

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: ZA SWEATERS LTD.
Address of the Factory	: 39 Kuturia, Ashulia, Savar, Dhaka
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 21 June, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 21 June, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 21 June, 2015
BKMEA Membership No.	: 1945

BASIC INFORMATION:

The building is a four storied RCC beam column frame structure. 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	: Floor area is (6989 sq. ft. x 4) = 27956sft for main factory building
v. No. of Stories	: 4 Storied
vi. Construction Year	: 2005-2006
vii. Foundation Type	: Isolated Column footing
viii. Design Drawings	: Available document: Approval plan, structural design drawing, soil test report. Not available: Architectural drawing, machine layout plan, floor load plan, material test report has not been found.
ix. Soil Investigation Report	: Available
x. Construction Materials	: Brick aggregate.
xi. Generator	: Outside the factory.

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. Remedial action to be undertaken to prevent the seepage of water from pipes and other sources. A qualified structural engineer should be involved for maintenance by correcting the identified issues

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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>	<p>Factory needs to have proper testing plan & record for fire safety equipment.</p> <p>Lights in storage area need to be installed with protective covers and conduits.</p> <p>Storage facilities with no air-conditioning duct shall be minimum 2.9 m and when used as a storage facility there shall be a minimum clearance of one-third the floor height from the ceiling to the top of the storage stack.</p> <p>Ensure adequate exit signs in all floors so that it is visible from all positions.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Factory needs to have as built drawing with proper dimensions showing all the means of escape.</p> <p>Factory needs to have valid fire license covering the full occupied area.</p> <p>All the exit doors need to be replaced by side swinging so that un-lockable doors can be opened easily in the direction of evacuation without the use of a key.</p> <p>Provide continuous guards and handrails on both sides of the stairs.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Factory needs to have a proper pre-plan for fire service & civil department.</p> <p>Final exit-2 needs to be fire separated by two hours rated construction & 1.5 hours fire rated opening with the others occupancies till to reach the area of refuge. Storage area needs to be protected with 2 hours rated Construction & 1.5 hours rated opening or doors.</p> <p>All the stairs (stair-1&2) need to be protected with fire and smoke resistant enclosures and opening (2 hours rated enclosure and 1.5 hour rated door) and provide the protected route from all though the</p>

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	<p>stairway to the final exits.</p> <p>Factory need to install centralized and automatic fire detection & alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline.</p> <p>Factory needs to install control panel for centralized automatic smoke detection & fire alarm system according to NTPA Guideline</p> <p>Factory need to ensure the minimum pressure for standpipes supplying a 50mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 Kpa.</p> <p>Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</p> <p>Factory needs to install dedicated fire pump with sufficient capacity and backup power.</p>
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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>	<p>N/A</p>
<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>	<p>Provide two separate and distinct connections of earthing for each generator.</p> <p>Ensure all distribution boards (including panel door) are earthed properly.</p> <p>Remove all unused cables from distribution boards and make sure all necessary cables are properly terminated at its point of termination using appropriate size and type of lug.</p> <p>Provide additional insulation for wiring exposed to external heat source to protect cable.</p> <p>Ensure overcurrent protection device (circuit breaker/fuse) for</p>

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	<p>each circuit/branch circuit.</p> <p>Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</p> <p>Ensure inspection of all earthing system is being completed and documented.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Install appropriate type of safety signage at substation and generator room. Also ensure graded rubber mats are provided in front of all distribution boards.</p> <p>Provide Instruction board for first aid and artificial respiration in the substation room and generator room.</p> <p>Fill the transformer breather oil cup with fresh Oil.</p> <p>Ensure distribution boards have a minimum clearance of 1 m (39 in) in front.</p> <p>Provide dedicated & adequate size of earthing with proper identification for each circuit from the earth bus-bar of distribution boards and ensure continuous earth path is back to main building intake.</p> <p>Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide mechanical guards for electrical wiring where necessary.</p> <p>Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</p> <p>Connect all metal in the building to the building earthing system.</p> <p>Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of overheating { ambient+(20°C-40°C)} and take proper action</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6</i></p>	<p>Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</p>

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<p><i>months)</i></p>	<p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</p> <p>Inspect electrical switchgear and panel boards on an annual basis.</p> <p>Ensure the substation room has adequate fire separation from the production area.</p> <p>Provide adequate means of ventilation for the substation room based on the installed equipment considering fire barriers.</p> <p>Ensure the generator room has adequate fire separation from the production area.</p> <p>Ensure distribution boards have no opening and all live internal components are concealed properly.</p> <p>Provide dedicated & adequate size of neutral with proper identification for each circuit.</p> <p>Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</p> <p>Provide adequate covers on cable trenches and channel. Provide proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the building.</p>
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