> <li><input type="checkbox"/> Prepare proper design and plan for dedicated fire pump with alternate backup power supply.</li> <li><input type="checkbox"/> Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline.</li> <li><input type="checkbox"/> Visual alarm should be placed at the generator room.</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"/> Implement the plan and design for one more exit</li> <li><input type="checkbox"/> Install staircase as per plan and design.</li> <li>- Minimum clear width should be 0.9 meter.</li> <li><input type="checkbox"/> All stairway to have direct access to outside of the factory building, which requires 1 hour fire rating separated corridor at ground floor in front of compressor room and floor exit-1 corridor</li> <li><input type="checkbox"/> Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room and compressor room.</li> <li><input type="checkbox"/> Provide 4 hours fire rated barriers with 2 hours fire rated door at boiler floor generator room, which located at the adjacent to operational area.</li> <li><input type="checkbox"/> Install automatic detection system with automatic fire alarm.</li> </ul>

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	<input type="checkbox"/> Install dedicated fire pump with alternate backup power supply. <input type="checkbox"/> Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. <input type="checkbox"/> Provide dedicated storage tank for firefighting operation
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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>	N/A
<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"/> 1. Provide updated SLD matching the existing installation at the factory. <input type="checkbox"/> 2. SLD to indicate exact positions of all points of switch boxes and other outlets. <input type="checkbox"/> 3. SLD to be approved by the engineer-in-charge. <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. <input type="checkbox"/> 2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation. <input type="checkbox"/> 3. As built drawing to be approved by the engineer-in-charge. <input type="checkbox"/> Install smoke detection in the generator room. <input type="checkbox"/> Adequate number of caution boards should be kept in the substation/ transformer room. <input type="checkbox"/> 1. All stranded conductors > 6mm <sup>2</sup> to be provided with cable sockets. <input type="checkbox"/> 2. All stranded conductors < 6 mm <sup>2</sup> , at exposed end should be soldered / crimped. <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 MDB and DBs.

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	<p>Ensure that all the electrical connections are properly secured with lugs.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 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><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.</li> <li><input type="checkbox"/> Provide adequate earthing to body and doors to 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"/> Provide adequate ventilation arrangements for indoor substation.</li> <li><input type="checkbox"/> Provide 4 hour fire rated walls all around the transformer / generator room on ground level.</li> <li><input type="checkbox"/> Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 60 m<sup>2</sup>, or relocate the generator room.</li> <li><input type="checkbox"/> Provide and maintain proper clearance in all sides of generator for ease of maintenance.</li> <li><input type="checkbox"/> Seal the cable entry-exit points of (MDB/DB's with non-flammable materials. In addition:             <ol style="list-style-type: none"> <li>1. Ensure that DB 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"/> Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.</li> </ul>