

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

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Name of the Factory	: Alternative Sweaters Ltd.
Address of the Factory	: Holding # 1745/1, Uttar Mullah Para, Uttar Khan, Uttara, Dhaka.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-09-19
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-09-19
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-09-19
BGMEA Membership No.	: 6011

### **BASIC INFORMATION:**

i. Building Usage Type	: Garments Factory.
ii. Structural System	: RCC Frame Building.
iii. Floor System	: RCC Beam Slab
iv. Floor Area	: Ground floor = 2000 sft , Entire building = 6784 sft (Approx.)Eight story and partly 8th floor
v. No. of Stories	: GF+ 2 floors ( 3 storey)
vi. Construction Year	: 1st phase of construction started in 2010 and 2nd phase of Construction started in 2014.
vii. Foundation Type	: Shallow foundation (isolated column footing)
viii. Design Drawings	: Not available
ix. Soil Investigation Report	: Available
x. construction Materials	: Reinforced Concrete ,as Coarse aggregate brick chips, Reported).
xi. Generator	: The generator was located in front of the building at south side.

**RECOMMENDATIONS FOR CORRECTIVE ACTION:** No critical or high risk observation was found during the day of assessment in the factory. During the assessment, some non-conformity was found for which mid-term corrective action has been suggested. There is no need to suspend operation in the factory.

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: 1. As built architectural and engineering drawings to be prepared and submitted for approval by appropriate authorities. As part of this process the building engineer will be required to make a number of checks on the structural design as described in the following recommendations.
Long Term (6-months)	: 1. The connection of steel structure needs to be checked by building engineer and 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>• Provide aisle marking with arrow guiding and exit signage on all Evacuation pathways or provided with overhead signage fixed at ceiling level. <ul style="list-style-type: none"> <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>- Signage should be uniform</li> </ul> </li> <li>• Provide fire extinguisher at all floor and to keep the record for re filling &amp; 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>• Exit door should have minimum clear width 0.9 meter.</li> <li>• Prepare proper plan &amp; design for another staircase. <ul style="list-style-type: none"> <li>- Minimum clear width should be 0.9 meter.</li> </ul> </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 hours fire rated doors in all stair way encloses.(Also require fire rated door at the floor occupied by other tenants)</li> <li>• Exit door should have minimum clear width 0.9 meter.</li> <li>• Prepare proper plan and design for fire rated barrier for 1 hour fire rating separated corridor with 45 minute fire rated door at ground floor.</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</li> </ul>

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	<p>for all corridors &amp; exit 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>• 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>• Install Manual activation call point at all exit routes</li> <li>• Prepare proper design and plan for dedicated fire pump with alternate backup power supply.</li> <li>• Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline.</li> <li>• Obtain fire license / permit from issuing authority</li> <li>• Implement to a single fire safety management system with approvals from all tenants in the factory building.</li> </ul>
<p>Long Term (The remedial works indicated must be carried out within a period of 6 months)</p>	<ul style="list-style-type: none"> <li>• Install another staircase as per plan and design. - Minimum clear width should be 0.9 meter.</li> <li>• All stairway to have direct access to outside of the factory building, which requires 1 hour fire rated construction with 45 minute fire rated door at ground floor for fire separated corridor.</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 supply.</li> <li>• Provide sufficient number of hose pipe with respect to area and travel distance as per RMG guideline.</li> <li>• Provide dedicated storage tank for firefighting operation</li> </ul>

**(B): Recommendations for Electrical Safety corrective actions:**

<p>Immediate <i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<p style="text-align: center;">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>	<p>N/A</p>
<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>• Necessity and capacity of the electrical substation shall be set by regulations in the Electricity Act or by the relevant electrical utilities.</li> <li>• Provide graded rubber mats of adequate size in front of CB board.</li> <li>• 1. Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the sign. 2. The source of illumination should be providing not less than 50 lux.</li> <li>• Individual Fuse protection should be provided to every 15A socket.</li> <li>• 1. Remove all the inflammable materials from surrounding of electrical circuitry. 2. Ensure that all electric circuitry clean of inflammable materials. 3. Conduct periodic maintenance and maintain the records.</li> <li>• Provide cable connections with properly soldered / welded lugs. Ensure that all the electrical connections are properly secured with lug.</li> <li>• Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation.</li> <li>• Avoid bunch of cable at MCCB/MCB terminal, use individual circuit and over current device for every incoming and outgoing circuit at the Circuit Breaker Board.</li> <li>• Provide separate earthing connection to electrical equipment. 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> </ul>
<p>Long Term <i>(The remedial works indicated must be carried out within a</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.</li> </ul>

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<i>period of 6 months)</i>	<p>3. SLD to be approved by the engineer-in-charge.</p> <ul style="list-style-type: none"><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></ul> <ul style="list-style-type: none"><li>• Review capacity of standby generator on basis of loads for essential lighting. Replace generator with larger capacity or install second generator if review indicates existing unit is too small.</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>
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