

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

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Name of the Factory	: Sublime Apparels Ltd.
Address of the Factory	: Shisir Chala, Bagher Bazar, Bhabanipur, Gazipur, Bangladesh.
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 18 May, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 18 May, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 18 May, 2015
BGMEA Membership No.	: 5835

### **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 system.
iii. Floor System	: RCC Beam slab.
iv. Floor Area	: 7100 sqm.
v. No. of Stories	: 3 stories
vi. Construction Year	: 2013 to ongoing
vii. Foundation Type	: Isolated column footing foundation
viii. Design Drawings	: Available: Approval plan, as built structural drawing, as built architectural drawing, soil test report. Not Available: As built machine layout plan, materials test report and floor load plan.
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)	: None
Mid Term (6-weeks)	: None
Long Term (6-months)	: 1. Provide protective coating to cover the exposed rebar from corrosion. 2. Develop set of as-built drawings showing structure details, loading, dimensions, levels, foundations and framing on Plan, Section and Elevation drawings.

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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 Manager/Director needs to arrange fire safety training for the workers of the factory from proper authority time to time.</p> <p>All the firefighting equipment need to be tested with proper documents.</p> <p>Lights in storage area need to be installed with protective covers and conduits.</p> <p>Combustibles are to be managed with yarn store. 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>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 a proper pre-plan for fire department.</p> <p>All the exit doors need to be replaced by side swinging so that unlockable doors can be opened easily in the direction of evacuation without the use of a key.</p> <p>Stair needs to have provided both side handrails.</p> <p>Stair-1 need to have provided intermediate handrail.</p> <p>Ensure illuminated emergency light in floors and escape routes.</p> <p>Ensure illuminated exit signs in floors so that it is visible from all positions.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Final exit-1&amp;3 need be to fire separated by 2 hr rated encloser construction &amp; 1.5 hr rated door opening.</p> <p>Bonded ware house need to be separated with the production floor by 2 hours rated construction &amp; 1.5 hours rated door.</p> <p><input type="checkbox"/> Generator room needs to be fire separated with 2 hr fire rated</p>

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	<p>enclosure and 1.5 hr rated opening having direct access from outside.</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Boiler room needs to be separated with 2 hour fire rated enclosure and 1.5 hour rated door/opening.</li><li><input type="checkbox"/> Sub-station room needs to be separated with 1 hour fire rated enclosure and 45 min fire rated opening.</li></ul> <p>All the exits connecting to the staircase-1,2 &amp; 3 need to be protected with fire and smoke resistant enclosures and opening (1 hours rated enclosure and 0.75 hour rated door) and provide a protected route from all through the stairway to the final exits.</p> <p>Factory need to install centralized and automatic fire detection &amp; 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 detection and alarm system at required location.</p> <p>The factory need to install manually operated electrical fire alarm system and automatic fire alarm system with single or multiple call boxes on all occupied floors, including other tenanted floors of the building.</p> <p>Install proper standpipe system having at least mm dia of standpipe. First aid hose system (38 mm nominal) shall be provided (Ref. Fire Service Standard # 9) in addition to Fire Aid Fire Fighting Appliances in existing high rise NTPA (20 m) buildings. In addition 50 mm or larger hose connection facility shall be provided.</p> <p>Factory needs to install standard standpipe, hose and fire pump system to ensure required hose pressure.</p> <p>Factory need to installed Siamese connection after installation of stand pipe system, hose system and fire pump.</p> <p>Factory needs to install dedicated fire pump with sufficient capacity and backup power.</p> <p>Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900ltr x 75min=142500 liters water storage tank.</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>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>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 (&gt; ambient+ 40°C) and take proper action.</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>Ensure all panel boards are earthed properly using appropriate type and size of cables and the earthing cables have continuity up to main earth /earthing pit.</p> <p>Provide additional insulation for wiring exposed to external heat source to protect cable.</p> <p>Ensure interlocking capabilities is existed between two sources fed to same busbar.</p> <p>Ensure inspection for 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>Ensure graded rubber mats are provided in front of all panel boards.</p> <p>Provide two separate and distinct connections of earthing for each generator.</p> <p>Provide dedicated &amp; adequate size of earthing with proper identification for each circuit from the earth busbar of distribution boards and ensure continuous earth path is back to main building intake.</p> <p>Use noncombustible material to make cable trench and cable channel and provide adequate and noncombustible covers on cable channels.</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+( 20C-40C)} and take proper action.</p>
<p>Long Term</p>	<p>Develop an electrical layout diagram and an as-built single line</p>

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<p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>diagram detailing key components and capacity of the electrical system.</p> <p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</p> <p>Inspect electrical panel boards on an annual basis to ensure that the equipment is in good working condition.</p> <p>Ensure overhead service connections to the building are led via adequate size and type of service masts and a goose neck bends at the top for entering the factory premises.</p> <p>Ensure the generator room has adequate fire separation from the production area.</p> <p>Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers.</p> <p>Ensure distribution board has no opening and all live internal components are concealed properly.</p> <p>Provide dedicated &amp; 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 obtained as per list.</p> <p>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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