

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Comfort Socks Ltd.
Address of the Factory	: Plot # 106, 108, atpoa, Pubail, Gazipur, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 9 th May, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 9 th May, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 9 th May, 2015
BGMEA Membership No.	: 3947

BASIC INFORMATION:

The factory building is two storied RCC beam-column frame structure and 1st floor roofing system is pre-fabricated shed. Entire building is used for RMG purpose .Comfort Socks Ltd occupied entire building. The following general information was noted:

- i. Building Usage Type : Socks factory.
- ii. Structural System : RCC Beam-Column Frame system.
- iii. Floor System : RCC beam slab floor system.
- iv. Floor Area : Production area is 9,500 sft.(approx.)
- v. No. of Stories : 2 Storey.
- vi. Construction Year : 2002-2003.
- vii. Foundation Type : Unknown.
- viii. Design Drawings : Unavailable.
- ix. Soil Investigation Report : Unavailable.
- x. Construction Materials : Brick aggregate. (Identified by removing plaster)
- xi. Generator : At 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) :

- Building engineer to prepare full set of structural as built drawing and prepare/update calculations showing the structural adequacy of the floor system taking into account the factory design imposed loading and the as built structure.
- Continue to monitor for dampness on an on-going basis.

The recommendations for **Fire & Electrical Safety** corrective action are:

(A): Recommendations for Fire Safety corrective actions:

Immediate	• None.
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<p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></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"> • Factory needs to have a fire training certificate from fire service & civil defense. • All the firefighting equipment need to be tested with proper documents. • Combustibles are to be managed with good housekeeping. 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. • Lights in storage area need to be installed with protective covers and conduits. • 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. • (a) The color and design of lettering, arrows and other symbols on exit signs shall be in high contrast with their background. <p>(b) The source of illumination, contrast, intensity and luminance needs to be at least 50 lux, 0.5, 5.0 foot-candles and 0.2cd/m² respectively.</p>
<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"> • Factory needs to have as built drawing with proper dimensions showing all the means of escape. • Factory needs to have valid fire license for the full occupied area. • 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. • Provide continuous guards and handrails on both sides of the stairways. • 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.

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<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 service & civil department.• The escape route need to provide protected paths of travel(2 hours fire rated construction with 1.5 hours fire rated opening) from the stair entrance at each floor level till to reach safe refuse area.• Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors.• Generator and boiler room need to be fire separated with 2 hours fire rated enclosure and 1.5 hour rated opening having direct access from outside.• All the exits connecting to the staircases need to be protected with fire and smoke resistant enclosures and opening (1 hour rated enclosure and 0.75 hour rated door) and provide a protected route from all though the stairway to the final exits.• Walls enclosing the lift core shall have a fire resistance rating of 2 hours and lift car doors shall have a fire resistance rating of at least 1 hour.• 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.• Factory needs to install manually operated electrical fire alarm system with single or multiple call boxes as well as automatic fire alarm system for centralized automatic fire detection and alarm system.• Install control panel board at required location.• Install suitable public address system having communication to all floors as well as facilities to receive messages from all floors.• Install proper standpipe system having at least 75 mm dia of standpipe• Install 1 riser per 1000 sqm of floor area. 38 mm dia of hoses with variable nozzle need to be installed.• 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
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	<p>have a minimum pressure of 200 Kpa.</p> <ul style="list-style-type: none"> • Siamese connection needs to the standpipe or to the delivery pipe of the gravity roof storage tank • Install dedicated fire pump with backup power system & sufficient capacity to achieve required pressure in the remote place of the factory. • Need to have fire command station to communicate with all floors at the entrance of lobby. • 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.
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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"> • Discharge the generator exhaust to the exterior of the building in a safe location. • Provide two separate and distinct connections of earthing for the generator. • 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"> • Fix appropriate type of safety signage at generator room and provide graded rubber mats in front of all panel boards. • Provide Instruction boards for first aid and artificial

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	<p>respiration in the generator room.</p> <ul style="list-style-type: none"> • Ensure in the generator room has adequate illumination level as per standard. • Ensure panel board is installed in compliant locations in terms of surrounding weather. • 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 and busbar. • Replace wooden box and bases with metal enclosure for installation of circuit breakers and switch controls. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Provide adequate support or mechanical guards for electrical equipment and wiring where necessary. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • Ensure Lighting fixtures are supported from the structure properly.
<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"> • 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 Measurement Program and record the related testing data. • Inspect electrical panel boards on an annual basis to ensure that the equipment is in good working condition. • Ensure overhead service connections to the building are led via adequate size and type of service masts. • Ensure the generator room has adequate fire separation from the main building.

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	<ul style="list-style-type: none">• Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers.• Ensure panel boards have no opening and all live internal components are concealed properly.• Install circuit breakers in proper way to ensure safe installation.• Provide dedicated & adequate size of neutral with proper identification for each 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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