

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Snow White Apparels Ltd.
Address of the Factory	: Akran, Birulia, Savar, Dhaka
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 19 th May, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 19 th May, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 19 th May, 2015
BGMEA Membership No.	: 6016

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 : Steel beam -column portal frame system.
- iii. Floor System : Pre-fabricated steel structure with deck slab and roof Deck slab and PEB roof.
- iv. Floor Area : 35836 Sq. ft.
- v. No. of Stories : Two storied
- vi. Construction Year : Building was built in one phase (2006-2007).
- vii. Foundation Type : Isolated Footing Foundation.
- viii. Design Drawings : Available: Approval plan, Structural design drawing
Not Available: Architectural drawing, soil test report, test report of construction materials and floor load plan.
- ix. Soil Investigation Report : Not found.
- x. Construction Materials : Steel joist ,Brick chips.
- 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:

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| Short Term (Immediate) | : N/A |
| Mid Term (6-weeks) | : N/A |
| Long Term (6-months) | : 1. Develop set of as-built drawings showing structural details, Section and Elevation drawings loading, dimensions, levels, foundations and framing etc. |

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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"> • Fire drill shall be conducted quarterly (4 times a year) under the Fire Safety Plan. A record of such drills shall be kept in writing for at least 3 years for the inspection of fire brigade whenever called for. • Factory need to ensure adequate number of exit sign as it is visible from any position and comply with the following condition: <ul style="list-style-type: none"> (a) The color and design of lettering, arrows and other symbols on exit signs needs to be in high contrast with their background. Words on the signs needs to be at least 150 mm with a stroke of not less 20 mm (b) The source of illumination, contrast, intensity and luminance needs to be at least 50 lux, 0.5, 5.0 foot-candles and 0.2 cd/m² respectively.
<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"> • Need to have as built drawing with floor machine layout showing means of escape. • Factory manager or director needs to arrange fire safety training for the workers of the factory from proper authority time to time. • All the firefighting equipment's need to test with proper documents. • All the exit doors need to be replaced by side swinging so that un-lockable fire rated doors can be opened easily in the direction of evacuation without the use of a key. • Illuminated emergency light needs to be covered in floor, exits and aisles. The intensity of illumination by means of escape lighting needs to be equal or more than 10 lux. The aisles need to be illuminated with escape lighting to a level of not less than 2.5 lux at floor level. • Emergency back-up power needs to be connected for critical fire safety system and not less than 30 minutes in case of failure of power supply.
<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"> • Factory needs to have a proper pre-plan for fire department. • Factory needs to have a proper pre-plan for fire

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	<p>department.</p> <ul style="list-style-type: none">• Factory need to provide protected paths of travel(2 hours fire rated construction with 1.5 hours fire rated opening) from exit-1 to final exit -1 till to reach safe refuse area.• Factory need to protect (a) the boiler room from the finishing section and maintenance room (b) generator room from maintenance room © Sub-station room from staircase of another factory and final exit-1 route. of ground floor of the building by 4 hours rated construction with 2 hours fire rated door/opening• 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.• 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.• Factory needs to install control panel for centralized and automatic fire detection and alarm system at required location.• Factory need to install 75mm diameter of standpipe system in the building.• Provide the required flow of 1900 liter/min and minimum pressure of 200 kPa for supplying first aid hose (38 mm nominal) OR Hydraulically design the standpipe and hose system to get the required pressure.• Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.• Factory needs to install dedicated fire pump with sufficient capacity and backup power.• Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1011liter x 75min=142511 liters water storage tank.
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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>	<ul style="list-style-type: none"> 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>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"> Ensure all distribution boards (including panel door) are earthed properly. Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit. Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering. Provide provision for inspection of all earthing system and ensure inspection is being completed and documented.
<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"> Install appropriate type of safety signage at substation and generator room. Also ensure graded rubber mats are provided in front of all distribution boards. Provide Instruction boards for first aid and artificial respiration in the substation room and generator room. Fill the transformer breather's oil cup with fresh Oil. Provide two separate and distinct connections of earthing for each generator. Provide dedicated & 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. Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's. Ensure all electrical cables are sized according to capacity of circuit breakers. Provide adequate support or mechanical guards for electrical wiring where necessary. Provide adequate covers on cable channels. Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. Connect all metal in the building to the building earthing system.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6</i></p>	<ul style="list-style-type: none"> Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system. Establish a periodical Insulation and earth Resistance

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<p><i>months)</i></p>	<p>Measurement Program and record the related testing data.</p> <ul style="list-style-type: none">• Inspect electrical switchgear and panel boards on an annual basis.• Ensure the substation room has adequate fire separation from the production area.• Provide adequate means of ventilation for the substation room based on the installed equipment considering fire barriers.• Ensure underground cables for electrical distribution in the premises are encased in GI or PVC pipes and laid in earth trenches of sufficient depth as per mentioned standard.• Ensure all high tension cables are laid following standard cable laying techniques.• Ensure the generator room has adequate fire separation from the main building.• Ensure distribution boards have no opening and all live internal components are concealed properly.• Provide dedicated & adequate size of neutral with proper identification for each applicable circuit.• Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.• Provide proper cable terminator/connector for stranded conductors at its point of termination.• Install separate distribution boards for lighting and power circuits.• Install lightning protection system on the building.
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